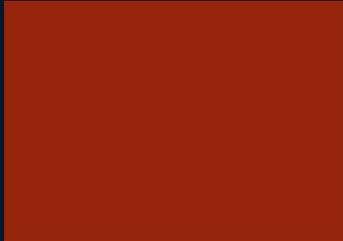




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THE EFFECT OF RESEARCH AND DEVELOPMENT (R&D) EXPENDITURES ON EXPORT: EVIDENCE FROM A PANEL OF SELECTED OECD COUNTRIES

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ABSTRACT

Purpose- R&D activities help countries to gain competitive power and thus achieve economic growth. The purpose of this paper is to analyze the effect of R & D activities on exports for 16 OECD countries using data from the period 2000-2015.

Methodology- Pedroni (1999) and Kao (1999) panel cointegration tests were used to test whether there is a long-term relationship between variables. In order to be able to do the cointegration analysis, the stationary of the variables considered should be determined. The unit root examination is conducted using four unit root tests; namely, the Levin, Li and Chu; Im, Pesaran and Shin W-stat; Fisher-ADF and Fisher-PP. Panel FMOLS and DOLS estimators were used to obtain long run coefficients after the cointegration relation was detected.

Findings- As a result of Pedroni and Kao cointegration test, it has been found that there is a long term relationship between R & D expenditures and exports. Both Panel FMOLS and Panel DOLS test results show that the sign of R & D expenditures is positively and statistically significant. According to the Panel FMOLS test results, a 1% increase in R & D expenditures leads to a 0.45% increase in exports. Similarly, according to Panel DOLS test results, 1% increase in R & D expenditures increases exports by 0.43%.

Conclusion- The results showed that the effect of R & D expenditures on exports is positive. Results obtained in the study are consistent with existing findings in the literature.

Keywords: R&D expenditures, export, panel co-integration test, panel FMOLS, panel DOLS.

JEL Codes: F14, O30, C23

1. INTRODUCTION

Research and development (R & D) activity can be defined as the creation and development of new products based on knowledge and technology and the realization of new production techniques (Güzel, 2009: 31). On the one hand, R & D activities increase the capacity of the country to produce new technology and thus to develop new products, and on the other hand speed up the spread of technology among countries and / or sectors (Şahbaz et al., 2014: 49). R & D activities not only affect the efficiency of the firm that makes these activities, but also increase the efficiency of other firms with its spillover effects (Pradeep et. al., 2017: 19). Thus, R & D activities help countries to increase their exports to gain competitive power and thus to provide economic growth (Akiş, 2015: 1314-1319).

As the investment in R & D increases, goods or services become more innovative and competitive in international markets, thus creating a competitive advantage that has positive effects on countries' exports (Neves et al., 2016: 130; Yüksel, 2017: 2). In addition to its competitive advantage, R & D activities have advantages for countries in attracting foreign capital, increasing productivity and getting rid of technological dependence (Güzel, 2009: 30). However, countries may not be able to benefit from some of the benefits of R&D activities, for various reasons such as imitation, job change of personnel, inter-company cooperation, which may lead to diffusion effects (Svensson, 2008: 12).

The purpose of this study, the effect of R & D activities on exports, which is selected for OECD countries including Turkey is examined for the 2000-2015 period. In the studies conducted in the literature, different variables such as R & D expenditures, number of patents, patent expenditures, R & D stock¹ and R & D personnel were used as indicators of R & D activities. In this study, the effect of R & D activities on exports is examined using R & D expenditures as a indicators of R & D activities. The plan of this paper is as follows: in the next section, the relationship between R & D activities and exports is theoretically revealed. In the third section, a empirical literature summary related to the subject is presented. In the fourth section, information about the methodology, the applied model, the data used in the study and are given. In the fifth section, panel unit root tests, panel cointegration tests and panel FMOLS and DOLS test results, which are applied in the study, are included. In the last section, the conclusion and evaluations related to the study are given.

2. THEORETICAL FRAMEWORK

Countries develop their technology by conducting R & D activities in order to increase their competitiveness and ensure economic growth. Technology has been accepted as an endogenous variable in some of the theories in economics literature and as an exogenous variable in some of them. In classical and neoclassical trade theories, technology is considered as an exogenous variable, but the nature of technological developments, their reasons, how they emerge and the factors that affected them have not been taken into consideration (Özer and Çiftçi, 2009: 39). The inclusion of technology as an internal variable to the trade theories first occurred with "The Product Cycle Theory" and "Technology Gap Theory". According to these theories, the main factor determining foreign trade is the technology differences between countries. In this context, the fact that countries are profitable from foreign trade and they are able to achieve sustainable growth rates depends on their ability to produce and / or transfer new technology (Şahbaz et al., 2014:48; Yıldırım and Kesikoğlu, 2012:166). According to Vernon (1966), technology development is emerging in countries where skilled labor and R & D expenditures are high (Yıldırım and Kesikoğlu, 2012:166). In the endogenous growth theories based on Schumpeter, the technology created by R & D activities is accepted as an endogenous variable (Şahbaz et al., 2014: 48). According to Schumpeter; in free-market economies where competition is high, either companies will constantly renew themselves and develop new products and production processes, or they will be wiped out of the market (Göçer, 2013a: 218). However, according to theories of endogenous growth, investments in R & D can lead to long-term growth and increased returns to scale (Svensson, 2008: 11).

There is a complementarity relationship between R & D and exports. This relationship is caused by two reasons. The first is the increase in exports with knowledge accumulation obtained through endogenous R & D activities. When countries create innovation as a result of R & D activities, they use these innovations not only to meet domestic demand but also to meet foreign demand through export (Özer and Çiftçi, 2009: 41). Thus, the production and export made to meet the foreign demand is increasing.

In the literature, there is a general consensus on the extent to which R & D activities increase exports (Girma et al., 2008: 752; Esteve-Pérez and Rodríguez, 2013: 221). In addition to increasing exports of R & D activities, the size of R & D expenditures also causes the volume of foreign trade to increase and qualitatively change. For example, foreign trade shifts from low and medium technology products to high technology products (Çetin, 2016: 35).

The second is that exports have a positive influence on R & D and export experience creates innovation flows that increase firms' innovative capacities and R & D activities (Esteve-Pérez and Rodríguez, 2013: 221; Neves et al.,2016: 132). Therefore, it is necessary for exporters to invest in new technology to compete in international markets and to meet the demands of a more sophisticated demand (Girma et al., 2008: 751). The increase in R & D and innovation through exports is called "learning by exporting" by Hobday (1995). According to this view, export are positively affects the technological and innovative capacity of firms (Neves et al.,2016: 131). In other words, domestic companies that have innovative, differentiated products and use the latest technology are able to export their products more easily. In addition, exporters compete in export markets and thus investing by becoming aware of foreign Technologies (Girma et al., 2008: 750). However, production for a wider market reduces the unit costs of R & D investments and encourages these activities (Özer and Çiftçi, 2009: 41). R & D and exports complement each other in terms of increasing knowledge, decreasing costs and increasing profits of firms (Neves et al.,2016: 132). At the same time, innovations emerging as a result of R & D activities have given monopoly power to the firm that created it, at least for a certain period of time (Özer and Çiftçi, 2009: 41).

¹ R & D stock is calculated by considering the R & D investment (RDE), the depreciation rate(δ) and the R & D investment increase rate (g). $RDS_0 = \frac{RDE}{g + \delta}$

3. BRIEF LITERATURE REVIEW

In applied studies in the literature related to the subject, various variables such as R & D expenditures, number of patents, patent expenditures, R & D stock and R & D personnel have been used as indicators of R & D activities. R & D expenditures have been used as an indicator of R & D activities in many studies, because of the ease and reliability of data collection (Sungur et al., 2016: 175). Table 1 presents the studies that take into account R & D expenditures as a demonstration of R & D activities. As shown in Table 1, the majority of studies have reached the conclusion that R & D activities have a positive effect on exports. However, Landesmann and Pfaffermayr (1997) found a negative relationship between R & D expenditure and exports in Germany and France. According to Landesmann and Pfaffermayr (1997) the reason for the negative relationship between the two variables is that the increase in R & D expenditures leads to decreasing returns and improvements in productivity or product quality are compensated by higher wage demands (Landesmann and Pfaffermayr, 1997: 196).

Table 1: Summary of Empirical Studies Relationship between R&D Activities and Export

| Author | Period / Country | Method | Results |
|---------------------------|---|--|--|
| Türker (2018) | 2000-2015 G-7 countries | Panel data analysis (Panel OLS) | According to the results of this study, there is a positive relationship between R&D expenditures and exports. The increase (decrease) in R & D expenditures increases (reduces) exports. |
| Özkan and Yılmaz (2017) | 1996-2015 12 EU countries and Turkey | Panel data analysis | The conclusion of the study shows that R & D expenditures positively affect high technology exports and GDP. The results show that a 1% increase in R & D expenditures leads to a 3.5% increase in high tech exports. |
| Çetin (2016) | 1996-2013 7 new industrialized countries | Panel data analysis, Granger causality test, (fixed and random effects estimation methods) | The results of the Granger causality test show that R & D expenditures lead to the export of high-tech products, while random effects estimation shows that R & D expenditures positively and significantly affect high-tech product exports. |
| Sungur et al. (2016) | 1990-2013 Turkey | Engle-Granger cointegration test, Granger and Hatemi-J asymmetric causality test | According to Granger Causality test results, unilateral causality relation exists from export to share of R&D expenditures in GDP, from patents to export and from R&D labor force to export. According to Hatemi-J asymmetric causality analysis results, there is a bidirectional relation between positive components of R&D labor and export; and there is a relation between negative components from R&D labor to export and from export to R&D. |
| Sandu and Ciocanel (2014) | 2008-2010 26 EU countries | Panel data analysis | This study shows that a 1% increase in public sector R & D expenditures has increased 8% of high-tech exports 2 years later and a 1% increase in private sector R & D expenditures has increased 9% of high-tech exports in the same year. |
| Kılıç et al. (2014) | 1996-2011 G-8 countries | Panel data analysis | In this study, it has been determined that R & D expenditures have a positive effect on high-tech product exports. It is also found that there is bidirectional causality between R & D expenditures and high-tech product exports. |
| Göçer (2013a) | 1996-2012 11 Asia countries | Hadri-Kuruzomi unit root test, Dumitrescu-Hurlin test, Westerlung-Edgerton LM bootstrap test | This study shows that R & D expenditures increase information-communication technologies exports and general exports. |
| Göçer (2013b) | 1996-2012 New Industrialized Countries | Pedroni cointegration test, Panel Fisher test | The study concludes that there is a positive relationship between R & D expenditure and high-tech product exports. |

| | | | |
|-----------------------------------|---|---|---|
| Yıldırım and Kesikoğlu (2012) | 1996-2008 Turkey | Panel causality test, GMM and Wald test | This study shows that there is a one-way causality relationship from R & D expenditure to exports and export does not cause R&D expenditure. |
| Uzay et al. (2012) | 1995–2005 40 countries with the highest export in Turkey | Panel data analysis | In this study, there is a positive relationship between R & D expenditures and exports; but a substantial part of the R & D expenditure's effect on exports has been found to be delayed. |
| Bojniec and Ferto (2011) | 1995–2003 18 OECD countries | Panel data analysis | The study shows that there is a positive relationship between R & D expenditure and manufacturing exports. The results reject the non-linear relationship between R&D and manufacturing exports. |
| Özer and Çiftçi (2009) | 1993–2005 19 OECD countries | Advanced panel data analysis | The findings of the study show that there is a positive relationship between R & D expenditures and exports. In addition, the cross-sectional effect coefficients of G7 countries are high and positive. |
| Braunerhjelm and Thulin (2008) | 1981-1999 19 OECD countries | Panel data analysis (fixed effects estimation method) | The results showed that R & D expenditures positively affected exports of high technology products. The results show that a 1 % increase in R & D expenditures leads to a 3 % increase in high tech exports. |
| Landesmann and Pfaffermayr (1997) | 1967-1987 7 OECD countries | AIDS-Almost Ideal Demand System | The study concluded that R & D expenditures in the United States, Great Britain and Japan affected exports positively. However, in Germany and France it has been found that there is a negative relationship between R & D expenditures and exports. |

4. DATA, EMPIRICAL MODEL AND METHODOLOGY

4.1. Data and Empirical Model

This paper examines relationship between the two variables for 16 OECD countries (Austria, Belgium, Canada, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, Poland, Portugal, Spain, Turkey, United Kingdom and United States) from 2000 to 2015 are selected as their search samples. In this study, some OECD countries have been included in the analysis due to data constraints. The data for this study is measured annually. Table 2 gives the data used for the empirical analysis in this study.

Table 2: Definitions and Descriptions of the Variables

| Variable | Symbol | Description | Data Source |
|--|--------|--|---|
| Natural logarithms of research development expenditure | lnrd | R&D expenditures (% of GDP) | OECD, OECD Science, Technology and R & D Statistics, 2018 |
| Natural logarithms of export | lnexp | Exports of goods and services (% of GDP) | WB, World Development Indicators, 2018 |

The model used in the analysis is shown in Equation 1.

$$\ln \exp_{it} = \beta_{0i} + \beta_{1i} \ln rd_{it} + \varepsilon_{it} \quad (1)$$

where, \exp_{it} is the export in i country at the time t , rd_{it} is the research and development expenditure as proxy research development activities in i country at the time t , β_0 is a constant term, β_1 is slope coefficients of the model, ε_t is an error term.

4.2. ECONOMETRIC METHODOLOGY

4.2.1. Unit Root Tests

One of the methods to be applied in this study is the cointegration analysis. In order to be able to do the cointegration analysis, the stationarity of the variables considered should be determined. The unit root examination is conducted using four unit root tests; namely, the Levin, Li and Chu; Im, Pesaran and Shin W-stat; Fisher-ADF and Fisher-PP.

We first use the panel ADF (LLC) test proposed by Levin, Lin and Chu (2002) by assuming the homogeneity in the dynamics of the autoregressive coefficients for all panel units. Secondly, we use Im, Pesaran and Shin W-stat (IPS) test proposed by Im, Pesaran and Shin (2003). IPS test is used to research the existence of unit root of panel data when powerful tests are needed for the small set of observations (Şen et al., 2014: 20). In addition, we use the nonparametric tests including the ADF-Fisher Chi-square and the PP-Fisher Chi-square tests, take into account of the heterogeneity across units proposed by Maddala and Wu (1999) and Choi (2001) (Gozgor et al., 2018: 31).

For all the tests considered in the analysis, the null hypothesis implies that time series contain unit root and the alternative hypothesis states that time series are stationary.

4.2.2. Co-Integration Tests

In the following level, the presence of a long-run relationship between the factors is analyzed. Co-integration tests are used for this. This study uses two co-integration techniques; namely, Pedroni panel co-integration Test (1999) and Kao panel co-integration tests (1999).

In the Pedroni cointegration test, seven different tests were presented to show the effects of in section (within) and cross-sectional (between) in panel and these tests are divided into two different categories. The first category contains four tests pooled within the dimension, the second category contains three other tests in the "between" dimension. The proposed within test statistics are: The panel v-statistics, panel rho-statistics, panel PP-statistics, panel augmented Dickey-Fuller (ADF)-statistics; the proposed between test statistics are group rho-statistics, group PP-statistics and group ADF-statistics.

For the within-dimension statistics the null hypothesis of no cointegration for the panel cointegration test is $H_0 = \gamma_i = 1$ for all i , versus the alternative hypothesis $H_1 = \gamma_i = \gamma < 1$ for all i , so that it presumes a common value for $\gamma_i = \gamma$. By contrast, for the between-dimensions statistics the null of no cointegration for the panel cointegration test is $H_0 = \gamma_i = 1$ for all i , versus the alternative hypothesis $H_1 = \gamma_i = \gamma < 1$ for all i , so that it does not presume a common value for $\gamma_i = \gamma$ under the alternative hypothesis (Pedroni, 1999: 657).

The other cointegration test to be used in the study is Kao (1999) cointegration test. This test presents a cointegration test for panel data analysis using Dickey Fuller (DF) and Augmented Dickey Fuller (ADF) tests. According to this test, the null hypothesis states that there is no cointegration between the series and the alternative hypothesis is that it is cointegration between the series (Tatoğlu, 2012: 233).

4.2.3. Panel FMOLS and DOLS

The next step is to estimate the cointegration parameters after the cointegration relation is established in this study. Two different methods have been used in this study, namely panel FMOLS (Fully Modified Ordinary Least Square) test and Panel DOLS (Dynamic Ordinary Least Square) test developed by Pedroni (2000, 2001). While the FMOLS method corrects deviations in standard fixed effect estimators (such as autocorrelation, varying variance), the DOLS method is a method with the ability to remove deviations from the static regression (especially due to endogeneity problems), including dynamic elements of the model. The FMOLS method, which permits a significant degree of heterogeneity between individual cross sections of the Pedroni, accounts for the existence of a possible correlation between the constant term and the error term and the differences between the independent variables (Gülmez, 2015: 24).

Panel FMOLS estimator is expressed as $\hat{\beta}_{GFM}^* = N^{-1} \sum_{i=1}^N \beta_{FMi}^* \cdot \beta_{FMi}^*$ is derived from the Panel FMOLS estimate for each country in equation (1). Panel DOLS estimator, the model in Eq. (2) is obtained by using the ECL estimates for each country.

$$\ln \exp_{it} = \beta_{0i} + \beta_{1i} \ln rd_{it} + \sum_{k=-K_i}^{K_i} \alpha_{ik} \Delta \ln rd_{it} + \varepsilon_{it} \quad (2)$$

where $-K_i$ and K_i indicate the number of leads and lags. The Panel DOLS estimator is written as $\hat{\beta}_{GD}^* = N^{-1} \sum_{i=1}^N \beta_{Di}^*$

olarak yazılır. β_{Di}^* is obtained from the prediction of equation (2) (Şahbaz et al., 2014: 54).

5. EMPIRICAL FINDINGS

5.1. Unit Root Tests

Before modeling, the LLC, IPS Fisher-ADF and Fisher-PP tests are applied to judge whether the two variables, $\ln rd$ and $\ln exp$ have the unit root or not. The results of unit root tests of R&D expenditures and export variables are shown in Table 3.

Table 3: Results of the Panel Unit Root Tests

| Variables | LLC | IPS | Fisher-ADF | Fisher-PP |
|------------------|----------------------|----------------------|---------------------|---------------------|
| $\ln rd$ | -0.99310 (0.1603) | 1.97568 (0.9759) | 20.0382 (0.9506) | 14.0059 (0.9976) |
| $\Delta \ln rd$ | -6.22512 (0.0000) | -5.78136 (0.0000) | 94.4706 (0.0000) | 114.127 (0.0000) |
| $\ln exp$ | -1.10374 (0.1349) | 0.92226 (0.8218) | 27.7146 (0.6834) | 28.9099 (0.6237) |
| $\Delta \ln exp$ | -13.1292 (0.0000) | -9.21403 (0.0000) | 135.749 (0.0000) | 170.450 (0.0000) |

Note: The number of lag is based on the Akaike Information Criteria (AIC). Maximum number of lag is 3.

The deterministic specification of the tests is fixed. Probability values are shown in brackets. As shown in Table 3, the tested statistics reject the null hypothesis, indicating the variables are stationary at the level and contain a panel unit root. This means that these variables are integrated of order one $I(1)$. All test results related to variables included in the analysis are consistent with each other.

5.2. Co-Integration Tests

Based on the same single order of the variables, whether co-integration exists between the variables or not is further tested. Then, the two variables are tested by the cointegration methods of Pedroni and Kao. Co-integration test results are shown in Table 4.

Table 4: Cointegration Test Results

| $\ln \exp_{it} = \alpha_{it} + \beta \ln rd_{it} + u_{it}$ | | | | |
|--|-----------|--------|-------------------|--------|
| Pedroni Panel Cointegration Test Results | | | | |
| (Within-Dimension) | | | | |
| | Stat | Prob. | WeightedStatistic | Prob. |
| Panel v-Statistic | 0.304406 | 0.3804 | -0.158143 | 0.5628 |
| Panel rho-Statistic | -0.680187 | 0.2482 | -0.953923 | 0.1701 |
| Panel PP-Statistic | -1.988563 | 0.0234 | -2.697701 | 0.0035 |
| Panel ADF-Statistic | -1.939772 | 0.0262 | -2.862427 | 0.0021 |
| (Between-Dimension) | | | | |
| | Stat | Prob | | |
| Group rho-Statistic | 0.503838 | 0.6928 | | |
| Group PP-Statistic | -3.514383 | 0.0002 | | |
| Group ADF-Statistic | -2.638003 | 0.0042 | | |
| Kao Panel Cointegration Test Results | | | | |
| | t-stat | Prob | | |
| ADF | -1.933636 | 0.0266 | | |
| Residual variance | 0.004830 | | | |
| HAC variance | 0.004790 | | | |

According to the Pedroni cointegration test results, four of the seven test statistics reject the null hypothesis; that is, there is no cointegration relationship. Therefore, long-term cointegration relationships exist between lnrd and lnexp. Engle-Granger based Kao test was applied to support the results of Pedroni panel cointegration test. According to the Kao cointegration test result, the null hypothesis that cointegration does not exist is rejected as a result of the p value becoming significant, and the alternative hypothesis which advocates cointegration is accepted.

5.3. Panel FMOLS and DOLS

In the study, Panel FMOLS and DOLS estimators were used to obtain long run coefficients after the cointegration relation was detected. The elasticity coefficients for the lnexp and lnrd variables are shown in Table 5.

Table 5: Long-Run Coefficients

| Dependent Variable: lnexp | | | | | |
|---------------------------|----------------------|-------------|------------|----------|--------|
| Method(s) | Independent Variable | Coefficient | Std. Error | t-stat | Prob |
| Panel FMOLS | lnrd | 0.446586 | 0.074299 | 6.010693 | 0.0000 |
| Panel DOLS | lnrd | 0.429436 | 0.083444 | 5.146410 | 0.0000 |

As can be seen from Table 5, both Panel FMOLS and Panel DOLS test results show that the sign of research and development expenditure is positively and statistically significant in line with the theory when evaluated on a panel basis. According to the Panel FMOLS test results, a 1% increase in research and development expenditure leads to a 0.45% increase in exports. Similarly, according to Panel DOLS test results, 1% increase in research and development expenditure increases exports by 0.43%.

6. CONCLUSION

R & D activities, which are important in increasing export performance, help countries to gain competitive power and thus to achieve economic growth. There is a comprehensive theoretical literature on the relationship between R & D activities and exports. The vast majority of studies have reached the conclusion that R & D activities have increased exports.

In this study, the impact of R & D activities on exports was analyzed for 16 OECD countries using data for the period 2000-2015. Pedroni (1999) and Kao (1999) panel cointegration tests were used to test whether there is a long-term relationship between variables in the study. As a result of the cointegration tests, it is concluded that there is a long-run relationship between R & D expenditures and exports. Panel FMOLS and Panel DOLS tests developed by Pedroni (2000, 2001) is applied to determine the magnitude and direction of the coefficients of the variables used in the study. The panel FMOLS test result shows that 1% increase in R & D expenditure increased exports by 0.45% while Panel DOLS test result shows that exports increased by 0.43%. In other words, the evidence that R & D expenditures, which is a demonstration of R & D activities, positively affects exports has been reached. Results obtained in the study are consistent with existing findings in the literature.

According to the results obtained, it is necessary for policy makers to consider this effect of R & D activities within the export incentive instruments. Hence, increasing the share of R & D expenditure in the budget has special importance in order to increase the competitiveness of the countries. For the future studies, the literature may contribute to the studies on the effect of sector-based R & D activities on exports.

REFERENCES

- Akiş, E. (2015). Innovation and competitive power. *Procedia - Social and Behavioral Sciences* 195, 1311-1320.
- Bojnec, S., Ferto I. (2011). Impacts of research and development on manufacturing trade. *Proceedings of Rijeka Faculty of Economics*, 29 (1), 65–88.
- Braunerhjelm, P., Thulin, P. (2006). Can countries create comparative advantages?. Centre of Excellence for Studies in Science and Innovation (CESIS), Electronic Working Paper Series, Working Paper No. 61.
- Choi, I. (2001). Unit root tests for panel data. *Journal of International Money and Finance*, 20, 249-272.
- Çetin, R. (2016). Yeni sanayileşen ülkelerde Ar-Ge harcamaları ve yüksek teknoloji ürünü ihracatı arasındaki ilişkinin panel veri analizi yöntemi ile incelenmesi. *İktisat Fakültesi Mecmuası*, 66 (2), 30-43.
- Esteve-Pérez, S., Rodríguez, D. (2013). The dynamics of exports and R&D in SMEs. *Small Business Economics*, 41(1), 219–240.
- Girma, S., Görg, H., Hanley, A. (2008). R&D and exporting: a comparison of British and Irish firms. *Review of World Economics*, 144 (4), 750-773.

- Gozgor, G., Lu, C. K. M., Lau, Z. (2018). Energy consumption and economic growth: new evidence from the OECD countries. *Energy*, 153, 27-34.
- Göçer, İ. (2013a). Ar-Ge harcamalarının yüksek teknolojili ürün ihracatı, dış ticaret dengesi ve ihracat üzerindeki etkileri. *Maliye Dergisi*, 165, 215-250.
- Göçer, İ. (2013b). Teknolojik ilerlemenin belirleyicileri: NIC ülkeleri için panel eşbütünleşme ve panel nedensellik analizleri. *Maliye Finans Yazıları*, 100, 116–141.
- Gülmez, A. (2015). OECD ülkelerinde ekonomik büyüme ve hava kirliliği ilişkisi: panel veri analizi. *Kastamonu Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 9, 18-29.
- Güzel, S. (2009). Ar-Ge harcamaları ve vergi teşvikleri: belirli ülkeler karşısında Türkiye'nin durumu. *Eskişehir Osmangazi Üniversitesi İİBF Dergisi*, 4 (2), 29-48.
- Im, K. S., Pesaran, M. H., Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of Econometrics*, 115(1), 53-74.
- Kao, C. (1999). Spurious regression and residual-based tests for cointegration in panel data. *Journal of Econometrics*, 90, 1-44.
- Kılıç, C., Bayar Y., Özekicioğlu H. (2014). Araştırma geliştirme harcamalarının yüksek teknoloji ürün ihracatı üzerindeki etkisi: G-8 ülkeleri için bir panel veri analizi. *Erciyes Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 44, 115-130.
- Landesmann, M., Pfaffermayr, M. (1997). Technological competition and trade performance. *Applied Economics*, 29 (2), 179-196.
- Levin, A. , Lin, C. F., Chu, C. (2002). Unit root tests in panel data: asymptotic and finite sample properties. *Journal of Econometrics*, 108 (1), 1-24.
- Maddala, G. S., Wu, S. (1999). A comparative study of unit root tests with panel data and a new simple test. *Oxford Bulletin of Economics and Statistics*, 61 (S1), 631-652.
- Neves, A., Teixeira, A. A. C., Silva, S. T. (2016). Exports- R & D investment complementarity and economic performance of firms located in Portugal. *Investigación Económica*, 75(295), 125-156.
- Özer, M., Çiftçi, N. (2009). Ar-Ge harcamaları ve ihracat ilişkisi: OECD ülkeleri panel veri analizi. *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi*, 23, 39-49.
- Özkan, G., Yılmaz, H. (2017). Ar-Ge harcamalarının yüksek teknoloji ürün ihracatı ve kişi başı gelir üzerindeki etkileri: 12 AB ülkesi ve Türkiye için uygulama (1996-2015). *Bilgi Ekonomisi ve Yönetimi Dergisi*, 12(1), 1-12.
- Pedroni, P. (1999). Critical values for cointegration tests in heterogeneous panels with multiple regressors. *Oxford Bulletin of Economics and Statistics*, 61(S1), 653-670.
- Pedroni, P. (2000). Fully-modified OLS for heterogeneous cointegrated panels. *Advances in Econometrics*, 15, 93-130.
- Pedroni, P. (2001). Purchasing power parity tests in cointegrated panels. *Review of Economics and Statistics*, 83, 727-731.
- Pradeep, V., Bhattacharya, M., Chen J. R. (2017). Spillover effects of research and development, exports and foreign investment on productivity: empirical evidence from Indian manufacturing. *Journal of South Asian Development*, 12(1), 18-41.
- Sandu, S., Ciocanel, B. (2014). Impact of R&D and innovation on high-tech export. *Procedia Economics and Finance*, 15, 80-90.
- Svensson, R. (2008). Growth through research and development. Swedish Government Agency for Innovation Systems Report, <https://www.vinnova.se/contentassets/409b49574a5440c884eac129b dd65e8c/vr-08-19.pdf>
- Sungur, O., Aydın H. İ., Eren, M. V. (2016). Türkiye’de Ar-Ge, inovasyon, ihracat ve ekonomik büyüme arasındaki ilişki: asimetrik nedensellik analizi. *Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 21(1), 173-192.
- Şahbaz, A., Yanar, R., Adıgüzel, U. (2014). Ar-Ge harcamaları ve ileri teknoloji mal ihracatı ilişkisi: panel nedensellik analizi. *Ç.Ü. Sosyal Bilimler Enstitüsü Dergisi*, 23(1), 47-60.
- Şen, A., Şentürk M., Özkan, G., Ducan, E. (2014). External determinants of economic growth in developing countries: panel data analysis. *Marmara Üniversitesi İ.İ.B. Dergisi*, 36(1), 15-28.
- Tatoğlu, F. Y. (2012). İleri panel veri analizi stata uygulamalı. Beta Basım Yayım Dağıtım A.Ş., İstanbul.
- Türker, O. (2018). G-7 ülkelerinde Ar-Ge harcamalarının ihracat üzerindeki etkisi. 12-14 Nisan, Nevşehir IERFM Uluslararası Ekonomi Araştırmaları ve Finansal Piyasalar Kongresi Bildiri Kitabı, 351-363.
- Uzay, N., Demir, M., Yıldırım E. (2012). İhracat performansı açısından teknolojik yeniliğin önemi: Türkiye imalat sanayi örneği. *Doğuş Üniversitesi Dergisi*, 13(1), 147-160.
- Yıldırım, E., Kesikoğlu F. (2012). Ar-Ge harcamaları ile ihracat arasındaki nedensellik ilişkileri: Türkiye örneğinde panel nedensellik testi kanıtları. *Marmara Üniversitesi İİBF Dergisi*, 32 (1), 165-180.
- Yüksel, S. (2017). The impacts of research and development expenses on export and economic growth. *International Business and Accounting Research Journal*, 1(1), 1-8.



PREDICTING FINANCIAL DISTRESS FOR MOBILE TELECOMMUNICATION COMPANIES LISTED IN KUWAIT STOCK EXCHANGE USING ALTMAN'S MODEL

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ABSTRACT

Purpose- With the bankruptcy of many large companies in recent years especially after the global financial crisis in 2008, the attention to bankruptcy prediction models has increased dramatically. The aim of this study is to examine the financial soundness of the companies listed in the mobile telecommunication sector in the Kuwait stock exchange (KSE).

Methodology- Many bankruptcy models were developed as an early warning systems for any distress a company might face. This paper uses one of the most common models, Altman Z-score model, to examine the likelihood of bankruptcy and the financial soundness of mobile telecommunication companies listed in Kuwait stock exchange market during the period from 2013 to 2016.

Findings- The results showed that out of the three companies operating in Kuwait, only one of them had a healthy financial position while the other two companies are facing financial distress.

Conclusion- The study found that mobile telecommunication companies in Kuwait are facing the risk of bankruptcy due to their negative working capital which makes them vulnerable to any unexpected short-term obligations. As a result, these companies should work to reduce the gap between their current assets and current liabilities.

Keywords: Altman, Z-score, mobile telecommunication sector, Kuwait stock exchange, financial distress, bankruptcy.

JEL Codes: G33, H12, M21.

1. INTRODUCTION

The telecommunication sector is the second largest sector in the Kuwaiti stock market in term of market capitalization per company with an average market capitalization of KWD 960.7 million. This sector is made of three companies, Zain, Ooredoo, and Viva. The total revenues for the sector in 2016 was KWD 2.073 billion (USD 6.912 billion). Mobile telecommunication company (also known as Zain) is the oldest mobile telecommunication company in Kuwait, it was found in 1983. Zain enjoyed a monopoly over the Kuwaiti market for 16 years from 1983 till 1999. To break the monopoly of Zain over the mobile telecommunication sector, the Kuwaiti government issued a second mobile company license in 1999. The second mobile telecommunication license auction was won by Kuwait Investment Projects Company (KIPCO). But soon after, KIPCO sold their stake in the company to Ooredoo, which is a Qatari owned company, and the new purchaser kept the same name of their mother company. The third mobile telecommunication license auction was won by the Saudi Telecom Company (STC) in the year 2009 and they chose the name Viva for it. Being the second largest sector in the Kuwaiti market means that any shortfall for any of its companies would have a greater effect on the market as whole compared to any other sector. That is why examining the financial soundness of these companies is crucial to maintain the stability of the market and the Kuwaiti economy for that matter.

This study incorporates five sections. The first section covers a brief description of the companies working in the mobile telecommunication sector in Kuwait. In section two, previous literature on the topic of measuring the financial soundness of companies in general and in telecommunication companies in specific is presented. Section three incorporates the data

and methodology used in this study. In section four the findings are shown and discussed. Finally in section five, the conclusion of the whole work.

2. LITERATURE REVIEW

Eloumi and Gueyie (2001) defined a company under a financial distress when having negative net income for two consecutive years. Ward et al. (2006) defined a company under financial distress when having interest coverage ratio of less than one. While others such as Almilia (2006) stated that a company experiencing financial distress is when a company suffers from negative net operating income and is not paying dividends for one consecutive year. Any company facing financial distress should work to address the causes of the problem, otherwise the company might face bankruptcy. Rudianto (2013) defines bankruptcy as a failure in running the business company to achieve its goals. Bankruptcy can be caused by financial failure or economic failure. Financial failure means that a company is unable to pay the company liabilities when mature, even though the total assets more than total liabilities. Economic failure means that a company is unable to cover the company cost. Altman (1968) argued that corporate failure happens in areas where the company management has detected some signs such as the failure to fulfill some obligations but failed to recognize it until it all accumulates and bankruptcy is imminent. Ross et al. (2013) stated that a company is facing bankruptcy when its assets values are equal that of the debts. When this happens, the equity value is equal to zero, and the control of the company is shifted from stockholder bondholder.

Subramanyam and Wild (2013) concluded that Financial analysis using financial ratios is a very useful tool that significantly assists business decision making and distinguishing the weak areas in the company from the strong. Husein and Pambekti (2014) found that financial ratios obtained from the company's financial statement are an efficient way to analyze the soundness of the company and can be used to anticipate future financial difficulties. Almilia (2006) concluded that the results showed that the financial ratios from the income statement, balance sheet and cash flow statement have a significant influence in predicting financial distress. Azadinamin (2013) in his study entitled "The Bankruptcy of Lehman Brothers: Causes of Failure & Recommendations Going Forward" concluded that the negative cash flow during the three years was the main reason for the bankruptcy of Lehman Brothers. Altman (1968) used financial ratios in his bankruptcy prediction model to produce an early warning system for the companies. Lagkas and Papadopoulos (2014) stated that the accuracy of the Altman z-score model was initially (prior to 1968) estimated to be 72% in predicting bankruptcy two years before it happens. The revised formula were found to predict bankruptcy one year before the event with 80%- 90% accuracy. VenkataRamana, et al. (2012) used Altman Z-score model to examine the financial performance and predict the risk of bankruptcy for the Indian cement companies for the period 2001-2010. They found that KCP Ltd and Kilogram Industries Ltd. experiencing poor financial performance or financial distress. Yet, Dalmia Bharat Ltd. is on the threshold of bankruptcy. This suggests that the use of a model Altman bankruptcy for research is still applicable. Azhar and Ramesh (2017) used Altman's z-score and showed that the majority of companies in India do not have good financial health, thus they point out that there is an urgent need for their administration to examine and reduce the financial difficulty of their companies. Maina and Sakwa (2017) used Altman's z-model to examine the financial soundness of companies in Kenya and they were able to distinguish between companies with good financial position and companies that were in the danger zone. Mahama (2015) investigated the application of Altman's z-score on ten companies listed on the Ghana Stock Exchange (GSE) to determine the level of financial distress. The data used were from year 2007 to 2013. The results showed that six companies didn't experience financial distress, while two companies experienced financial distress, while the last two companies were facing bankruptcy. AlKhatib and AlBzour (2011) compared the performance of both Altman's and Kida's models in predicting bankruptcy for companies listed in the Jordanian stock exchange during the period 1990-2006. They found that Altman's z-score model had an accuracy rate 94% compared to 70.2% for the Kida model in predicting bankruptcy. When it comes to the mobile telecommunication companies, Kpodoh (2009) conducted a study on the three mobile telecommunication companies operating in Ghana. The study covered MTN-Ghana, Millicom-Ghana, and Ghana Telecom for the period 2005-2008. The results showed that MTN-Ghana was the only company that had a z-score of above 2.99 while the other two were in the distress zone. The researcher concluded that the main reason for the low score for both Millicom and Ghana telecom was the high operating costs and recommended that these companies should work in reducing their expenses otherwise they will face bankruptcy.

3. DATA AND METHODOLOGY

As for most of the bankruptcy prediction models, Altman (1968) used the Multiple Discriminate Analysis (MDA). The discriminant analysis is a statistical technique that identifies some financial ratios that are considered the most important in influencing the value of an event, and then develops it into a model with a view of making it easier to draw conclusions from an event. Altman's z-score model is based on financial ratios, Husein and Pambekti (2014) concluded that financial ratios founded in the company's financial statement are an efficient way to analyze the soundness of the company and can be used to anticipate future financial difficulties. Altman's z-score is a linear combination of four or five financial ratios,

weighted by coefficients. The coefficients were estimated by identifying a set of firms which had declared bankruptcy and then collecting a matched sample of firms which had survived, with matching by industry and approximate size (assets).

While there are many Altman z-score models for different types of companies, for example the 5 factor model is used for manufacturing companies and there is a model that is designed for banks, this paper uses Altman 4 factor model to measure the financial stress of the companies. This formula is used for the non-manufacturing and emerging companies. The formula used is as follow;

$$Z = 6.56 X1 + 3.26 X2 + 6.72 X3 + 1.05 X4 \quad (1)$$

Where;

$X1 = \text{working capital (current assets (CA) – current liabilities (CL)) / total assets (TA)}$

$X2 = \text{retained earnings (RE) / total assets (TA)}$

$X3 = \text{earnings before interest and tax (EBIT) / total assets (TA)}$

$X4 = \text{total book equity (TE) / total liabilities (TL)}$

The results obtained from the model is then compared to a benchmark that is set to determine the financial soundness of the company. The criteria used to interpret the Z-score model is;

- Safe Zone if Z-score > 2.99 (risk free)
- Gray Zone if $1.81 \leq \text{Z-score} \leq 2.99$ (at risk)
- Distress Zone if Z-score < 1.81 (bankruptcy)

The data used in this paper were obtained from the annual reports of the mobile telecommunication companies under study. By looking at table 1. It can be seen, in the asset side of the balance sheet, that Zain is the largest company in terms of both total assets and current assets almost double the size of Oredoo, the second largest company. The same story can be seen in the liability side where Zain had the highest total and current liabilities out of the three companies. From the shareholders equity side, the story is a bit different where it can be seen that Oredoo had the highest retained earnings followed by Zain. While looking at the paid-up capital, it can be seen that Zain has a paid-up capital that is almost eight times larger than the other two companies. In the income statement side, Zain is by far the highest company in terms of sales and earnings before interest and tax (EBIT). These big differences can be explained by the age of the companies, with Zain being the first mobile company not only in Kuwait but also in the GCC region. This head start gave Zain the opportunity to build up its assets and create a customer base that is loyal to the company.

Table 1: Altman Z-Score Results

| (All in 1000 KWD except stock price) | Viva | | | | Oredoo | | | | Zain | | | |
|--------------------------------------|---------|---------|---------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | 2013 | 2014 | 2015 | 2016 | 2013 | 2014 | 2015 | 2016 | 2013 | 2014 | 2015 | 2016 |
| Current Assets | 28,719 | 63,903 | 87,194 | 82,229 | 367,255 | 322,746 | 284,767 | 288,471 | 766,394 | 720,724 | 795,137 | 676,520 |
| Current Liabilities | 124,732 | 109,872 | 136,009 | 119,883 | 588,742 | 608,084 | 465,747 | 483,144 | 740,968 | 827,680 | 975,068 | 790,074 |
| Total Assets | 178,990 | 213,962 | 263,099 | 267,392 | 1,641,410 | 1,547,929 | 1,407,554 | 1,389,399 | 3,096,940 | 3,277,063 | 3,495,181 | 3,091,702 |
| Total Liabilities | 169,408 | 164,016 | 170,194 | 134,679 | 708,959 | 694,541 | 617,661 | 631,240 | 1,333,738 | 1,483,094 | 1,767,091 | 1,669,220 |
| Retained Earnings | -40,358 | 5 | 33,922 | 65,350 | 622,853 | 601,088 | 589,815 | 579,566 | 509,296 | 512,780 | 510,641 | 571,503 |
| Paid-up Capital | 49,940 | 49,940 | 49,940 | 49,940 | 50,403 | 50,403 | 50,403 | 50,403 | 432,268 | 432,706 | 432,706 | 432,706 |
| Share Market Price (in KWD) | 0.580 | 0.650 | 0.990 | 0.930 | 1.760 | 1.400 | 1.100 | 1.200 | 0.690 | 0.530 | 0.350 | 0.410 |
| Sales | 128,422 | 238,974 | 276,888 | 279,059 | 731,117 | 748,496 | 718,418 | 706,841 | 1,240,035 | 1,213,229 | 1,137,547 | 1,087,774 |
| EBIT | 24,530 | 41,042 | 45,210 | 41,900 | 126,632 | 76,060 | 48,710 | 72,051 | 319,303 | 314,559 | 253,002 | 237,726 |
| Working Capital | -96,013 | -45,969 | -48,815 | -37,654 | -221,487 | -285,338 | -180,980 | -194,673 | 25,426 | -106,956 | -179,931 | -113,554 |
| Equity Market Value | 289,652 | 324,610 | 494,406 | 464,442 | 887,093 | 705,642 | 554,433 | 604,836 | 2,982,649 | 2,293,342 | 1,514,471 | 1,774,095 |

4. FINDINGS AND DISCUSSIONS

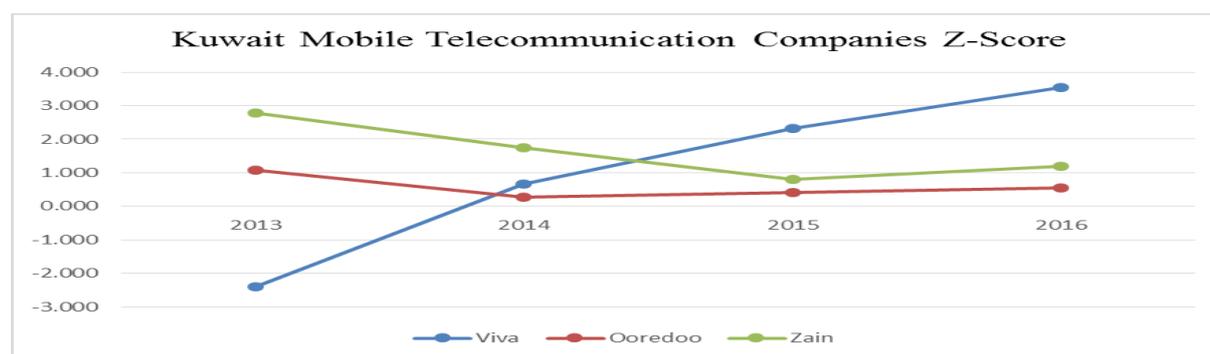
This paper is based on data collected from the annual reports of the mobile telecommunication companies listed in the Kuwait stock exchange market for the period spanning from 2013 to 2016. The annual reports were obtained from the Kuwait stock market website.

By looking at the results in table 2, it can be seen that Viva had the best financial position among all three companies, despite being the last company to enter the market. Zain, on the other hand, had a moderate chance of bankruptcy while Ooredoo was at the bottom with a high chance of being bankrupted.

Table 2: Altman Z-Score Results

| | Mobile Telecommunication Companies Listed in KSE Market | | | | | |
|------|---|-----------------|---------|-----------------|---------|-----------------|
| | VIVA | | OOREDOO | | ZAIN | |
| | Z-Score | Bankruptcy Risk | Z-Score | Bankruptcy Risk | Z-Score | Bankruptcy Risk |
| 2016 | 3.536 | Free | 0.561 | High | 1.186 | Gray |
| 2015 | 2.318 | Gray | 0.417 | High | 0.794 | High |
| 2014 | 0.669 | High | 0.276 | High | 1.738 | Gray |
| 2013 | -2.400 | High | 1.070 | High | 2.773 | Gray |

2.99< Free, 2.99≥ Gray≥1.18, 1.18>High bankruptcy risk

Figure 1: Altman Z-Score Results

It can also be seen that Viva has shown a constant improvement during the period under study. In 2013, VIVA was the worst company among the three but that situation has changed and by the year 2016 where it was the only company that is in the safe zone. VIVA had a high risk of bankruptcy for the years 2013 and 2014 but that risk was reduced by the year 2015 and in the year 2016 the company was safe from bankruptcy. From table 3, it can be seen that Viva have always struggled in maintaining a positive net working capital meaning that their current liabilities have always exceeded their current assets. When it comes to retained earnings to total assets, it is understandable to have a negative ratio since the company only started operating late in 2010 and with the setup costs showing their effect on the retained earnings section of the income statement for the past 3 year. But, these negative retained earnings started to diminish once the company's operations started. This would imply an efficient cost control and aggressiveness in perusing income. In the EBIT/total assets ratio, Viva started showing some weakness starting from 2014 onward with the ratio showing a downward trend. When it comes to Viva market capitalization value, it can be seen that the price had an upward trend from 2013 till 2015 but the price went slightly down in the year 2016. The reason for the decline in the stock price can be explained by the structure of Viva ownership, where the third license auction was for 25% of the ownership and as of the end of 2016 Saudi Telecom company (the mother company Viva) owned 51.8% stake in the company that would imply that buying a larger stake in the company led to the increase in the price in order to obtain control over the company.

Table 3: Viva Financial Ratios Results

| Viva | 2013 | 2014 | 2015 | 2016 |
|------|--------|--------|--------|--------|
| X1 | -0.536 | -0.215 | -0.186 | -0.141 |
| X2 | -0.225 | 0.000 | 0.129 | 0.244 |
| X3 | 0.137 | 0.192 | 0.172 | 0.157 |
| X4 | 1.710 | 1.979 | 2.905 | 3.449 |

Ooredoo was the worst company in the industry showing a high chance of bankruptcy in every year, it has been showing a downward trend in their z-scores. The company has been facing the risk of bankruptcy since the year 2013, the reason for its survival might be the financial backing of their major shareholder Ooredoo group. Ooredoo group, which the government of the state of Qatar owns 69% of its shares, holds a 92.17% stake in Ooredoo Kuwait. Ooredoo has been keeping a negative gap between its current assets and current liabilities for the whole study period as did all other companies in the sector. As for the retained earnings to total assets ratio, Ooredoo held the highest ratio in the sector in all years. But when it comes to the EBIT to total assets ratio the company was the worst in the industry, they were inefficient in getting the most out of their assets when they are compared to its rivals. Again, as for Viva, Ooredoo had a high market

capitalization to total liabilities which was the result of the takeover price Ooredoo group paid for it. After the takeover the share price started to go down representing the actual value of the company.

Table 4: Ooredoo Financial Ratios Results

| Ooredoo | 2013 | 2014 | 2015 | 2016 |
|---------|--------|--------|--------|--------|
| X1 | -0.135 | -0.184 | -0.129 | -0.140 |
| X2 | 0.379 | 0.388 | 0.419 | 0.417 |
| X3 | 0.077 | 0.049 | 0.035 | 0.052 |
| X4 | 1.251 | 1.016 | 0.898 | 0.958 |

Figure 2: Viva Stock Price

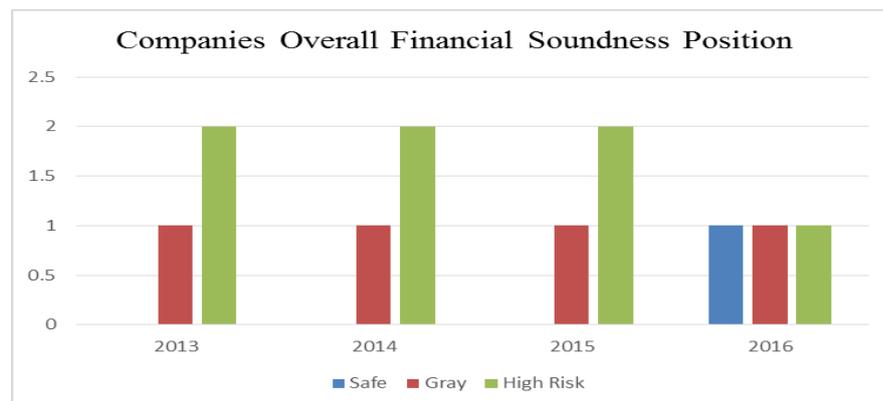


Zain is the first mobile telecommunication company in Kuwait, it was established back in 1983 and enjoyed a monopoly over the mobile telecommunication sector in Kuwait for almost 16 year. By looking at the z-scores of Zain, it can be seen that the Zain did not make the most of their monopoly. Zain showed a high bankruptcy risk in 2015 and they were barely in the gray zone in 2016. Zain still has the backing of the Kuwaiti government since Kuwait Investment Authority (KIA), the investment arm on the Kuwaiti government, owns 24.61% of the company's shares. Zain was the best performer when it comes to net working capital to total assets averaging -0.028 compared to -0.147 for Ooredoo and -0.269 for Viva. On the flip side, Zain had a declining retained earnings to total assets ratio for the years 2013, 2014, and 2015 but that decline was reversed in 2016. In terms of EBIT to total assets ratio, Zain performed better than Ooredoo but way below Viva. As a result of the declining price of Zain shares, equity market value to total liabilities ratio also showed the same trend, except for the year 2016 and that was because of the offer by Oman Telecommunication Company (Oman Tel) to buy a 21.9% of the company at a 20% premium.

Table 5: Zain Financial Ratios Results

| Zain | 2013 | 2014 | 2015 | 2016 |
|------|-------|--------|--------|--------|
| X1 | 0.008 | -0.033 | -0.051 | -0.037 |
| X2 | 0.164 | 0.156 | 0.146 | 0.185 |
| X3 | 0.103 | 0.096 | 0.072 | 0.077 |
| X4 | 2.236 | 1.546 | 0.857 | 1.063 |

While literature has shown that Altman's z-score model have a high accuracy rate in predicting the bankruptcy of companies reaching 90% in some cases, the results obtained in this research showed that none of the companies under study filed for bankruptcy despite being in the high risk of bankruptcy zone for four years as in the case of Ooredoo. One explanation for that is the ownership structure of these companies since all three companies have the backing of deferent governments making them somewhat immune from any financial falls.

Figure 3: Overall Financial Soundness Position

5. CONCLUSION

The mobile telecommunication sector is the second largest sector in the Kuwaiti stock market when it comes to market capitalization per company which means that any fall of these companies would have a huge effect on both the stock market and the economy of Kuwait. This makes it crucial for practitioners to monitor the financial soundness of these companies in order to prevent any unfortunate falls. This study showed that only one of the three mobile telecommunications companies operating in Kuwait has a healthy financial position while the other two are facing financial difficulties. The results from this research should send a warning signal for both investors and top management in these companies to re-think about their way in choosing the stocks they invest in, for investors, and the way they conduct their business for the company's top management.

REFERENCES

- AlKhatib, K., AlBzour, A. (2011) Predicting corporate bankruptcy of Jordanian listed companies: using Altman and Kida models. *International Journal of Business and Management*. Vol. 6 (3), Pages 208-215.
- Almilia, L. S. (2006). Prediction of corporate financial distress by multinomial logit analysis. Economic Institute of Perbanas, Surabaya, Indonesia.
- Altman, E. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *Journal of Finance*, Vol. 23, Pages 589-609.
- Azadinamin, A. (2013). The bankruptcy of Lehman Brothers: causes of failure & recommendations going forward. Swiss Management Center (SMC) University.
- Azhar, S., Ramesh, B. (2017). Predicting financial insolvency of listed power generation/distribution companies in India using Z-score (December 14, 2017). *IOSR Journal of Business and Management (IOSR-JBM)* (2017). Available at SSRN: <https://ssrn.com/abstract=3087896>
- Elloumi, F., Gueyie, P. J. (2001). Financial distress and corporate governance: an empirical analysis. *Corporate Governance*, Vol. 1 (1), 15-23.
- Husein, M., Pambekti, G. (2014). Precision of models of Altman, Springate, Zmijewski, and Grover for predicting the financial distress. *Journal of Economics, Business, and Accounting Ventura*, Vol. 17 (3), Pages 405-416, December.
- Kpodoh, B. (2009). Bankruptcy and financial distress prediction in the mobile telecom industry: the case of MTN-Ghana, Millicom-Ghana, and Ghana Telecom. Masters Thesis, School of Management – Blekinge Institute of Technology, Spring 2009.
- Lagkas, T. D., Papadopoulos, D. (2014). Financial analysis considering distress prediction models of telecommunications companies listed in Athens Stock Exchange: Hellenic telecommunications organization. *Forthnet, Hellas Online, International Journal of Decision Sciences, Risk and Management*, 5 (4). Pages: 376 – 397, ISSN 1753-7169, <https://doi.org/10.1504/IJDSRM.2014.068151>
- Mahama, M. (2015) Assessing the state of financial distress in listed companies in Ghana: signs, sources, detection, and elimination: a test of Altman's Z-score. *European Journal of Business and Management*, Vol. 7 (3), 1-11.
- Maina, F., Sakwa, M. (2017). Understanding financial distress among listed firms in Nairobi stock exchange: a quantitative approach using the z-score multi-discriminant financial analysis model. University of Agriculture and Technology, Nairobi, Kenya.
- Ross, W. J. (2013). *Fundamental of corporate finance*. McGraw-Hill, Irwin.
- Rudianto, A. (2013). *Accounting information management for strategic decision making*. Erlangga. Jakarta, Indonesia.

Subramanyam, K. R., Wild, J. (2013). Financial statement analysis. 11th edition, N.Y.: McGraw-Hill/Irwin.

VenkataRamana, N., Azash, S., Ramakrishnaiah, K. (2012). Financial performance and predicting the risk of bankruptcy: a case of selected cement companies in India. *International Journal of Public Administration and Management Research*, Vol. 1, No. 1, Pages 40-56, October.

Ward, T. J., Foster, B., Woodroof, J. (2006). Estimated operating cash flow, reported cash flow from operating activities, and financial distress. *Advances in Quantitative Analysis of Finance and Accounting*, Vol. 4, Pages. 97-120.



CPI, MONEY SUPPLY AND EXCHANGE RATE DYNAMICS IN TURKEY: A VECM APPROACH

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ABSTRACT

Purpose- The aim of this study is to outline the relationship between The Consumer Price Index (CPI), Money Supply (M3) and The Exchange Rates (EXC) in Turkey.

Methodology- The data were gathered from The Turkish Statistical Institute and The Central Bank which covers the monthly period between 2005/1 and 2017/12 and were taken on their own levels where an error correction model was utilized to reveal both the long and short run relationships.

Findings- The results revealed that 100 billion TL rise in M3 is accompanied by 19 points increase in the CPI and 1TL depreciation of local currency (appreciation of \$) leads to 82.9 points upswing in CPI.

Conclusion- The Cointegrating equation revealed that there was a significant long-run relationship between CPI, Money Supply and Exchange Rates. Moreover changes in M3 and EXC together cause changes in CPI at .10 significance level. Money Supply endogeneity was also observed at the 10 level.

Keywords: Inflation, money supply, exchange rates, error correction model, Turkey.

JEL Codes: E00, C22, E51

1. INTRODUCTION

The rate of inflation or the change in CPI still is and has always been among the most important economic variables which was closely watched and tracked by all economic agents as unanticipated and highly volatile rates of it signals danger as it yields high costs on the economy as a whole. Therefore, measurement, prediction and causes of this important economic variable has always attracted both academic and public interest. As a result there are a couple of variables which are regarded as the most relevant causes of changes in general price levels in the literature. Hence the majority of the studies conducted concerning the causes of inflation with reference to the underlined theoretical models focuses on a few important variables such as the monetary aggregates, the exchange rates, the interest rates and the fiscal deficits. The outlined framework becomes more evident as the literature reveals that more often for the emerging group of countries when compared to their developed counterparts there seems higher levels of significant relationships between the monetary aggregates, the exchange rates and the rate of inflation especially in the long-run.

In this framework Turkey can be regarded as a fragile country with highly volatile price levels and exchange rates for a long period of time. There are more than a couple of few factors which might be considered as the cause of this economic outcome. The lack of strong commitment for an explicit inflation target, fiscal dominance, structural constraints, persistent trade and current account deficits, foreign currency dependence and demand as a result of highly debted private sector, a strong exchange rate pass through effect, domestic demand driven growth with slow supply side adjustments, presence of a wage-inflation spiral might all be admitted as the important contributors to the outlined economic state mentioned above.

There are numerous studies in the relevant economic literature both conducted abroad and domestically which aim to outline the relationships between the price levels, monetary aggregates and the exchange rates. More often the

relationships were revealed by taking the differences or changes in these variables econometrically as the series are usually not stationary. In this study the variables are aimed to be taken on their own levels to show both the long and the short run relationships by adopting an error correction model where monthly CPI, M3 and exchange rates (TL/\$) for Turkish economy for the 2005-2017 period will be used.

In the upcoming sections first the relevant literature will be outlined by using both international and domestic studies. Then the data and the methodology (error correction model) of this study will be given in the next section. Findings of this study will be revealed and finally the concluding remarks will be shared in the proceeding sections.

2. LITERATURE REVIEW

In this context Hossain (2010) in his study by using a cointegration and error correction mechanism found a stable money demand function and causality between money supply growth and inflation in Bangladesh. Ratnasiri (2009) showed that money supply growth was a significant cause of inflation both in the short and long-run though the effect of exchange rate depreciation was revealed to be insignificant in Sri Lanka. Kilindo (1997) likewise proposed a tight monetary policy in Tanzania (where the growth of money supply should be kept at the rate of growth of real output) to control inflation as a strong relationship between these variables were obtained in the study. Siregar and Rajaguru (2005) stated that persistent inflationary pressures during the 1997 crisis were highly related with the loose monetary base policy adopted and the expected depreciation of the local currency in Indonesia. In line with these studies Chaudhary and Ahmad (1995) found that money supply in Pakistan is an endogenous variable and especially fiscal deficits which in turn raises money supply raises inflation. Qayyum (2006) also concluded that there was a strong relationship between money supply growth and inflation in Pakistan during 1960-2005 period. Kemal (2006) detected significant long-run relationship between money supply and price levels in Pakistan where a lag of nine months was observed. Lozano (2008) also revealed a significant long run relationship between money growth and inflation in Colombia. De Grauwe and Polan (2005) in their study used a sample of data for 60 countries over a period of 30 years and especially found strong relationships between money growth rates and price level growth rates for countries with high inflation though they indicate that this relationship becomes weaker as low inflation countries are examined. Narayan, Narayan and Prasad (2006) used 4 different estimators and found significant long-run relationship between monetary growth and inflation in Fiji. Nguyen (2015) utilized data for a composition of asian countries and showed that M2 significantly effects the rate of inflation when PMG estimation method is applied.

Nevertheless the results of some other studies were rather different where either the relationship between the monetary aggregates and the rate of inflation was weaker or other variables such as the interest rates were believed to be more significant. In that framework Zhang (2009) concludes that money supply and inflation relationship in China becomes weaker as a result of rise in money multiplier and velocity and a more aggressive interest rate response would limit economic fluctuations. Vymyatnina (2006) found Granger causality running from CPI to M2 but not in the opposite direction which was interpreted as a support for the endogeneity of money supply and likewise suggested that interest rate as a policy instrument could produce better inflation outcomes. Staiger, Stock and Watson (1997) analysed the effect of 71 leading indicators of inflation forecasts for two different periods and two different time horizons (a year and two year a head) and M3 ranks the 49th and 30th leading indicator for a year head predictions of two different periods and ranks the 64th and 5th for two years a head predictions though they comment that drawing a conclusion such that the inflation does not respond to the type of monetary policy (tight or loose) might be a misguide. Woodford (1998) revealed that the equilibrium inflation rate could be analysed without making any specific reference to the money demand and supply conditions if a Wicksellian interest rate rule is adopted as a policy guideline. Senda (2001) shows that unanticipated policy changes such as money supply shocks creates asymmetric outcomes especially when the prices are more flexible upwards than downwards. This outcome I suppose might also be interpreted as the importance of the role of monetary policy changes even when they are unanticipated as the real output effect is more limited as a result of more upward flexible prices. Hossain (2005) found a bi-directional causality between money supply growth and inflation where power of relationship from inflation to money growth was observed to be stronger which in turn concluded to be the reason for a self sustaining inflationary process in Indonesia.

The relationship between exchange rates and inflation rates are more often regarded as bi-directional. The theoretical framework such as the PPP (purchasing Power Parity) states that the long-run exchange rates are determined as a result of relative price changes across countries. In the reverse direction as clearly underlined by the ERPT (exchange Rate Pass Through) framework the change in exchange rates might effect the domestic price levels via the prices of imported goods. The ERPT effect seems more evident among emerging market economies when the literature is reviewed although the persistence of it becomes weaker as low and stable levels of inflation rates are reached. In that manner Minella et al. (2003) revealed that the ERPT effect was evident and concluded that exchange rate volatility contributes to the volatility of inflation in Brazil. De Grauwe and Schnabl (2008) used data for south eastern and central european countries and put forward that as moderate and low inflation levels became dominant the relationship between exchange rate regimes and inflation turned out to be weak and insignificant. Likewise similar results were interpreted in studies (Bailliu and Fujii, 2004; Gagnon

and Ihrig, 2004; Choudhri and Hakura, 2006; Winkelreid, 2014) where low rates of average inflation rates were associated with the decline in ERPT effect. Strikingly in their study Bussiere, Chaire and Peltonen (2014) calculated the long-run ERPT coefficients for 40 countries where Turkey had the highest score (0.991) which was even significant at 0.01 level.

When the domestic literature is reviewed different studies found varying results. Kaya and Öz (2016) by using quarterly data showed that there is a long-run positive relationship between money supply and inflation rate where an ARDL bounds testing approach is adopted. Also similar results were obtained both in the short and long run in Altıntaş, Çetintaş and Taban (2008). Nevertheless money supply and inflation were negatively associated in the short run in another study (Korkmaz, 2017). Also no evidence of support for the Quantity Theory was observed in Koru and Özmen (2003). In contrast Oktayer (2010) by using co-integration analysis revealed that monetary aggregates, budget deficits and price levels move together in the same direction in the long run. Koyuncu (2014) found one way causality from monetary growth to inflation where money supply can be admitted as exogenous. Though real base money was found to be endogenous in Altinkemer (2004).

The exchange rate and (domestic) price level relationship in Turkey is also investigated in a numerous studies. A rapid and fast ERPT was found in Kara and Ögünç (2008) until 2001 but the effect was observed to be less in the following years. Mihaljek and Clau (2001) found the exchange rate elasticity .56 in their study where the ERPT effect regarding several emerging economies was surveyed. Also the ERPT effect was evidenced in Civcir and Akçağlayan (2010).

3. DATA AND METHODOLOGY

In this study CPI, M3 and exchange rate (EXC) monthly time series between years 2005 and 2017 was used to analyse the relationship among them. The stationarity of series in time series analysis is important as spurious regressions with high goodness of fit values might lead to misjudgements and misinterpretations of obtained regression results if series are non-stationary or in other words have unit roots. Therefore to outrule this possibility of a spurious regression, stationarity of series should be tested and verified.

There are a few unit root tests which are generally used for testing stationarity such as the Augmented Dickey and Fuller (1981) unit root test. The ADF unit root test is conducted as follows where the first equation represents the model without trend and constant terms, the second equation with only constant term and third equation with both trend and constant term.

$$\Delta x_t = \psi x_{t-1} + \sum_{i=1}^p \beta_i \Delta x_{t-i} + u_t \quad (1)$$

$$\Delta x_t = \beta_0 + \psi x_{t-1} + \sum_{i=1}^p \beta_i \Delta x_{t-i} + u_t \quad (2)$$

$$\Delta x_t = \beta_0 + \lambda t + \psi x_{t-1} + \sum_{i=1}^p \beta_i \Delta x_{t-i} + u_t \quad (3)$$

Here Δ is the difference operator, β_0 the constant term, λ the trend term, t time, p the lag value and u_t the error term.

The null hypothesis H_0 states that the series are non stationary (or the condition where $\psi = 0$) and is tested by comparing the τ test statistic with the MacKinnon critical value.

The relationship between variables might be examined by using VAR based models if they are $I(0)$ integrated of order zero which means that they are stationary on their on levels. Also Granger causality tests might be conducted as well to determine the direction of relations as well. Nevertheless if variables are not stationary on their levels the first differences of them might become stationary $I(1)$ or integrated of order one. Then if the variables are co-integrated the vector of $I(1)$ variables can be linearly transformed to an $I(0)$. As this outrules the possibility of a spurious regression the relationship between variables can be detected by constructing a vector error correction model (VECM) where both short and long run dynamics might be investigated (Engel and Granger, 1987). Johansen and Jeselius (1990) co-integration procedure is widely applied for this purpose where Maximum Eigenvalue and Trace test statistics are used. Maximum Eigenvalue tests the null hypothesis of r co-integrating equations against more than r where $r = 0, 1, \dots, n-1$. Here n represents the number of variables therefore the number of co-integrating equations at most could be one less than the number of variables. Trace statistic tests r co-integrating equations against $r+1$. The results provide the rank of the system and when both test statistics reveal the same rank position then the decision can be made fairly easily. The Trace and Max Eigenvalue statistics are as follows:

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^g \ln(1 - \hat{\lambda}_i) \quad (4)$$

$$\lambda_{max}(r, r + 1) = -T \ln(1 - \hat{\lambda}_{r+1}) \quad (5)$$

The VECM can be estimated after the the rank of the co-integration equation is determined using the relevant criteria mentioned just above. The equation below is a general representation of a VECM.

$$\Delta y_t = \Pi y_{t-k} + \Gamma_1 \Delta y_{t-1} + \Gamma_2 \Delta y_{t-2} \dots \dots \dots + \Gamma_{k-1} \Delta y_{t-(k-1)} + u_t \quad (6)$$

$$\Pi = (\sum_{i=1}^k \beta_i) - I_g \quad (7)$$

$$\Gamma_i = (\sum_{j=1}^i \beta_j) - I_g \quad (8)$$

Π is the long-run coefficient matrix and g represents the total number of variables. If $1 < \text{rank}(\Pi) < g$ and there are r co-integrating vectors then:

$\Pi = \alpha \beta'$ where β' (rxg) represents the coefficients of the variables in the error correction equation and α (gxr) the adjustment parameters (error correction coefficients). The sign of the adjustment parameter is important as a minus sign represents convergence into equilibrium. Also the magnitude of it represents the speed of adjustment.

Also it is important to note that the co-integration system and error correction model estimates are highly sensitive to the lag length chosen. Therefore different types of criteria such as LR (modified Likelihood Ratio Statistic), FPE (Final Prediction Error) AIC (Akaike Information Criterion), SC (Schwarz Information Criterion) and HQ (Hannan-Quinn Information Criterion) for optimum lag length selection might be used.

4. FINDINGS

The stationarity of the variables are first tested on their own levels and then on their first differences by using ADF. Then the optimum lag lengths were determined by using the results of different information criteria. Co-integration rank tests (Trace and Max. Eigenvalue) were applied to find out whether the rank of co-integrating equations. Then vector error correction estimates are found where both long and short run coefficients were revealed. Wald and VECM based Block Exogeneity Test were conducted to find out the causality relationships. At the end Jarque – Bera Test for normality, Breush and Godfrey Test for serial correlation, Breusch and Pagan Test for Heteroskedasticity andn CUSUM Tets for structural stability are used. Also the Impulse Response Funtions (IRF) are graphed.

Table 1: ADF Test Results of Variables on Their Own Levels

| | CPI | | | M3 | | | EXC | | |
|---------------------------|---------|----------|----------------|-----------|-----------|----------------|----------|-----------|----------------|
| | None | Constant | Constant/Trend | None | Constant | Constant/Trend | None | Constant | Constant/Trend |
| ADF Test Statistic | 7.6793 | 3.9854 | 1.176268 | 11.19474 | 4.766549 | 0.872339 | 2.368749 | 1.018689 | -1.299517 |
| P Value | 1.0000 | 1.0000 | 0.9999 | 1.0000 | 1.0000 | 0.9998 | 0.9958 | 0.9967 | 0.8840 |
| Critic Values | | | | | | | | | |
| 1% | -2.5818 | -3.4781 | -4.025924 | -2.581349 | -3.476805 | -4.023975 | -2.66936 | -3.477144 | -4.024452 |
| 5% | -1.9431 | -2.8824 | -3.442712 | -1.943090 | -2.881830 | -3.441777 | -1.95641 | -2.881978 | -3.442006 |
| 10% | -1.6151 | -2.5779 | -3.146022 | -1.615220 | -2.577668 | -3.145474 | -1.60850 | -2.577747 | -3.145608 |

Table 2: ADF Test Results of Variables on Their First Differences

| | CPI | | | M3 | | | EXC | | |
|---------------------------|---------|----------|----------------|-----------|-----------|----------------|----------|-----------|----------------|
| | None | Constant | Constant/Trend | None | Constant | Constant/Trend | None | Constant | Constant/Trend |
| ADF Test Statistic | 7.6793 | 3.9854 | 1.176268 | 11.19474 | 4.766549 | 0.872339 | 2.368749 | 1.018689 | -1.299517 |
| P Value | 1.0000 | 1.0000 | 0.9999 | 1.0000 | 1.0000 | 0.9998 | 0.9958 | 0.9967 | 0.8840 |
| Critic Values | | | | | | | | | |
| 1% | -2.5818 | -3.4781 | -4.025924 | -2.581349 | -3.476805 | -4.023975 | -2.66936 | -3.477144 | -4.024452 |
| 5% | -1.9431 | -2.8824 | -3.442712 | -1.943090 | -2.881830 | -3.441777 | -1.95641 | -2.881978 | -3.442006 |
| 10% | -1.6151 | -2.5779 | -3.146022 | -1.615220 | -2.577668 | -3.145474 | -1.60850 | -2.577747 | -3.145608 |

As it can be seen from both Tables 1 and 2 CPI, M3 and EXC series are all non-stationary on their own levels. The null hypothesis of non-stationarity of series can not be rejected at 0.05 level for all models (none, constant, constant and trend). When series are differenced once all variables become stationary except for CPI and EXC series non-stationary only for one model (no trend and no constant).

Table 3: Lag Length Criteria Results

| Lag | LogL | LR | FPE | AIC | SC | HQ |
|-----|-----------|-----------|-----------|-----------|-----------|-----------|
| 0 | -3087.682 | NA | 6.24e+16 | 47.18598 | 47.25183 | 47.21274 |
| 1 | -2349.421 | 1431.437 | 9.12e+11 | 36.05223 | 36.31561* | 36.15925 |
| 2 | -2330.735 | 35.37500 | 7.87e+11 | 35.90435 | 36.36526 | 36.09164* |
| 3 | -2324.292 | 11.90200 | 8.18e+11 | 35.94339 | 36.60183 | 36.21095 |
| 4 | -2317.109 | 12.94027 | 8.42e+11 | 35.97113 | 36.82711 | 36.31895 |
| 5 | -2303.917 | 23.16128 | 7.91e+11 | 35.90714 | 36.96064 | 36.33522 |
| 6 | -2296.092 | 13.38113 | 8.08e+11 | 35.92507 | 37.17611 | 36.43342 |
| 7 | -2284.026 | 20.07892 | 7.74e+11 | 35.87826 | 37.32683 | 36.46688 |
| 8 | -2273.164 | 17.57905* | 7.55e+11* | 35.84983* | 37.49593 | 36.51871 |
| 9 | -2267.895 | 8.285383 | 8.04e+11 | 35.90679 | 37.75043 | 36.65594 |
| 10 | -2264.376 | 5.372628 | 8.81e+11 | 35.99047 | 38.03164 | 36.81989 |
| 11 | -2254.302 | 14.91843 | 8.74e+11 | 35.97407 | 38.21278 | 36.88376 |
| 12 | -2251.756 | 3.653736 | 9.76e+11 | 36.07261 | 38.50884 | 37.06256 |

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

As series become stationary at their first differenced levels they might become integrated of order one I(1). If the series are cointegrated then VECM can be used. Therefore, the first step is to determine the optimum lag length. Table 3 shows that according to both LR, FPE and AIC criterions eight is the optimum lag length for this model. The Johansen and Jeselius cointegration analysis provides that for both rank tests (Trace and Maximum Eigenvalue) there are one cointegrating equations when the deterministic trend assumption of the test is chosen as intercept but no trend in CE (cointegrating equation). The test details can be seen from Tables 4 and 5. As a result VECM was estimated by using eight lags and the same deterministic trend assumption.

Table 4: Unrestricted Cointegration Rank Test (Trace)

| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistic | 0.02 Critical Value | Prob.** |
|------------------------------|------------|--------------------|------------------------|---------|
| None * | 0.181882 | 49.86736 | 38.71685 | 0.0007 |
| At most 1 | 0.099435 | 22.96698 | 23.07043 | 0.0207 |
| At most 2 | 0.064489 | 8.932802 | 11.23272 | 0.0553 |

Trace test indicates 1 cointegrating eqn(s) at the 0.02 level

* denotes rejection of the hypothesis at the 0.02 level

Table 5: Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

| Hypothesized No. of CE(s) | Eigenvalue | Max-Eigen Statistic | 0.02 Critical Value | Prob.** |
|------------------------------|------------|------------------------|------------------------|---------|
| None * | 0.181882 | 26.90038 | 25.06941 | 0.0106 |
| At most 1 | 0.099435 | 14.03418 | 18.37120 | 0.0957 |
| At most 2 | 0.064489 | 8.932802 | 11.23272 | 0.0553 |

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.02 level

* denotes rejection of the hypothesis at the 0.02 level

**MacKinnon-Haug-Michelis (1999) p-values

Table 6: Vector Error Correction Estimates

Included observations: 134 after adjustments

Standard errors in () & t-statistics in []

| Cointegrating Eq: | CointEq1 | | |
|-------------------|--------------------------------------|-----------|-----------|
| CPI(-1) | 1.000000 | | |
| M3(-1) | -1.90E-07 (1.1E-07) [-1.70210] | | |
| EXC(-1) | -82.92006 (60.3569) [-1.37383] | | |
| C | -96.42705 (45.4652) [-2.12090] | | |
| Error Correction: | D(CPI) | D(M3) | D(EXC) |
| CointEq1 | -0.010260 | -63557.19 | -0.000147 |

Table 6 reveals VECM results where the parameters of the cointegration equation which provides the long-run relationship can be observed. The long-run coefficients matrix $\Pi = \alpha\beta'$ and the short-run coefficients matrix Γ was constructed by using the information from the model above.

$$\alpha = \begin{bmatrix} -0.010260 \\ -63557.19 \\ -0.000147 \end{bmatrix} \quad \beta = [1 \quad -1.90E - 07 \quad -82.92006] \quad \Gamma = \begin{bmatrix} 0.209 & \dots & -0.532 \\ -2182940 & \dots & -38100785 \\ -0.009 & \dots & -0.131 \end{bmatrix}$$

$$\Delta CPI_t = \alpha_{1,1}(\beta_{1,1}CPI_{t-1} - \beta_{1,2}M3_{t-1} - \beta_{1,3}EXC_{t-1} - C) + \Gamma_{1,1} \Delta CPI_{t-1} + \dots + \Gamma_{1,8} \Delta CPI_{t-8} + \Gamma_{1,9} \Delta M3_{t-1} + \dots + \Gamma_{1,16} \Delta M3_{t-8} + \Gamma_{1,17} \Delta EXC_{t-1} + \dots + \Gamma_{1,24} \Delta EXC_{t-8}$$

$$\Delta M3_t = \alpha_{1,2}(\beta_{2,1}CPI_{t-1} - \beta_{2,2}M3_{t-1} - \beta_{2,3}EXC_{t-1} - C) + \Gamma_{2,1} \Delta CPI_{t-1} + \dots + \Gamma_{2,8} \Delta CPI_{t-8} + \Gamma_{2,9} \Delta M3_{t-1} + \dots + \Gamma_{2,16} \Delta M3_{t-8} + \Gamma_{2,17} \Delta EXC_{t-1} + \dots + \Gamma_{2,24} \Delta EXC_{t-8}$$

$$\Delta EXC_t = \alpha_{1,3}(\beta_{3,1}CPI_{t-1} - \beta_{3,2}M3_{t-1} - \beta_{3,3}EXC_{t-1} - C) + \Gamma_{3,1} \Delta CPI_{t-1} + \dots + \Gamma_{3,8} \Delta CPI_{t-8} + \Gamma_{3,9} \Delta M3_{t-1} + \dots + \Gamma_{3,16} \Delta M3_{t-8} + \Gamma_{3,17} \Delta EXC_{t-1} + \dots + \Gamma_{3,24} \Delta EXC_{t-8}$$

$$ECT_{t-1} = \beta_{1,1}CPI_{t-1} - \beta_{1,2}M3_{t-1} - \beta_{1,3}EXC_{t-1} - C$$

The parameters of α (3x1) matrix consists of the adjustment coefficients. β (1x3) reveals coefficients of the error correction equation. Γ is a (3x24) matrix where the numbers represent the short run coefficients. The set of equations above represent the VECM estimates.

$$CPI_{t-1} = 1.90E - 07M3_{t-1} + 82.92006EXC_{t-1} + 96.42705 \quad (9)$$

Table 7: Error Correction Term Results

| | Coefficient | Std. Error | t-Statistic | Prob. |
|----------------|-------------|------------|-------------|--------|
| $\alpha_{1,1}$ | -0.010260 | 0.002748 | -3.733123 | 0.0003 |

The long-run relationship between the variables are as it is shown in Equation 9. The adjustment parameter or the coefficient of the ECT_{t-1} in ΔCPI_t equation is -0.010260. The minus sign shows that the model corrects itself when it departs from its equilibrium state from the previous period. Therefore when the difference between CPI, M3 and EXC is positive in one period CPI will fall in the next period or the opposite happens when the difference is negative. The adjustment coefficient in this model is fairly small though it is highly significant.

As it can be observed, in the long run when M3 rises by a 100 billion TL CPI index increases by 19 points and when TL/USD exchange rate increases by 1 TL (or if TL depreciates 1 TL) CPI increases by 82.9 points.

The short run coefficients of the model are also important as they present whether the differenced past values of CPI, M3 and EXC lead to changes in differenced CPI parameters.

Table 8: Wald Test Results

| Test Statistic | Value | df | Probability |
|----------------|----------|----------|-------------|
| F-statistic | 5.849688 | (8, 109) | 0.0000 |
| Chi-square | 46.79750 | 8 | 0.0000 |

Null Hypothesis: $\Gamma_{1,1} = \Gamma_{1,2} = \dots = \Gamma_{1,8} = 0$

| Test Statistic | Value | df | Probability |
|----------------|----------|----------|-------------|
| F-statistic | 0.739011 | (8, 109) | 0.6569 |
| Chi-square | 5.912086 | 8 | 0.6571 |

Null Hypothesis: $\Gamma_{1,9}=\Gamma_{1,10}=\dots=\Gamma_{1,16}=0$

| Test Statistic | Value | df | Probability |
|----------------|----------|----------|-------------|
| F-statistic | 1.773285 | (8, 109) | 0.0900 |
| Chi-square | 14.18628 | 8 | 0.0770 |

Null Hypothesis: $\Gamma_{1,17}=\Gamma_{1,18}=\dots=\Gamma_{1,24}=0$

As it can be seen from the Wald test results above that differenced past values of CPI ($\Delta CPI_{t-1}, \dots, \Delta CPI_{t-8}$) significantly cause changes in differenced CPI (ΔCPI_t) as the null hypothesis of $\Gamma_{1,1}=\Gamma_{1,2}=\dots=\Gamma_{1,8}=0$ can be rejected at even 0.01 significance level. Although the differenced past values of M3 ($\Delta M3_{t-1}, \dots, \Delta M3_{t-8}$) does not cause changes in differenced M3 ($\Delta M3_t$) as the null hypothesis of $\Gamma_{1,9}=\Gamma_{1,10}=\dots=\Gamma_{1,16}=0$ can not be rejected at as the probability is 0.65. Nevertheless the differenced past values of EXC ($\Delta EXC_{t-1}, \dots, \Delta EXC_{t-8}$) significantly cause changes in differenced EXC (ΔEXC_t) as the null hypothesis of $\Gamma_{1,17}=\Gamma_{1,18}=\dots=\Gamma_{1,24}=0$ can be rejected at 0.10 significance level though can not be rejected at 0.05 level.

Table 9: VEC Granger Causality/Block Exogeneity Wald Tests

| Dependent variable: $\Delta(CPI)$ | | | |
|-----------------------------------|----------|----|--------|
| Excluded | Chi-sq | df | Prob. |
| $\Delta(M3)$ | 5.912086 | 8 | 0.6571 |
| $\Delta(EXC)$ | 14.18628 | 8 | 0.0770 |
| All | 25.43445 | 16 | 0.0625 |
| Dependent variable: $\Delta(M3)$ | | | |
| Excluded | Chi-sq | df | Prob. |
| $\Delta(CPI)$ | 12.45658 | 8 | 0.1320 |
| $\Delta(EXC)$ | 13.09643 | 8 | 0.1086 |
| All | 24.07915 | 16 | 0.0878 |

The causal relationship between variables can also be detected by conducting VEC based Granger Causality tests for the same error correction model estimated above. As it can be seen that the null hypothesis of differenced past values of M3 does not cause changes in differenced CPI can not be rejected. Though the null hypothesis of differenced past values of EXC does not cause changes in differenced CPI can not be rejected at 0.05 level but can be rejected at 0.10 level. More importantly both differenced past values of and M3 and EXC does not cause changes in CPI can not be rejected 0.10 significance level where the probability (0.0625) is very close to 0.05 level. Also it can be seen that neither CPI nor EXC alone does not cause M3 at 0.05 significance level only they jointly are significant at 0.10 level.

The last step of the analysis involves the tests for normality, auto-correlation, heteroscedasticity and model specification.

Graph 1: Jarque-Bera Test Results

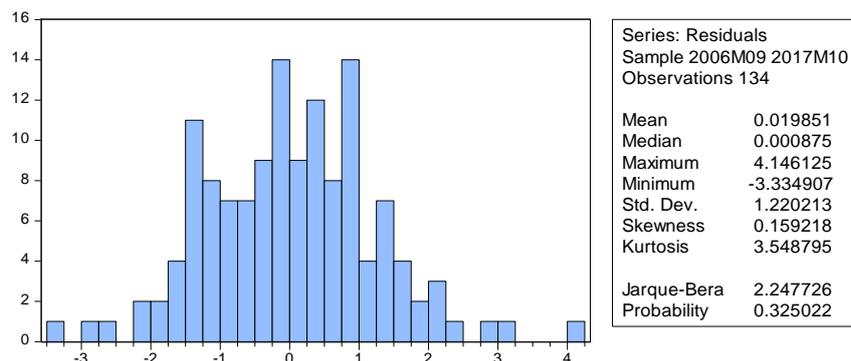


Table 10: Breusch-Godfrey Serial Correlation LM Test Results

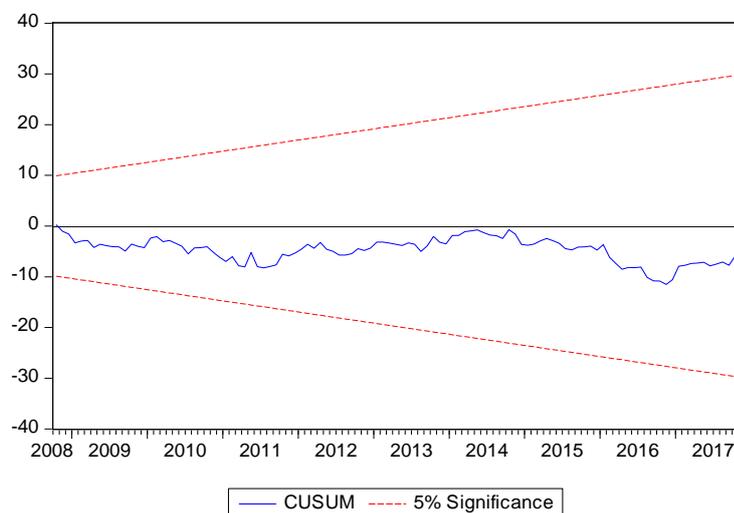
| | | | |
|-------------|----------|----------------|--------|
| F-statistic | 1.516894 | Prob. F(8,101) | 0.1606 |
|-------------|----------|----------------|--------|

Table 11: Breusch-Pagan-Godfrey Heteroskedasticity Test Results

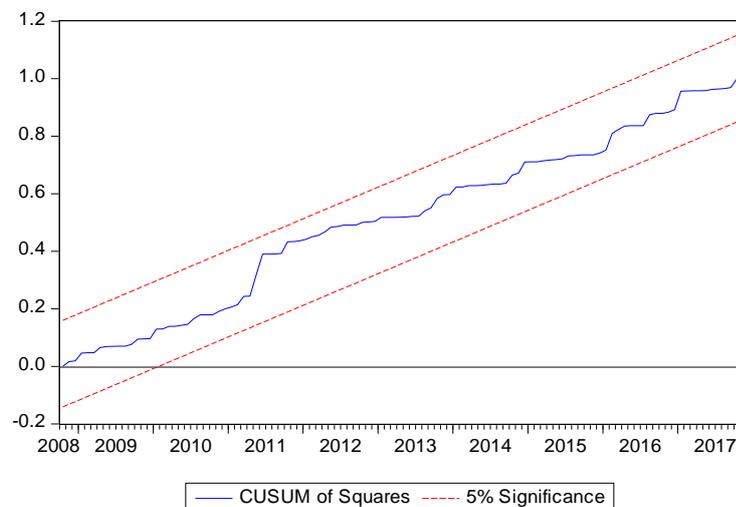
| | | | |
|-------------|----------|-----------------|--------|
| F-statistic | 0.856718 | Prob. F(27,106) | 0.6688 |
|-------------|----------|-----------------|--------|

The test results show that the null hypothesis of series are normality distributed for Jarque – Berra test and the null hypothesis of no serial correlation for Breusch – Godfrey LM Test and the null hypothesis of no heteroscedasticity for Breusch – Pagan – Godfrey test can not be rejected. Therefore the residuals are normally distributed with no serial correlation and no heteroscedasticity which are statistically desired properties for the validity of the model.

Graph 2: CUSUM Test

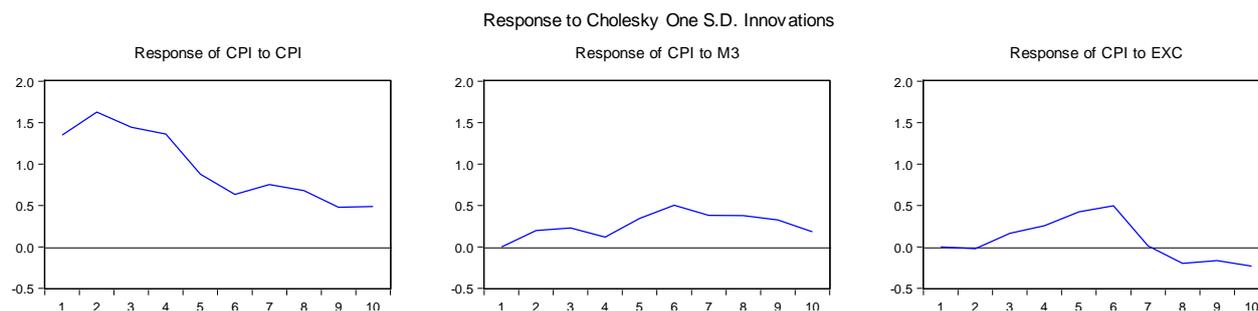


Graph 3: CUSUM of Squares Test



It can be seen from the graphs of both stability tests (cusum and cusum of squares) that the graphs for the recursive estimates both lie within the confidence bands which displays the parameter stability for the model.

Graph 4: IRF for The Series CPI, M3 and EXC



The impulse response function graphs reveal that when a unit standard deviation shock is impulsed to CPI the future CPI rates respond positively and the magnitude is higher in the short run where the effect seems to persist even after 8 months though it declines. The effect of M3 on CPI is moderate and the effect is positive. Nevertheless the effect of EXC on CPI seems more complicated as for the next 7 months the sign is positive then the sign becomes negative.

5. CONCLUSION

Highly volatile and persistent inflation rates were present for a prolonged period of time in Turkey. Even though there has been a downward trend after 2001 -as a result of couple of structural measures taken such as the explicit inflation targeting- still the inflationary inertia seems to be dominant as the yearly rate of inflation was %12,15 as of May 2018. More often this phenomenon was regarded as the result of several factors: monetisation of public debt, high rates of growth of monetary aggregates, time inconsistent monetary policies, fiscal imbalances, strong exchange rate pass through effect, wage-inflation spiral and supply side restrictions. The existence of inflation inertia reflects that rather than the targeted level declared by The Central Bank the past levels of inflation drives the expectations. In other words expectations might hardly become rational as a result of repeated failure of reaching the declared target.

In this study as the unexpected changes in the rate of inflation in Turkey has long been considered as a heavy burden on the society as a whole a long run relationship between the CPI and the two important causes of changes in price levels –money supply and exchange rates- were investigated by using an error correction model. An important feature of this study is that variables are taken on their own levels to reveal a long-run equation as most of the studies reviewed in the literature either differenced or took the percentage changes of the variables for stationarity purposes. In line with our predictions the

results showed that 100 billion TL rise in M3 is accompanied by 19 points increase in the CPI and 1TL depreciation of local currency (appreciation of \$) leads to 82.9 points upswing in CPI. Also in the short run when VEC based causality tests were conducted changes in M3 and EXC together cause changes in CPI at .10 significance level. Moreover the changes in CPI and EXC do also cause changes in M3 at .10 significance level which might be considered as a sign of money supply endogeneity. Besides the IRF reveal that CPI responds to changes in past CPI values even after 10 months though the response becomes smaller which depicts the existence of a strong inflation inertia. This study mainly is in line with other studies that found significant relationships between monetary aggregates, exchange rates and price levels either conducted abroad mostly in emerging markets or domestically. Also it worths mentioning that no serial correlation, no heteroscedasticity and a normal distribution were observed with structural parameter stability which might be admitted as desired econometric properties for the validity of this study.

REFERENCES

- Altıntaş, H., Çetintaş, H., Taban, S. (2008). Türkiye'de bütçe açığı, parasal büyüme ve enflasyon arasındaki ilişkinin ekonometrik analizi: 1992-2006. *Anadolu Üniversitesi Sosyal Bilimler Dergisi*, 8(2), 185-208.
- Bailliu, J., Fujii, E. (2004). Exchange rate pass-through and the inflation environment in industrialized countries: an empirical investigation", Bank of Canada Working Paper 2004-21, 1-39.
- Bussiere, M., Chiaie, S. D., Peltonen, T. A. (2014). Exchange rate pass through in the global economy: the role of emerging market economies. *IMF Economic Review* 62(1), 145-78.
- Chaudhary, A. M., Ahmad, N. (1995). Money supply deficit and inflation in Pakistan. *The Pakistan Development Review*, 34(4), 945-56.
- Choudhri, E. U., Hakura, D. S. (2006). Exchange rate pass through to domestic prices: does the inflationary environment matter?. *Journal of International Money and Finance*, 25(4), 614-39.
- Civcir, İ., Akçağlayan, A. (2010). Inflation targeting and exchange rate: does it matter in Turkey?. *Journal of Policy Modeling*, 32.
- De Grauwe, O., Polan, M. (2005). Is inflation always and everywhere a monetary phenomenon?. *Scandinavian Journal of Economics*, 107(2), 239-59.
- De Grauwe, P., Schnabl, G. (2008). Exchange rate stability inflation and growth in South Eastern and Central Europe. *Review of Development Economics*, 12(3), 530-49.
- Dickey, D. A., Fuller, W. A. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica*, 49(4), 1057-1072.
- Engel, R. F., Granger, C. W. J. (1987). Co-integration and error correction representation, estimation and testing. *Econometrica*, 55(2), 251-276.
- Gagnon, J. E., Ihrig, J. (2004). Monetary policy and exchange rate pass through. *International Journal of Finance and Economics*, 9, 315-338.
- Hossain, A. (2005). The Granger causality between money growth currency devaluation and economic growth in Indonesia: 1954-2002. *International Journal of Applied Econometrics and Quantitative Studies*, 2-3, 45-68.
- Hossain, A. A. (2010). Monetary targeting for price stability in Bangladesh: how stable is its money demand function and the linkage between money supply growth and inflation. *Journal of Asian Economics*, 21, 564-78.
- Johansen, S., Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration - with applications to the demand for money. *Oxford Bulletin of Economics and Statistics*, 52(2), 169-210.
- Kaya, M. G., Öz, E. (2016). Enflasyon, bütçe açığı ve para arzı ilişkisinin Türkiye ekonomisi açısından değerlendirilmesi: 1980-2014 dönemi. *Manisa Celal Bayar Üniversitesi İİBF Dergisi*, 23(3), 639-651.
- Kemal, M. A. (2006). Is inflation in Pakistan a monetary phenomenon?. *The Pakistan development Review*, 45(2), 213-20.
- Kilindo, A. A. L. (1997). Fiscal operations money supply and inflation in Tanzania. *AERC Research Paper*, 65, 1-52.
- Korkmaz, Ö. (2017). Enflasyon oranını etkileyen faktörlerin belirlenmesi: Türkiye üzerine bir uygulama. *Dokuz Eylül Üniversitesi İİBF Dergisi*, 32(2), 109-142.
- Koru Tekin, A., Özmen, E. (2003). Budget deficits, money growth and inflation: the Turkish evidence. *Applied Economics*, 35(5), 591-596.
- Lozano, I. (2008). Budget deficit, money growth and inflation: evidence from the Colombian case. *Borradores de Economía*, 537, 1-25.
- Mihaljek, D., Clau, M. (2001). A note on the pass through from exchange rate and foreign price changes to inflation in selected emerging market economies. *BIS Papers no 8*, 69-81.
- Minella, A., Freitas, P. S., Goldfajn, I., Muinhos, M. K. (2003). Inflation targeting in Brazil: constructing credibility under exchange rate volatility. *Journal of International Money and Finance*, 22, 1015-40.

- Narayan, K. P., Narayan, S., Prasad, A. D. (2006). Modelling the relationships between budget deficits money supply and inflation in Fiji. *Pacific Economic Bulletin* 21(2), 103-116.
- Nguyen, V. B. (2015). Effects of fiscal deficit and money M2 supply on inflation: evidence from selected economies of Asia. *Journal of Economics Finance and Administrative Science*, 20, 49-53.
- Oktayer, A. (2010). Türkiye’de bütçe açığı para arzı ve enflasyon ilişkisi. *Maliye Dergisi*, Sayı 158, Ocak-Haziran, 431-447.
- Qayyum, A. (2006). Money inflation and growth in Pakistan. *The Pakistan Development Review*, 45(2), 203-12.
- Kara, H., Ögünç, F. (2008). Inflation targeting and exchange rate pass-through: the Turkish experience. *Emerging Markets Finance and Trade*, 44(6), 52-66.
- Ratnasiri, H. P. S. G. (2009). The main determinants of inflation in Sri Lanka: a var based analysis. *Staff Studies Central Bank of Sri Lanka*, 39(1-2), 1-14.
- Senda, T. (2001). Asymmetric effects of money supply shocks and trend inflation. *Journal of Money Credit and Banking*, 33(1), 65-89.
- Siregar, Y. Z., Rajaguru, G. (2005). Base money and exchange rate: sources of inflation in Indonesia during the post 1997 financial crisis. *Journal of Economic Integration*, 20(1), 185-215.
- Staiger, D., Stock, J. H., Watson, M. W. (1997). The NAIRU unemployment and monetary policy. *Journal of Economic Perspectives*, 11, 33-51.
- Vymyatnina, Y. (2006). How much control does bank of Russia have control over money supply. 131-44.
- Winkelried, D. (2014). Exchange rate pass through and inflation targeting in Peru. *Empirical Economics*, 46, 1181- 1196.
- Woodford, M. (1998). Doing without money: controlling inflation in a post-monetary World. *Review of Economic Dynamics*, 1, 173-219.
- Zhang, W. (2009). China’s monetary policy: quantity versus price rules. *Journal of Macroeconomics*, 31, 473-84.

RELATION OF DIRECT FOREIGN INVESTMENTS AND ECONOMIC GROWTH: PANEL DATA ANALYSIS ON APEC COUNTRIES

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ABSTRACT

Purpose- In this study, relation between direct foreign investments and economic growth had been analyzed for 11 APEC countries (Australia, Canada, Chile, China, Indonesia, Japan, Korea, Malaysia, Mexico, Russia and USA) in between era of 1990-2016 with the help of panel data analysis.

Methodology- In this purpose, stability of variables had been searched by Im, Peseran and Shin Panel Unit Root Tests, Maddala and Wu Panel Unit Root Tests and Coi Panel Unit Root Tests to obtain unbiased predictions in study. Then, panel cointegration and causality tests had been applied.

Findings- At the end of the research, it had been determined that existence of causality relation between series and there is unidirectional causality from direct foreign investments to economic growth.

Conclusion- Although direct foreign investment in most of the developing countries is not directly linked to economic development, capital, technology and knowledge transfer which indirectly contributes. For this reason, developing countries are encouraging foreign direct investment.

Keywords: Direct foreign investments, economic growth, APEC countries, panel data analysis.

JEL Codes: E20, O16, O40.

1. INTRODUCTION

Asia-Pacific Economic Cooperation had been established for moving forward of economic development and wealth level and for strengthen of connection between Asia Pacific Community in 1989. APEC has 21 members. APEC members have corresponded to 40% of world population, 56% of world GDP and approximately 48% of world trading volume. Basic aims of cooperation in the scope of APEC is to decrease tariffs among members and reduce other trade barriers, to make contribution for formation of efficient economies in local basis and increase export significantly thanks to this (www.apec.org, 2018).

With increase in economic integration movements, studies that examines the effects of economic integrations on member countries and countries staying out of integration had started to increase in economic literature. Effects of economic integrations has mainly divided into two as static effects and dynamic effects. While static effects are referred to "trade creation" and "trade diversion" effects which are for once only; dynamic effects have defined the more long-termed effects of economic integrations. One of the most important dynamic effects of economic integrations is the promotion effect for foreign investments and especially for the direct foreign investments (DFI). Economic integration has caused to gather of production in unity in more effective hands and drawing significant foreign capital investment to the region by enlarging market volume by liberalizing the trade among member countries (Çeştepe and Mıstaçoğlu, 2010:94).

Besides that, DFI is a special external financing in terms of developing countries and contribution to formation of capital, it has more importantly ensured the access to market network as much as transferring of technology, innovation capacity and executive abilities. However, it cannot say that international capital trend shows a proper distribution among developing countries. Economic and politic other factors have played a role in that as much as DFI drawing capacities.

In literature, it has been seen that large majority of studies that examines the effect of economic growth on direct foreign investments in economic integrations are made on regional integrations among developed countries as EU. In this study, relation between direct foreign investments and economic growths have been discussed for APEC Countries. While, in second chapter following the introduction of study, it had been given place to empirical studies that examines the relation between direct foreign investments and economic growth, in last chapter, effect of direct foreign investments on economic growth had been tested by econometric modelling in 11 chosen APEC Countries.

2. LITERATURE REVIEW

In international growth literature, the effect of direct foreign investments on growth have been one of frequently searched subjects. In empirical literature, a lot of studies that are done on single country as well as on countries are available for relation between direct foreign investments and economic growth. The existence positive relation had been found between related variables which are used in the most of the studies that investigate the relations between direct foreign investments and economic growth. It has been coincided at least to negative and meaningless relation between direct foreign investments and economic growth in literature. Studies examining the relation between direct foreign investment and economic growth had been divided into two as studies which are made in Turkey and international studies.

Table 1: National Studies Investigating the Relationship between Foreign Direct Investment and Economic Growth

| Author (s) | Period | Method | Results |
|--------------------------|---------------|---|------------------|
| Yapraklı (2006) | 1970-2006 | Multiple Cointegration and Error Correction Model | DYY ≠ Growth |
| Afşar (2007) | 1992:1 2006:3 | Granger Causality | FDI → Growth |
| Karagöz (2007) | 1970-2005 | Johansen Cointegration, ECM Granger Causality | DYY ≠ Employment |
| Ayaydın (2010) | 1970-2007 | Cointegration, Granger Causality | FDI → Growth |
| Ekinci (2011) | 1980-2010 | Engle-Granger Causality | FDI ↔ Growth |
| Koyuncu (2011) | 1990-2010 | Granger Causality | FDI ↔ Growth |
| Yılmaz vd. (2011) | 1980-2008 | EG Cointegration | Positive effect |
| Şahin (2015) | 1980-2013 | ARDL Bounds Test | Positive effect |
| Işık (2016) | 1970-2014 | ARDL Bounds Test | FDI ↔ Growth |
| Kahveci and Terzi (2017) | 1984-2015 | Sims and DL-VAR Causality | Growth → FDI |

Yapraklı (2006), Karagöz (2007), Ayaydın (2010), Yılmaz et al. (2011) investigated whether there is a long-term relationship between FDI and growth using the cointegration method. While Ayaydın and Yılmaz have not found any relationship between economic growth and direct foreign investments, Yılmaz has found that there was a positive relationship between economic growth and foreign direct investment. Afşar (2007), Ekinci (2011), Koyuncu (2011) found that there is a causal relationship between foreign direct investment and economic growth in the studies on causality relationship between foreign direct investment and economic growth.

Table 1 has consisted of empirical studies that are made to show the effect of direct foreign investments on economic growth in Turkey. There is unidirectional or bidirectional causality relation between direct foreign investments and economic growth in the 8 of 10 studies which are given in Table 1. Any causality relation had not been discovered in the remaining 2 studies.

Table 2: International Studies Investigating the Relationship between Foreign Direct Investment and Economic Growth

| Author (s) | Period | Countries | Method | Results |
|------------------------------------|-----------|-----------------------|----------------------------------|--|
| Blomstorm, Lipsey and Zejan (1992) | 1960-1985 | 78 Developing Country | Granger Causality Test | FDI ≠ Growth |
| Zhang (2001) | 1984-1998 | China Zones | Panel data analysis | FDI → Growth |
| Kholdy and Sohrabian (2005) | 1975-2002 | 25 Countries | Granger Causality | FDI ≠ Growth |
| Carcovic and Levine (2002) | 1960-1995 | 72 Countries | Panel data analysis | FDI ≠ Growth |
| Alfaro and Charlton (2007) | 1990-2001 | 22 OECD Countries | Panel data analysis | A positive and meaningful relationship |
| Okuyan and Erbaykal (2007) | 1970-2006 | 9 Developing Country | Toda-Yamamoto Causality | FDI ↔ Growth |
| Shaikh (2010) | 1981-1999 | 47 Developing Country | Panel data analysis | Negative effect |
| Sichei and Kinyondo (2012) | 1980-2009 | 45 African Countries | Panel data analysis | Positive effect |
| Wang and Wong (2009) | 1970-1989 | 69 Countries | Panel data analysis, Dynamic SUR | FDI → Growth |

In Table 2, it had been given place to studies that examine the direct foreign investments and economic growth in the world. While relation has not been found in three of nine studies, negative relation had been found in one study. In the remaining 5 studies, positive and meaningful results had showed up between direct foreign investments and economic growth in the remaining 5 studies.

In the majority of international studies examining the relationship between economic growth and foreign direct investment, there was no causal relationship between economic growth and foreign direct investment. Blomstorm, Lipsey and Zejan (1992), Kholdy and Sohrabian (2005), Carcovic and Levine (2002) and Shaikh (2010) used causality analyzes and they have not found any relationship between economic growth and foreign direct investment.

3. RESEARCH METHOD

3.1. Search Period and Data Set

In the study, relation between direct foreign investments and economic growth had been tried to examine in 11 APEC Countries¹ by using annual data related to era of 1990-2016. 11 APEC countries had been taken in application in terms of accessibility to variables used in research. GDP variable which are used as dependent variable to represent the economic growth have shown growth rate as percentage of GDP by years. Direct foreign investments and capital variables which are used in analysis had been taken as independent variable. The model to be estimated is as follows:

$$GDP_{it} = \delta_{it} + fdi_{it} + cap_{it} + e_{it} \quad (1)$$

Panel data analysis that has many superiorities against other technics had been preferred in the study. The most important specification of panel data analysis is allowing to constitute data set which has time dimension as well as section dimension by gathering time series and cross-sectional series.

Panel unit root tests had been firstly applied to get unbiased predictions for model (1) which is defined in study. In this context, since stability status of variables in panel data analyzes was applied to methodology which will be used in models, it had been firstly gone to that stability towards variables which are used in models is examined by Im, Peseran and Shin Panel Unit Root Tetst, Maddala and Wu Panel Unit Root Tests and Coi Panel Unit Root Tests and stability conditions of variables is determined. Then, at the end of the unit root tests, Cointegration Test had been applied to analyze the possible long-term relation between variables which are used in models that all variables are in same level and stable in their first differences.

¹ Australia, Canada, Chile, China, Indonesia, Japan, Korea, Malaysia, Mexico, Russia, USA

3.2. Panel Unit Root Tests

Panel unit root tests that are frequently used in literature are Levin and others (2002), Im, Pesaran and Shin (2003) and, Maddala and Wu (1999). Panel unit root tests have given information one by one about which are stable or not for series constituting the panel. At analysis stage of search, Im, Pesaran and Shin (2003), Maddala and Wu (1999) and Choi (2001) Panel Root Tests which are from panel root tests had been used.

Test statistic which is developed by Im, Pesaran and shin (2003) is as below:

$$\Delta y_{it} = \alpha_i y_{it-1} + \sum_{j=1}^{p_i} \gamma_{ij} y_{it-j} + X'_{it} \delta + \varepsilon_{it} \quad (2)$$

$$\Delta y_{it} = y_{it} - y_{i,t-1} \quad (3)$$

$$y_{it} (i = 1, 2, \dots, n; t = 1, 2, \dots, T) \quad (4)$$

Unit root hypotheses are given below:

$$H_0: \alpha_i = 0: \text{Series is not stationary. } H_A: \alpha_i < 0: \text{Series is stationary.} \quad (5)$$

Maddala and Wu (1999) had developed a Fisher type test that combines probability values from unit root tests for each cross section. Test is without parameter and has 2n degree of freedom (n has shown the number of countries in panel). Test statistic has been shown as:

$$\lambda = -2 \sum_{i=1}^n \log_e (p_i) \sim \chi^2_{2n(d.f.)} \quad (6)$$

Choi (2006), derives another test statistic.

$$Z = \frac{1}{\sqrt{n}} \sum_{i=1}^n \Phi^{-1} (p_i) \sim N(0,1) \quad (7)$$

Φ^{-1} ; is the inverse of the normal cumulative distribution function.

Table 3: Im, Pesaran, Shin Panel Unit Root Test

| Level | | |
|-----------|-------------|-------------|
| Variables | W-Statistic | Probability |
| GDP | -6.6613 | 0.0000*** |
| Fdi | -3.7626 | 0.0001*** |
| Cap | -7.4158 | 0.0000*** |

Note: *, **, *** represent 10%, 5%, 1% significance levels

Table 4: Maddala and Wu Unit Root Test

| Level | | |
|-----------|----------------------|-------------|
| Variables | ADF Fisher Statistic | Probability |
| GDP | 83.1446 | 0.0000*** |
| Fdi | 47.2589 | 0.0005 |
| Cap | 92.9810 | 0.0000 |

Note: *, **, *** represent 10%, 5%, 1% significance levels

Table 5: Choi Panel Unit Root Test

| Level | | |
|-----------|-------------|-------------|
| Variables | Z-Statistic | Probability |
| GDP | -6.4371 | 0.0000*** |
| Fdi | -3.9098 | 0.0000*** |
| Cap | -7.10525 | 0.0000*** |

Note: *, **, *** represent 10%, 5%, 1% significance levels

3.3. Panel Cointegration Test

At the result of panel unit root tests, cointegration analysis which is established on the assumption that all series are integrated from first degree has been applied to analyze whether there is long term relation between variables or not by using Johansen Fisher Panel Cointegration test. Johansen Fisher panel cointegration tests is panel version of individual Johansen cointegration test. Johansen Fisher panel cointegration test has based on total of p-values of trace statistics and individual Johansen maximum eigenvalue. Also, p value which is obtained from individual cointegration test for p_i section 'i' under null hypothesis, test statistics for panel is as follows:

$$-2 \sum_{i=1}^n \log(p_i) \sim X_{2n}^2 \quad (8)$$

Cointegration test results in Johansen type panel had depended on delay number of VAR system (Hossain, 2011:6995).

Kao (1999) cointegration test has based on below panel regression model.

$$y_{it} = x'_{it}\beta + z'_{it}\gamma + \varepsilon_{it} \quad (9)$$

In number (9) equality, it has been assumed that y_{it} and x_{it} is stable in I(1) level and a cointegrated relation does not happen. Kao (1999) that defends a equality as $z_{it} = \{\mu_{it}\}$ had analyzed the cointegration relation between series with reference to DF and ADF unit root tests which will be done for ε_{it} series (Lau et al., 2011:148).

Table 6: Lag Length Test Results

| Lag Length Criteria | LogL | LR | FEP | AIC | SC | HQ |
|---------------------|-----------|-----------|-----------|-----------|-----------|----------|
| 0 | -1982.125 | NA | 3068.911 | 16.54271 | 16.58622 | 16.56024 |
| 1 | -1866.398 | 227.5969 | 1261.042 | 15.65332 | 15.82735 | 15.72344 |
| 2 | -1840.713 | 49.87198 | 1097.391 | 15.51427 | 15.81883* | 15.63699 |
| 3 | -1830.766 | 19.06535* | 1088.867* | 15.50638* | 15.94116 | 15.68169 |

Note: LR: Likelihood Ratio Test, FPE: Last Forecast Error, AIC: Akaike Information Criteria, SC: Schwarz Information Criteria, HQ: Hannan Quinn Information Criteria. * sign indicates the most appropriate delay length determined according to the relevant criteria.

Table 7: Panel Cointegration Test

| Kao Cointegration Test | | | | | | |
|--|-------------------------------|------------------|------------|---------------------------------|---------------------------|-------------|
| | t- statistic | | | Probability | | |
| ADF | -1.9981 | | | 0.0228** | | |
| Residual Variance | 6.7283 | | | | | |
| HAC Variance | 1.5464 | | | | | |
| Johansen Fisher Panel Eşbütünleşme Testi | | | | | | |
| Null Hypothesis | Fisher Constructed Trace Test | Statistic from y | Probabilit | Fisher Constructed Maximum Test | Statistic from Eigenvalue | Probability |
| None | 115.9 | | 0.000*** | 75.13 | | * 0.000** |
| At most 1 | 64.32 | | 0.000*** | 44.06 | | * 0.000** |
| At most 2 | 61.28 | | 0.000*** | 61.28 | | * 0.000** |

Note: ***, **, * indicate that the null hypothesis is rejected at the significance level of 1%, 5% and 10%, respectively. In Kao cointegration test, Barlett Kernel method was used and Bandwith width was determined by Newey-West method.

3.4. Panel Causality Test

Whether there is causality relation between RD expenses and patent numbers or not had been analyzed by panel which Granger causality method which is developed by Dumitrescu and Hurlin (2012). Dumitrescu and Hurlin (2012) panel Granger causality test is a method which is brought in to literature lately. In terms of an economic fact, due to high probability of that causality relation which is effective for a country is also effective for other countries, causality relation

has been tested more effectively with more observations in mentioned causality test within the frame of panel data. In Dumitrescu-Hurlin panel Granger causality test, lack of homogeneous Granger causality relation under basic hypothesis is tested against the alternative hypothesis which this relation exists in at least cross section (Bozoklu and Yilanci, 2013:175).

Table 8: Dumitrescu-Hurlin Panel Causality Test Results

| Null Hypothesis | W-Stat | Zbar Stat | Probability |
|-----------------|--------|-----------|-------------|
| cap→GDP | 3.16 | 1.201 | 0.229 |
| GDP→cap | 5.07 | 3.636 | 0.000*** |
| fdi →GDP | 3.93 | 2.176 | 0.029** |
| GDP→ fdi | 3.21 | 1.268 | 0.204 |
| fdi→cap | 3.99 | 2.256 | 0.024** |
| cap→ fdi | 5.14 | 3.720 | 0.000*** |

Note: *, **, *** represent 10%, 5%, 1% significance levels

Panel causality test results have been shown in table 6. In the research that economic growth, direct foreign investments and causality relation between capital variables were searched, unidirectional causality had been determined from direct foreign investments to economic growth.

4. CONCLUSION AND DISCUSSIONS

One of the economic politics which is important in implementation way of growth and developments of developing countries is direct foreign investments. Direct foreign investments have importance in terms of making deep of capital accumulation, developing export and increasing of technology transfer.

As theoretically, direct foreign investments which tend to countries that has lack of savings have contributed to solution of saving gap problem or capital accumulation. On the other hand, the direction of direct foreign capital currents will be to countries that have high growth performance, economic and political stability.

In this study, relation between direct foreign investments and economic growth had been searched for 11 APEC Member Countries with the help of panel data analysis by using annual data between 1990 and 2016. In study, whether there are variables or not had been determined by firstly making unit root tests. According to unit root tests, it had been observed that all of taken variables became stable at first difference, in other words variables that are used in analysis did not have unit root. Since taken variables are stable at first difference, whether they are cointegrated or not should be analysed to prevent fake causality relation. With this purpose, Johansen fisher Panel Cointegration Test and Kao Cointegration Test had been applied to determine whether variables are cointegrated or not in equations which are composed for causality tests. Two different test results which are applied as cointegration test have shown that economic growth, capital and direct foreign investment variables move as integrated and there is long-term relation between variables.

While any causality was not determined from economic growth to direct foreign investments for panel set in committed Dumitrescu and Hurlin (2012) panel Granger causality analysis, a Granger causality relation has been seen from direct foreign investments to economic growth.

Although direct foreign investment in most of the developing countries is not directly linked to economic development, capital, technology and knowledge transfer which indirectly contributes. For this reason, developing countries are encouraging foreign direct investment.

REFERENCES

- Ayaydin, H. (2010). Doğrudan yabancı yatırımlar ile ekonomik büyüme arasındaki ilişkinin incelenmesi: Türkiye örneği. Dumlupınar Üniversitesi Sosyal Bilimler Dergisi, 26 (1), ss.133-145.
- Alfaro, L., Charlton, A. (2007). Growth and the quality of foreign direct investment equal?. Working Paper. Harvard University.
- Blomstorm, M., Lipsey, A. R., Zejan, M. (1992). What explains developing country growth?. NBER Working Paper, No.4132.
- Bozoklu, Ş., Yilanci, V. (2013). Finansal gelişme ve iktisadi büyüme arasındaki nedensellik ilişkisi: gelişmekte olan ekonomiler için analiz. Dokuz Eylül Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi Cilt:28, Sayı: 2, Yıl:2013, ss.161-187.
- Carcovic, M., Levine, R. (2002). Does foreign direct investment accelerate economic growth? financial globalization: a blessing or curse. World Bank Conference Washington.
- Choi, I. (2001). Unit root tests for panel data. Journal of International Money and Finance 20 (2001), pp. 249–272.

- Çeştepe, H., Mistaçoğlu, T. (2010). Gelişmekte olan ülkelerde doğrudan yabancı yatırımlar ve ekonomik entegrasyon: ASEAN ve MERCOSUR örneği. *Yönetim ve Ekonomi*, Cilt:17, Sayı:2.
- Dumitrescu, E. I., Hurlin, C. (2012). Testing for granger non-causality in heterogeneous panels. *Economic Modelling*, 29(4), 1450-1460.
- Ekinci, A. (2011). Doğrudan yabancı yatırımların ekonomik büyüme ve istihdama etkisi: türkiye uygulaması (1980-2010). *Eskişehir Osmangazi Üniversitesi İİBF Dergisi*, 6 (2), ss.71-76.
- Im, K. S., Pesaran, H. M., Yongcheol, S. (2013). Testing for unit roots in heterogeneous panels. *Journal of Econometrics*, c.115, s.53-74.
- Işık, C. (2016). Doğrudan yabancı sermaye yatırımları ve ekonomik büyüme ilişkisi: sınır testi yaklaşımıyla Türkiye örneği. *IUJEAS*, Vol. 1, Issue 1, January 2016.
- Kahveci, Ş., Terzi, H. (2017). Türkiye’de doğrudan yabancı yatırımlar ve ekonomik büyüme arasındaki ilişkilerin nedensellik analizleri ile testi. *Erciyes Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, Sayı:49, Ocak-Haziran, ss. 135-154.
- Kao, C. (1999). Spurious regression and residual-based tests for cointegration in panel data. *Journal of Econometrics* 90 (1999), pp.1-44.
- Karagöz, K. (2007). Bir sosyal politika aracı olarak doğrudan yabancı yatırımların istihdama etkisi. *Sosyoloji Konferansları Dergisi*, 36, ss.99-114.
- Kholdy, S., Ahmad, S. (2005). Financial market, FDI and economic growth: granger causality tests in panel data model. Working Paper, California State Polytechnic University.
- Koyuncu, T. F. (2011). Doğrudan yabancı yatırımların iktisadi büyüme etkisi: Türkiye için bir ekonometrik analiz. Paper Presented at Econ Anadolu, ss. 1-15.
- Levin, A., Lin, C. F., Chia-Shang, Chu, J. (2002). Unit root tests in panel data: asymptotic and finite-sample properties. *Journal of Econometrics*, v.108, p.1-24.
- Maddala, G. S., Wu, S. (1999). A comparative study of unit root tests with panel data and a new simple test. *Oxford Bulletin of Economics and Statistics*, Special Issue 0305-9049.
- Okuyan, H. A., E. E. (2007). Gelişmekte olan ülkelerde doğrudan yabancı yatırımlar ve ekonomik büyüme ilişkisi. *Ekonomik Yaklaşım*, 19(67), 47-58.
- Shaikh, F. M. (2010). Causality relationship between foreign direct investment, trade and economic growth in Pakistan. In *International Business Research* (Vol. 1, pp. 11-18). Harvard Business School.
- Sichei, M., Kinyondo, G. (2012). Determinants of foreign direct investment in Africa: a panel data analysis. *Global Journal of Management and Business Research*, 12(18), 85-97.
- Şahin, D. (2015). Türkiye’de doğrudan yabancı sermaye yatırımları ve ekonomik büyüme ilişkisi: ARDL sınır testi yaklaşımı. *Akademik Sosyal Araştırmalar Dergisi*, Yıl: 3, Sayı: 19, Aralık2015, s. 159-172.
- Wang, M., Sunny, W. M. C. (2009). Foreign direct investment and economic growth: the growth accounting perspective. *Economic Inquiry*, 47 (4), pp. 701-710.
- Yapraklı, S. (2006). Türkiye’de doğrudan yabancı yatırımların ekonomik belirleyicileri üzerine ekonometrik bir analiz. *Dokuz Eylül Üniversitesi İ.İ.B.F. Dergisi*, 2 (2), 23-48.
- Yılmaz, Ö., Vedat, K., Akıncı, M. (2011). Türkiye’de doğrudan yabancı yatırımlar ve ekonomik büyümeye etkisi (1980-2008). *Atatürk Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 25(3-4), 13-30.
- Zhang, K. H. (2001). How does foreign direct investment affect economic growth in China?. *Economics of Transition*, 9 (3), pp. 679-693.
<https://www.apec.org/>, Erişim Tarihi: 20.03.2018.



FINANCIAL MANIPULATION IN SEASONED EQUITY OFFERINGS: EVIDENCE FROM TURKEY

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ABSTRACT

Purpose- This study aims to search whether financial manipulation practices was performed on Seasoned Equity Offerings (seos) by 41 firms in Borsa Istanbul for the 2010-2015 period.

Methodology- Probit analysis and Beneish (1999) model were used in the study. 9 financial ratios were used as independent variables in the probit model in order to find out whether the firms make manipulation through these ratios. For the purpose of estimating sample firms' tendency for manipulation clustering analysis was also used. Manipulation possibilities were calculated for each firms. Finally based on average index values, firms were grouped as a having high and low manipulation tendency.

Findings- In the model, based on an event study conducted via the bulletins and reports of BIST and SPK, 20 firms were considered as manipulator while the remaining considered as control firms. It was observed that most of manipulation techniques (%89) were made in order to increase period profit.

Conclusion- It has been confirmed that firms that conducted seos applied the financial manipulation techniques during the analysis period. 3 independent variables include Asset Quality Index, Inventories / Net Sales Index and Total Accruals / Total Assets index were found to be statistically significant in determining whether firms apply financial manipulation. Based on the robustness test, the model's estimating power was calculated as %70.23. According to the model's reliability test, 11 firms were found as a having high manipulation tendency. This finding refers success rate for estimating manipulator firms in our model is % 55 (11/20).

Keywords: Financial manipulation, seasoned equity offering, beneish model, probit analysis.

JEL Codes: C23, G10, G32

1. INTRODUCTION

The accuracy of financial statements reported by the companies to the public can be among the most important factors in the investment decisions of current and potential investors. Therefore, financial statements should include accurate, transparent, appropriate and comparable information (Uluslan, 2008:141). In order to ensure financial information contains accurate, reliable and current values, independent auditing processes are implemented in the world and in Turkey and financial statements are prepared based on international financial reporting standards (IFRS).

However, despite the auditing principles, standards, etc. applied in order to reach the object above mentioned, it can be seen that companies may apply to some wrong, misleading transactions in the financial reports they publish periodically. In the literature, these initiatives of the companies are called financial statement manipulation. Financial manipulation can be defined as a deliberate attempt to deceive and mislead information users especially investors and buyers, through the preparation of financial statements that contain false and misleading information (Rezaee, 2005: 279). Manipulation of financial information can be emerged through some different ways such as earning management practices include (Spathis vd., 2002:510):

- Inflation of the company's assets, sales and profit figures,

- Reflecting amount of the liabilities, expenses and losses to the financial statements lower than fair value,
- Not providing adequate information about these financial items.

Figures presented on the financial tables may contain incorrect and misleading information due to mistakes and fraudulent transactions. The most important factor that separates the manipulative transactions included in the financials from the errors is whether the transaction that caused the misrepresentation of the financial statements is deliberately made or not.

American Institute of Certified Public Accountants - AICPA, separates incorrect information that causes fraudulent in financial statements, into the two sections as incorrect information due to fraudulent financial reporting and due to mal management of company assets (AICPA, 2002:1721-1722).

According to Association of Certified Fraud Examiners - ACFE; fraud is misrepresenting or deceiving actions that individuals or organizations make although they are aware of the fact that if these actions are performed it will result in an unjust and unfair gain to the individuals, companies or other parties. Therefore, it is necessary to evaluate the errors and fraudulent applications differently. They should not be considered as they have same meanings.

The fraudulent and misleading practices seen on the financial statements can occur as follows (Rezaee, 2005: 279) :

- 1- Falsification, alteration or manipulation of financial and other supporting documents related to commercial transactions,
- 2- Transactions, accounts and other important informations that constitute the basis for the preparation of financial statements may contain deliberately wrong and / or misleading figures.
- 3- Deliberately misapplication or interpretation of accounting standards, principles, policies and methods used to measure, record and report economic events and business transactions,
- 4- Intentional negligence and insufficient disclosure and presentation related to accounting standards, principles, practices and financial information.
- 5- Using aggressive accounting techniques with illegal earnings management practices,
- 6- The manipulation of accounting techniques applied under existing accounting standards, which are very detailed, very easy to manipulate and include some legal gaps that lead firms to hind their real economic performance.

There are three main financial manipulation techniques that companies have implemented using the above-mentioned applications; Earnings Management, Income Smoothing, Creative Accounting Practices (Mulford, Comiskey, 2002: 3).

Earnings management can be defined as manipulative process performed by companies on the period profit / loss item in order to be considered less or more profitable.

There is no clear consensus in the literature on the definition of earnings management concept, but there are three different approaches (Beneish, 2001:4) :

- By taking advantage of restrictions seen in the generally accepted accounting principles and in other accounting regulations, publishing desired earning figures with intentional steps taken in the preparation of financial reports.
- For the purpose of earning management, making intervention to the reporting process made to external information users. When we extend this definition a bit further, we find two sub-items of earning management: Timing management and real earnings management that occurs in the form of changing reported earnings or some of its sub-items.
- Earnings management is performed based on implementations made by managers in financial reports when they mislead some stakeholders about the company's real economic performance or adjusting and restructuring financial reports that affect the decisions about the company.

Income smoothing is keeping the earnings of the various periods relatively stable and ensure to avoiding revenues from sharp fluctuations. The main reason lies behind of the stabilization of the profits is the desire of the companies to meet the profitability expectations of the markets and they realize this by reducing the R&D, marketing and selling, general administrative expenses or postponing or canceling a new project (Acharya, Lambrecht, 2015 : 2534).

There are two basic factors that lead companies to implement income smoothing. (Li, Richie, 2016: 176):

- When the profits become smooth, it will be easier for investors to estimate firms' future earnings.
- Presenting financial figures through smoothing, in fact, means deceiving analysts and other groups interested in the company by manipulating items in the financial reports. Thus it means that managers can take more advantage of managerial incentives.

Company executives want to keep profit and growth rate balanced and steady in order to ensure sustainability of their positions in the firm and obtain higher financial rights. Because when the firm's growth rate is high and its performance is good, the increase in the company's profitability will not create a big impact on the shareholders, whereas it will have a significant positive impact when the company has a bad or average performance (Zhang, 2016 : 1).

Creative accounting is defined as the fulfillment of the priorities of parties who prepare financial data by making some calculations and publishing them in the financial statements through taking advantage of the gaps and resiliency in the legal regulations. Firms that want to change or hide the undesirable consequences of financial situations and activities (Çelik, 2016:50) usually carry out this practice.

There are two aspects of researching creative accountancy: The first one and in other words the positive one, is an examination of the financial accounting principles and instruments used to describe the macro and microenvironment of an entity and this method specifies how much accounting practices should be changed. The second or negative one is that firms make suspicious and unethical practices even in partial of the financial statements in order to influence investors and gain the trust of stakeholders (Tassadaq, Malik, 2015 : 545)

Creative accounting techniques may provide some advantages such as decreasing cost of capital, but in the medium and long-term, it will cause loss of investors' confidence about the company. (Çelik, 2016:50).

In the literature, both national and international studies have also showed that firms, which implement seasoned equity offerings, may apply financial manipulation. It has been determined that companies that go to the public again through seasoned equity offerings, may also attempt to mislead investors in financial reports published prior to share issuance in order to maximize issuing revenue. Particularly, firms issuing shares may increase their profitability before the issuance by changing their discretionary accruals published in financial reports (Teoh et al., 1998 : 64).

In the next section, a summary of the previous studies in the literature on financial manipulation is given.

2. LITERATURE REVIEW

The manipulation of financial statements has been the subject of many researches at both national and international studies. Among the studies, the best known are the models of Healy (1985), DeAngelo (1986), Jones (1991) Beneish performed in 1997, 1999 and 2001 (Küçüksözen, 2004 : 250).

Healy (1985) argued that managers are constantly manipulating financial statements in order to obtain and sustain managerial incentives. He underlined that, for this purpose, the companies used discretionary accruals in their financial statements. In his study, total accruals are calculated by subtracting the cash flow based on the main operations from the net profit. He also obtained discretionary accruals by eliminating non-discretionary ones. Having analyzed the sample of 94 firms between 1930 and 1980, Healy found that firms usually apply period profit increasing techniques first and then apply profits reduction methods since firms cannot apply period profit increasing techniques every year because of particularly auditing process.

DeAngelo (1986) argued that publicly held companies may apply period profit reducing techniques in order to minimize repurchasing costs of stocks in the delisting process. In his study, he examined the sample of 64 firms in the US between 1973 and 1982, and tested whether the firms were making manipulation using the accruals in the financial statements during the stock recall process. However, the results of the analysis in the model did not fully confirm that firms applied to financial manipulation to reduce the period profit. The study may be considered unique in terms of the quality of firms included in the sample because all of the firms consist of companies that have determined a critical decision such as an exit the stock market.

Jones (1991) analyzed 23 firms from 1980 to 1985 in the US, he conducted the test to see wheter firms apply financial manipulation in order to reflect lower period profit through using custom tariffs. He analyzed the manipulative transactions through discretionary accruals as in other studies. In order to calculate the discretionary accruals, he first made a distinction between normal and abnormal accruals in the analysis and assumed that the discretionary accrual was an element of abnormal accruals. Because according to the author the non-discretionary accruals will remain stable or will not change much over the years, therefore the firm will carry out manipulative transactions via the discretionary accruals. If the change in the total accrual year-to-year is negative, it means that the financial manipulation process is performed by using discretionary accruals. In the study, the author calculated the abnormal accrual by subtracting the accrued amount of the current period from the normal accrual, which is the total accrual of the previous period. According to the result of the model, it was concluded that during the analysis period, firms reported low profits in order to benefit from custom tariffs.

Beneish (1997) used the probit model in his study to estimate manipulative transactions in financial statements. Sample firms were divided as manipulators, which performed manipulation practices in the financial statements and control firms that did not. In the analysis covers 1987-1993 period, 64 firms that were regarded to manipulate the financial statements

by the SEC, the regulator of the capital market in the US, were considered as manipulators. In addition, as control firms, he analyzed 1,989 firms that had a high accrual in financial statements such as manipulator firms but did not involve any fictitious transactions. In his study, he found that manipulator firms performed poorly in medium and long term and their performance changed seriously from period to period. In the model, 6 variables were used to determine the make-up on the financial statements and 7 variables used to measure the tendency of companies for manipulative processes. These variables are shown in Table 2 and Table 3.

Table 1: Independent Variables Created to Determine Makeup Transactions in Financial Statements

| VARIABLE | DESCRIPTION | CALCULATION |
|--|---|---|
| Trade Receivables Index | It measures the consistency between the change in trade receivables and in sales. | Change in Trade Receivables % / Change in Sales % |
| Gross Profit Margin Index | It measures the commercial profitability in other words the sustainability of the firm. | Gross Profit / Sales |
| Active Quality Index | It measures the risk / ability to convert assets into money. If the rate is higher than one, it is an indication that the company is in a tendency to postpone its costs capitalization. | Fixed Assets (excluding Land, Facilities and Equipments) / Total Assets |
| Amortisation Index | The change in depreciation expense is measured. In this way it is measured whether the firm slows down these expenses to increase the period profit. | Current Year Depreciation / Previous Year Depreciation |
| Marketing Sales Distribution and General Administrative Expenses Index | This index analyzes the trends in general administrative expenses with sales. Management costs, which are higher than sales, are considered as an indicator for manipulative movements. According to Beneish, there is a positive relationship between this index and financial manipulation. | (Marketing Sales Distribution and General Administrative Expenses on Current Year/ Sale Revenue on Current Year) / (Marketing Sales Distribution and General Administrative Expenses on Previous Year/ Sale Revenue on Previous Year) |
| Total Accruals to Total Assets | This rate measures how much the period profit is based on the cash assets. The increase in this ratio indicates a possibility of a financial manipulation of the company. | Cash Net Operating Capital on Current Year / Cash Net Operating Capital on Previous Year |

Reference : Beneish (1997: 10 – 12)

Table 2: 7 Variables Developed to Measure Tendency of Manipulative Processes of Firms

| VARIABLE | DESCRIPTION |
|------------------------------|---|
| Capital Structure | It shows the firm's debt and equity composition. If the firm's financing policy is more in the form of equity, possible increase in firm leverage may be signal for manipulative process. |
| Historical Stock Performance | The decrease in the stock price of the company may lead company managers to have the idea that they will make manipulative operations in financial statements in order to ensure stock prices peek and thus they may get serious returns. |
| Shareholding Structure | If the owner-manager concept is in question, that is, if the top management of the firm has a share in the company's capital at the same time, the managers may want to take advantage of the fluctuations in the share price. |
| Quotation Timing | Firms' IPO time is the period when financial manipulative movements are seen most. For this reason, there is a high possibility of applying fraudulent transactions in the financial statements of companies that go to the public. |
| Growth in Sales | If sales fluctuated very harshly up or down compared to the previous period, this may be regarded as a sign of a manipulation made in the sales item of the company's income statement. |
| Independent Audit Company | The auditing techniques, ability to detect mistakes and misrepresentations in the financial statements and loyalty to ethical values of an independent auditor influence the potential for manipulative operations of the company. |

Reference: Beneish (1997: 10 – 12)

Beneish (1999), has updated his study conducted in 1997. In his new model, he changed variables and sample and also probit analysis. He added Growth in Sales and Change in Firm Leverage variables to the independent variables pool, which includes 6 variables, were created to detect manipulative transaction observed in the financial statement. In this study, 74 firm's data were used instead of 64 firms used in the previous study. First, he separated firms as manipulator and control firms. Then he he revised definition of control firm and described them as firm operating in the same industry as manipulator firms in his updated study.

There are lots studies related financial manipulation on seasoned equity offerings. Table 2 summarizes studies by author and year as follows:

Table 3: International Studies Related Financial Manipulation on Seasoned Equity Offerings

| AUTHOR(s) | YEAR | FINDINGS |
|----------------|------|--|
| Teoh et al. | 1998 | They analyzed pre and post issue financial statements of firms in the industrial sector for the period of 1976 – 1989. Investors are overly optimistic about the future of the firm before the issuance because of the aggressive use of Period Profit Increasing Techniques. The net profitability of firms that issued seasoned equity offerings during the year of issuance was 1.69% higher than the similar firms, while it was 1.60% and 0.32% less in the following two years after the issuance. They found out that short-term discretionary accrual is the most open to managerial manipulation among these four accruals and it is the most significant determinant of the post-issue financial performance |
| Islam et al. | 2002 | They reviewed the financial statements of 32 industrial companies for three years before and after the issuance. The financial performance indicators used in the analysis are; Operating Income & Loss Margin, Net Income Margin, Asset and Equity Profitability Ratio, Operating Income & Loss Margin / Total Assets ratios. They stated that the companies made public offering had remarkable operating performance before issuance but there was a significant decrease in their performance after the issuance. It has been found that the decline in operating performance seen in the post-issue period is much more severe in small-scale firms than in the large ones. |
| Jo and Kim | 2008 | Examined financial statements belong to the period include 3-years pre-and post- seasoned equity offerings and analyzed return of stocks up to 5 years after the public offering. They have investigated the relationship between the firms' ethical and public disclosure practices and the company's long-term performances. They stated that firms that apply public disclosure practices regularly and become transparency are less tend to apply financial manipulation and therefore such firms will have a higher long-run performance |
| Shu and Chiang | 2014 | Analyzed the sample that consists of 463 industrial firms' financial statements prepared the quarterly basis for last 5 years by eliminating public and financial institutions. In small firms, it was determined that the timing effect of seasoned equity offerings was negatively correlated with the short-term existence of the firm and the positive with long-term existence. For large firms, it has been determined that earnings management is positively correlated with short-term wealthy while it is negatively correlated with long-term prosperity. In firm size - based analysis, they observed that large firms are often tend to implement earnings management practices, while small-scale firms are more on market timing. Discretionary accruals for large firms were found to be positively associated with short-term announcement effect and negatively associated with post-issue profitability. |
| Kothari et al. | 2016 | Have examined the role of manipulation through accruals and real activities in reducing overvaluation seen in the seasoned equity offerings at the time of the issuance. They name earning management practices performed through opportunistic reductions particularly in R&D, marketing and general administrative expenses as manipulation made based on real activities. According to the results of the analysis, although they were much more costly than their long run returns, authors found that firms managers were more inclined to manipulate financial figures through real activities. |
| Fang | 2017 | Analyzed the existence of real and accrual earnings management applications before and after seos by using modified Jones (1991) model and Roychowdhury method. According to results, it was determined that real and accrual earnings management application were observed both on before and after seos. Also he found out that real and accrual earning management practies are highly correlated and accrual earning management has a more impact on short – term peformance of the firms. |

3. DATA AND METHODOLOGY

3.1. Sample Construction

In this study, it was investigated whether sample that consist of 58 firms conducted seasoned equity offerings between 2010 and 2015 period applied financial manipulation or not. Firms operate in the financial sector and do not have adequate data set were eliminated and thus the number of sample firms included to analysis became 41. The financial data of the firms included in the sample were obtained from Public Disclosure Platform (www.kap.org.tr) and statistical analyzes were performed using SPSS program and E - Views 8 version.

In the sample, the breakdown of the firms that their shares traded in markets of the BIST are respectively; 19 firms (46,34%) in the main market, 12 firms (29,27 %) in star market, 4 (9,76 %) in developing market and 6 firms in other markets. However, when the sample firms separated based on groups according to BIST classification, we observed that 23 firms (56,10 %) in A group, 7 firms (17,07 %) in C group, 6 firms (14,63 %) in B group and 4 firms (9,76%) in D group.

The index-based breakdown of the sample firms is shown in Table 4.

Table 4: Breakdown of the Firms Based on Index

| INDEX | NUMBER OF COMPANIES | % |
|--|---------------------|----------------|
| BIST MAIN | 19 | 46,34% |
| BIST EMERGING COMPANIES | 4 | 9,76% |
| EQUITY MARKETS FOR QUALIFIED INVESTORS | 2 | 4,88% |
| PRE-MARKET TRADING PLATFORM | 2 | 4,88% |
| WATCHLIST | 2 | 4,88% |
| BIST STARS | 12 | 29,27% |
| GRAND TOTAL | 41 | 100,00% |

Sector-based breakdown of the sample firms is shown in table 5.

Table 5: Breakdown of the Firms by Sector

| SECTOR | NUMBER OF COMPANIES | % |
|---------------------|---------------------|-----|
| FOOD | 6 | 15% |
| ELECTRICITY | 4 | 10% |
| HOLDING COMPANY | 3 | 7% |
| CHEMISTRY | 4 | 10% |
| MACHINE | 3 | 7% |
| TEXTILE | 3 | 7% |
| ALCOHOLIC BEVERAGES | 2 | 5% |
| CEMENT | 2 | 5% |
| FERTILIZER | 2 | 5% |
| CONSTRUCTION | 1 | 2% |
| FURNITURE | 2 | 5% |
| RETAIL | 2 | 5% |
| PACKING | 1 | 2% |
| PRINTING PRESS | 1 | 2% |
| AUTOMOTIVE | 1 | 2% |
| SPORTS | 1 | 2% |

| | | |
|--------------------|-----------|----------------|
| AGRICULTURE | 1 | 2% |
| TOURISM | 1 | 2% |
| PUBLISHING | 1 | 2% |
| GRAND TOTAL | 41 | 100.00% |

When we review the breakdown of the sample firms by sector, we realized that the vast majority of firms are composed of food, electricity, holding, chemical, machinery, textile sectors.

The breakdown of the sample firms on the basis of the equity code is shown in Table 6.

Table 6: Sample Breakdown Based on Equity Code

| EQUITY CODE | NUMBER of COMPANY | % |
|--------------------|-------------------|----------------|
| - | 1 | 2,44% |
| A | 23 | 56,10% |
| B | 6 | 14,63% |
| C | 7 | 17,07% |
| D | 4 | 9,76% |
| GRAND TOTAL | 41 | 100,00% |

3.2. Model

Financial statements and independent audit reports of sample firms were analyzed, the weekly bulletin of CMB and daily bulletin of BIST related to these firms were also reviewed.

The following methodology has been performed for determining whether firms in the sample are manipulators:

- Firms having qualified or unfavorable independent audit reports,
- Firms having marginal changes in the profitability ratios compared to pre capital increase period,
- Companies that are found to have received a warning, especially punishment, due to their financial table applications as a result of the examinations made by CMB and BIST and published in their reports and bulletins.

These firms were accepted as manipulators and the other companies were analyzed as control companies. As a result of this methodology, 20 firms were accepted as manipulators (49%) and 21 firms (51%) were accepted as control firms in the model.

In the study, balance sheets and income statements of the companies covered for the period of 2010-2015 were analyzed. However, 2010 was taken into consideration as base year for the calculation because each company in the sample has a different issuance date. In order to prevent overlapping problem, if firms made two or more issues in the same analysis period, the first issuance was included to analysis while the others excluded from model construction. Years considered as the base year, previous year and following year symbolized as respectively t , $t - 1$, and $t + 1$.

The summary financial information for the sample, which is separated as the manipulator and control companies, is shown in Table 7 below.

Table 7: Summary Financials of Manipulator and Control Firms

| SUMMARY FINANCIALS of SAMPLE FIRM TYPE | AVERAGE | |
|---|----------------|----------------|
| | Manipulator | Control |
| TOTAL ASSETS | 20.247.396.002 | 44.680.412.004 |
| NET WORKING CAPITAL | 789.573.208 | 1.305.668.646 |
| TOTAL DEBTS | 13.000.829.985 | 24.266.847.017 |
| LEVERAGE RATIO | 67,25% | 71,47% |
| SALES | 8.967.556.007 | 16.516.046.603 |
| SALE GROWTH RATE | -29,45% | -30,49% |

It can be seen that the manipulator firms in the sample are composed of relatively smaller firms. The average asset size of the manipulator firms is lower than the control firms. Manipulator firms' net working capital is similarly lower compared to control firms. From the viewpoint of total debts item, although the debt amounts of the manipulator firms seem less than the control firms it is seen that the leverage ratios of the manipulator firms are higher than the control firms. This increases the financial risk of the manipulators and makes them more fragile to interest and exchange rate shocks. However, the use of debt at a high rate may have been preferred because financing costs have led to higher profit per share due to the tax advantage. In terms of sales growth rate, it is observed that manipulator firms perform far behind the control firms.

The financial manipulation techniques performed by the companies included in the sample during the analysis period of 2010 - 2015 are summarized in the following table 8 and table 9 based on Küçüksözen's (2004) classification:

Table 8: Period Profit Increasing Techniques

| I - The Type of Technique Used | No of Observations |
|--|--------------------|
| None or underrecognition of Depreciation and amortization expenses. | 3 |
| Manipulation related to provisions for advance payments. | 2 |
| Excluding some subsidiaries from consolidation. | 1 |
| None or underrecognition of provision amount for losses. | 15 |
| Unconfirmed debt and receivable amounts. | 3 |
| Accrual processing for a revenue item that is not precisely known to be accurate. | 1 |
| None or miscalculation of deferred tax asset item. | 16 |
| None or underrecognition of provision amount related to legal penalties. | 2 |
| None or miscalculation of the provision for doubtful receivables from related and unrelated parties. | 20 |
| Recognition of consignment sales as sales in the income statement. | 4 |
| Reflecting interest on loans and exchange rates as asset items to the balance sheet. | 1 |
| Displaying Brand Value in the balance sheet. | 8 |
| Overvaluation of existing assets. | 3 |
| GRAND TOTAL | 79 |

Table 9: Period Profit Reducing Techniques

| II - The Type of Technique Used | No of Observations |
|---|--------------------|
| None or miscalculation of deferred tax asset item. | 4 |
| Related Party Transactions and Implicit / Camouflaged capital transactions | 3 |
| Related Party Transactions and Implicit / Camouflaged capital transactions - Providing funds to group companies at lower interest rates than their peers. | 1 |
| Causing to lose for the company by making pricing for the benefit of its related parties. | 1 |
| The loss of the company due to the share transfer agreements made by related companies. | 1 |
| GRAND TOTAL | 10 |

While 89% of the manipulative transactions performed by the companies constitute transactions to increase the period profit, 11% constitute transactions aiming to decrease the period profit. Transactions conducted to increase the period profit are operations aimed to increase the credibility of the company for its partners include the customers, financial institutions, investors and funds etc. and these are usually designed to provide cheap funds to the firm. During the analysis

period, the most performed ones were respectively; none-recognition or inadequate of provision for doubtful receivables from related or unrelated parties, mistakes made in the calculations related to deferred tax and impairment provision items. Transactions aimed to reduce the period profit are generally carried out in order to decrease company's tax liability. The vast majority of these transactions consist of mistakes made in calculations related to deferred tax assets and implicit capital transfers.

The Beneish model will be applied to measure whether firms that make seasoned equity offerings apply earnings management practices. There are two main reasons for choosing the Beneish model. (Küçüksözen, 2004: 291) :

- In addition to the analysis of accruals included in the financial statements, this model also considered financial ratios as independent variables in the calculations,
- Beneish model allow making analysis for the two years. Because each company in our sample has a different issue year, financial statements were analyzed under the three-year section are respectively pre-issuance year, issuance year and post-issuance year through the Beneish Model.

There are two types of errors may be encountered in the Beneish model: (Beneish, 1999 : 16)

Error Type 1 : Manipulator firm may be regarded as a company that does not perform financial manipulation.

Error Type 2: Designation of the sample firms as manipulator even if they do not make or apply.

Investors are likely to suffer losses if they encounter both of these types of errors, which described in Beneish model. In error type 1, investors will lose due to the purchasing stocks of firms which are manipulator indeed. Therefore, it is very clear that they will lose as firm's real operating performance come out. In the error type 2, the investors do not make the loss when they perceive firms as a manipulator, which are not indeed, but they will not tend to buy their shares. This means investors will miss chance to buy shares of companies that are not manipulator and carry potential high returns based on their financial performance. Loss of investors are defined as the opportunity cost in case of the increase in stock prices of firms that are perceived as manipulator. As a result, the loss caused by the Error Type 1 will be higher and the this type of error will be more important for the investors (Beneish, 1999 : 16).

The following model of Beneish (1999) has been applied to firms performed seasoned equity offerings by using the financial data of 2010, which is the first year of the analysis period:

$$M_i = \beta X_i + \epsilon_i$$

The definition of the terms in the formula is shown below:

M_i : Dependent Variable,

X_i : Independent Variable,

B : Coefficients of independent variables

ϵ_i : Error term

Probit analysis was performed using the independent variables in the model. Dependent variables are considered as 1 for the manipulator firms and 0 for the controller firms and the coefficients and error terms of the variables in the equation are calculated (Küçüksözen, 2004: 291).

As the independent variables included in the model, the variables of Küçüksözen's study published in 2004 were used. In this model, the variables included in the study of Beneish in 1999 were used. In addition, instead of the sale growth index of used in Beneish's study, inventories / net sales ratio and financing expenses / net sales ratio were used.

When considering that most of financial manipulation transactions are being made via the capitalization of financing expenses and inventory valuation methods in Turkey, in this study it has been accepted to add inventories / net sales ratio and financing expenses / net sales ratios to the model like in Küçüksözen's study.

The main explanatory variables used in the study and the formulas of these variables are shown below:

The trade receivables index reflects the change in the trade receivables of the company in the year of issuance compared to the previous year. An unexpectedly high increase in the index may be perceived as a sign of the possibility of financial manipulation by the firm. Under normal circumstances, the company has a sales policy according to its customer portfolio and product tree. Under this policy, it is certain how much of the company sales will be carried out as advance sales and the average term and interest rates are determined in credit sales.

If there is no radical change in the firm's operations, it is not expected that the sales policy will change at least in the short run. Therefore, a significant increase in this index compared to last year can be interpreted as financial manipulation in which the firm has increased its sales and/or receivables in order to increase the period profit. The most common methods

used to inflate the receivables and sales, as well as in our sample, include showing consignment sales as real sales and showing unconfirmed amounts of debts and receivables in the balance sheet.

$$TRI_t = \frac{\text{Trade Receivables}_t / \text{Net Sales}_t}{\text{Trade Receivables}_{t-1} / \text{Net Sales}_{t-1}} \quad (1)$$

The gross profit margin index shows the change in the gross profit in issuance year compared to the previous year. Decline in the index or becoming lower than 1 indicates that the gross profit of the company is narrowing. Gross profit is described as a difference that is calculated by subtracting costs that are incurred to accomplish sales from net sales amount. It is one of the most important criteria of the sustainability of the company together with operating profit. It is possible to interpret this decrease as the firm can not generate sustainable cash flow in the medium and long term.

$$GMI_t = \frac{\text{Gross Profit Margin}_t / \text{Net Sales}_t}{\text{Gross Profit Margin}_{t-1} / \text{Net Sales}_{t-1}} \quad (2)$$

The asset quality index refers to the change in the value of other fixed assets held by the firm in the year of issue compared to the previous year. The reason for taking other fixed assets as a base is that most of the manipulative transactions are performed through capitalization of expenses amount of items related to this group rather than reflecting to the income statement as period expenses or loss.

$$AQI_t = \frac{(1 - \text{Current Assets}_t + \text{Fixed Assets}_t) / \text{Total Assets}_t}{(1 - \text{Current Assets}_{t-1} + \text{Fixed Assets}_{t-1}) / \text{Total Assets}_{t-1}} \quad (3)$$

The depreciation index shows the change in the depreciation in issuing year compared to the previous year. Beneish (1999) calculated the depreciation rate as depreciation / depreciation plus net tangible assets. Küçüksözen (2004), because he could not obtain depreciation expense amount from balance sheet directly, he considered the depreciation expense as the difference between the tangible fixed assets of two periods. Since the depreciation expenses of each periods can be obtained directly from financial statements prepared based on International Financial Reporting Standards (IFRS) for the period 2010-2015, we did not need to make calculations to reach depreciation figures. If index becomes less than 1 this indicates that the firm may have carried out financial manipulation by changing the calculation method or increasing the useful life of the asset to show a higher period profit.

$$AI_t = \frac{\left(\frac{\text{Change in Accumulated Depreciation}_t}{\text{Change in Accumulated Depreciation}_t + \text{Tangible Assets}_t} \right)}{\left(\frac{\text{Change in Accumulated Depreciation}_{t-1}}{\text{Change in Accumulated Depreciation}_{t-1} + \text{Tangible Assets}_{t-1}} \right)} \quad (4)$$

Marketing, sales, distribution and general administrative index; Beneish (1999), in his model accepted that marketing and general administrative expenses are related to sales and disproportionate increase in this relation should be considered as negative about company's future expectations by the financial analyst. A firm with this profile can be expected to be more inclined to financial manipulation. Küçüksözen (2004) states that if this index is subject to high increase, it indicates that except for efficiency in company's operations, this also shows that company may apply financial manipulation by inflating its sales or reducing its expenses.

$$MSA_t = \frac{\frac{(\text{Marketing, Selling and Distribution Expenses}_t + \text{General Administrative Expenses}_t)}{\text{Net Sales}_t}}{(\text{Marketing, Selling and Distribution Expenses}_{t-1} + \text{General Administrative Expenses}_{t-1}) / \text{Net Sales}_{t-1}} \quad (5)$$

The change in the liabilities structure indicates the change in the company's leverage level. This index shows a change in firm's leverage level in issuing year compared to previous year. If index increases sharply or exceed 1 refers to company's increased financial risk. In case of increased financial risk, firm management can offset bank loans with buyers or expense accounts in order to avoid existing and potential investors having a negative perception about the firm (Küçüksözen, 2004 : 308).

$$LVGI_t = \frac{\left(\frac{\text{Short Term Liabilities}_t + \text{Long Term Liabilities}_t}{\text{Total Assets}_t} \right)}{\left(\frac{\text{Short Term Liabilities}_{t-1} + \text{Long Term Liabilities}_{t-1}}{\text{Total Assets}_{t-1}} \right)} \quad (6)$$

The ratio of total accruals to total assets index; much of the studies on financial manipulation focus on manipulative transactions through the using accruals. According to the principle of based on accrual recording method, income and expenses are recorded when they occurred rather than when they are paid or collected. Therefore, firms may want to show the current period profit as higher or lower by using these non-cash transactions. Total accruals are calculated as the change in operating capital excluding cash and depreciation. The purpose of using this index is to explain the relationship between the exchange of the firm's non-cash capital and financial manipulation. (Küçüksözen, 2004 : 309).

$$TATA_t = \frac{(\text{Current Assets}_t - \text{Cash and Cash Equivalent}_t - \text{Short Term Liabilities}_t - \text{Principal Installments And Interests of Long - Term Liabilities}_t - \text{Taxes Payable And Other Fiscal Liabilities}_t) - \text{Amortisation Expenses}_t}{\text{Total Assets}_t} \quad (7)$$

Inventories / Sales ratios and Financing Expenses / Sales ratios were not included in Beneish (1999) but used in Küçüksözen (2004) model. The reason for considering these ratios as variables in our model is that in many manipulative transactions are being made through the usage of the inventories and financing expenses (Küçüksözen, 2004 : 309 – 310). The financial data set used in our study consists of the financial statements prepared according to IFRS through independent auditing of the companies. In income statement, which is one of these tables, because of the gross sales item is not used therefore in the calculations net sales item will be included as sale amount information.

The ratio of inventories to net sales index indicates change in inventories ratio in issuing year compared to previous year. In particular, firms may tend to show lower or higher profits for the current period by changing inventory valuation methods and by classifying general production costs under the cost of goods sold and inventories via the various type of methods (Küçüksözen, 2004 : 309). The increase in this index indicates that the share of inventories increases faster than sales. This ratio shows that firms can apply for financial manipulation in order to show the cost of goods sold low and presenting high period profit.

$$ICR_t = \frac{\text{Inventories}_t / \text{Net Sales}_t}{\text{Inventories}_{t-1} / \text{Net Sales}_{t-1}} \quad (8)$$

The ratio of financing expenses to net sales; this index represents the change in the ratio in issuing year compared to the previous year. In case of being lower than 1, this can be perceived as a sign of financial manipulation that the firm has made by capitalization of financing expenses under the cost of assets purchased or under the production costs in order to show the higher period profit. In the opposite case, the firm may perform the manipulation for reducing the period profit by showing financing expenses in the income statement as the deduction item from profit.

$$FSR_t = \frac{\text{Financing Expenses}_t / \text{Net Sales}_t}{\text{Financing Expenses}_{t-1} / \text{Net Sales}_{t-1}} \quad (9)$$

Within the framework of the above-mentioned independent variables, the data of the manipulator and the control companies for the 2010 – 2015 period are analyzed. The central distribution characteristics are presented in Table 10.

Table 10: Distribution Characteristics of Independent Variables for Manipulator and Control Companies

| | Control Companies (21) | | Manipulator Companies (20) | |
|-------------------------|------------------------|--------|----------------------------|--------|
| | Mean | Median | Mean | Median |
| <i>TRI_t</i> | 1.36 | 1.05 | 1.60 | 0.88 |
| <i>GMI_t</i> | 1.36 | 0.98 | 2.69 | 0.97 |
| <i>AQI_t</i> | 2.07 | 1.14 | 1.15 | 1.00 |
| <i>AI_t</i> | 11.67 | 0.36 | 3.17 | 0.56 |
| <i>MSA_t</i> | 1.04 | 0.95 | 1.22 | 1.01 |
| <i>LVGI_t</i> | 1.00 | 0.87 | 0.96 | 0.91 |
| <i>TATA_t</i> | -0.05 | -0.03 | 0.07 | 0.04 |
| <i>ICR_t</i> | 1.36 | 1.11 | 1.20 | 0.99 |
| <i>FSR_t</i> | 1.62 | 1.00 | 2.21 | 1.09 |

According to the information presented in Table 10, as a consistent with findings of Beneish study (1999), the average TRI index is higher for manipulator companies than control firms. This can be interpreted as a signal that manipulator companies perform credit sales at a higher rate, recording consigned sales in the income statement under the sale revenue item or tend to increase their sales figures through counterfeit invoices.

The higher average of GMI observed in manipulator firms is consistent with Beneish study (1999). This is evidence that manipulator companies tend to show higher profit margins in their financials. This finding is consistent with the fact that the vast majority (89%) of companies that are expressed as manipulators from sample firms use period profit increasing methods.

When the results are analyzed in terms of asset quality (AQ), consistent with the results of Beneish (1999), the asset quality of manipulator companies seems to be worse than control companies. This can be regarded as a demonstration of why manipulator companies approach to use manipulation way.

When the results of the table are evaluated in terms of amortization expense (AI), it is available to see that, on the contrary to Beneish (1999) study, manipulator companies do not manipulate financial information through depreciation when compared to control companies. It was observed that the depreciation costs of the control companies are much higher than the manipulator companies.

By analyzing the results presented in the table by ratio of sales to marketing, selling and general administrative expenses (MSA), it is determined that manipulator companies have a higher MSA than control companies, contrary to the findings of Beneish (1999). This presents evidence that manipulator companies tend to disclose lower profitability by showing more expenses.

In terms of the change in leverage structure (LVGI); unlike the findings of Beneish (1999), manipulator firms seem to finance their activities less by borrowing than control firms. In fact, this conclusion implies that the manipulator companies don't need to resort to this path.

Results related to total accruals / total assets ratio that shows the proportion of non-cash working capital in total assets reflect positive results observed for manipulator firms consistent with Beneish study while it reflects the negative results for the control firms. This implies that manipulator companies finance their working capital through shareholder equity and control firms prefer to finance working capital with debt.

In terms of the inventories to sales ratio (ICR), the results based on table indicate that manipulator companies seem to have a smaller inventory amount than to control companies. This implies that manipulator companies are operating with lower inventory levels. This may be due to the fact that the manipulator companies are relatively smaller companies. Since this variable is not included in the study of Beneish (1999), the comparison could not be conducted with that study. Finally, when the results of the table are analyzed in terms of the financing expenses to sales ratio (FSR), manipulator companies are seem to be at higher levels of financing costs compared to control companies. This means that manipulator companies are smaller and have higher access costs to financing. Since this variable is not included in the study of Beneish (1999), the comparison could not be conducted with that study.

4. FINDINGS and DISCUSSIONS

4.1. Probit Analysis

In the analysis, 9 index defined above were used as independent variables while dummy variable that indicates whether firms are manipulators was used as dependent variable. Probit analysis was performed using Eviews 9.0 program and other analyzes were performed through SPSS 22 program. The analysis results are presented in Table 11.

Table 11: Probit Analysis Results Regarding Manipulator and Control Companies

| Method#: | ML-Binary Probit | | | |
|---------------------|------------------|-----------------------|----------------|--------------|
| Obs.: | 41 | | | |
| Variable | Coef. | Std. Error | z stat. | Prob. |
| Constant | -0.53 | 0.98 | -0.54 | 0.58 |
| TRI _t | 0.16 | 0.20 | 0.84 | 0.39 |
| GMI _t | 0.08 | 0.11 | 0.73 | 0.45 |
| AQI _t | -0.40* | 0.23 | -1.76 | 0.07 |
| AI _t | -0.009 | 0.007 | -1.22 | 0.22 |
| MSA _t | 0.81 | 0.75 | 1.08 | 0.27 |
| LVGI _t | 0.80 | 0.79 | 1.01 | 0.30 |
| TATA _t | 3.05* | 1.56 | 1.94 | 0.05 |
| ICR _t | -0.99* | 0.54 | -1.83 | 0.06 |
| FSR _t | 0.15 | 0.13 | 1.10 | 0.26 |
| Mc Fadden R squared | 0.30 | Mean Dependent var | | 0.48 |
| S.D. Dependent var | 0.50 | S.E. Of regression | | 0.46 |
| AIC | 1.45 | Sum squared resid | | 6.64 |
| SIC | 1.87 | Log likelihood | | -19.78 |
| HQI | 1.60 | Deviance | | 39.57 |
| Restr. Deviance | 56.81 | Restr. Log likelihood | | -28.40 |
| LR stat. | 17.24 | Avg. Log likelihood | | -0.48 |
| Prob. (LR stat.) | 0.04 | | | |
| Obs with Dep:0 | 21 | | | |
| Obs with Dep:1 | 20 | | | |

Note: #; *Convergence achieved after 5 iteration, QML (Huber/White) standard errors & covariance. * and **; shows the related parameters are statistically significant at the 10% and 5% significance levels, respectively.

As shown in Table 11, the significance level of the model (McFadden R-squared) was 30%. In the study of Beneish (1999), this rate calculated as 30%. From point of this view, the explanatory power of the model can be regarded as enough. The probability of the model is 0.04 and the model is statistically significant ($p < 0.05$). Since the model is statistically significant, the comments on the variables will be reliable. The results of the robustness check test are shown in Table 12.

Table 12: The Robustness Check Test Results of Model

| | Estimated Equation | | |
|--------------------------|--------------------|-------|-------|
| | Dep=0 | Dep=1 | Total |
| $P(\text{Dep}=1) \leq C$ | 14 | 5 | 19 |
| $P(\text{Dep}=1) > C$ | 7 | 15 | 22 |
| Total | 21 | 20 | 41 |
| Correct | 14 | 15 | 29 |
| % Correct | 66.67 | 75.00 | 70.23 |
| % Incorrect | 33.33 | 25.00 | 19.51 |

According to the findings represented in Table 12, the average accuracy value of the model is 70.23%, and the estimated results have statistically acceptable level. When we look at the model's estimating power, non-manipulator companies are estimated with a 66.67% accuracy ratio while manipulator companies are estimated with a 75% accuracy ratio.

When the analysis results are evaluated based on independent variables shown in Table 11; the trade receivables index (TRI) has a positive coefficient (0.16) in line with the analysis results of Beneish (1999), but it is statistically insignificant. This situation does not allow for the decision whether an increase in incompatibility with sales has increased the likelihood of manipulating financial information. The finding also differs from Tekin's study conducted in 2017.

The Gross Profit Margin Index (GMI) has a positive coefficient (0.08), but this is not statistically significant either. Therefore, it can not be said that declining in this index whether increases the likelihood of manipulating financial information. The finding is also different from Tekin (2017) study but it consistent is with Beneish (1999) study.

The asset quality index (AQI) has a negative coefficient (-0.40), which is statistically significant at the 90% confidence level. In other words, the increase in asset quality reduces the company's risk of financial manipulation. This is consistent with our theoretical expectations but it is incompatible with the work of Beneish (1999) and Tekin (2017).

The depreciation index (AI) has a negative coefficient (-0.009), which is not statistically significant. Therefore, it cannot be claimed that declining in this index increases the likelihood of manipulating financial information. This is consistent with our theoretical expectations and with the work of Beneish (1999) but it is incompatible with Tekin (2017).

Because variables include marketing, selling and administrative expenses/sale ratio (MSA), leverage change index (LVGI) and financing expenses / sales ratio (FSR) are calculated as positive but statistically insignificant, it is not available to claim that change in these variables increases the likelihood of financial manipulation. Results related to MSA index are not consistent with Beneish (1999) and Tekin (2017) while results based on LVGI index is consistent with Tekin (2017) but not consistent with Beneish (1999). Similarly, findings belong to FSR index are not consistent with Tekin (2017).

The coefficient of the total accruals / total assets ratio (TATA) is positive (3.05) and is statistically significant at 90% confidence level. Increases in non-cash working capital have significantly increased the likelihood of financial manipulation. This result is consistent with the work of Beneish (1999) but differs from Tekin (2017).

The coefficient of inventories / net sales ratio (ICR) variable is negative (-0.99) and is statistically significant at 90% confidence level. This finding suggests that if this index increase possibility of financial manipulation will be reduced. Findings related to ICR are also consistent with Tekin (2017) study.

The explanatory power of the independent variables included in the model is summarized in Table 13.

Table 13: Statistically Significant Independent Variables in Determining Whether Firms Apply to Financial Manipulation

| Statistically Significant Independent Variables at 90% Confidence Level |
|--|
| Asset Quality Index (AQI) |
| Total Accruals / Total Assets (TATA) |
| Inventories / Net Sales (ICR) |

Based on findings shown in table 13, it can be inferred that AQI and ICR ratios may decrease the possibility of being manipulator firm while TATA increases the possibility of being manipulator firm.

4.2. Testing of the Model's Reliability

The power of the model was tested using the coefficients obtained from the probit analysis and for this purpose, the following equation was established.

$$M1 = -0.53 + (0.16 * TAE) + (0.08 * BKME) - (0.40 * AKE) - (0.009 * AE) + (0.81 * PSE) + (0.80 * KYE) \\ + (3.05 * TVO) - (0.99 * SSO) \\ + (0.15 * FSO) \quad (10)$$

Using the firms' data for the t period in the equation (10), the possibility of being manipulator (M_i) was calculated for each firm included in the sample.

Table 14: Possibilities for Conducting Financial Manipulation by the Companies (M_i)

| FIRM | M_i | FIRM | M_i |
|---------------|-------------------------|--------------|-------------------------|
| ACSEL | 0.51 | IHLAS | 0.14 |
| AEFES | -0.62 | IZFAS | -0.16 |
| AFYON | -0.20 | IZTAR | -1.06 |
| AKENR | 0.82 | KARSN | 1.59 |
| AKSEN | -0.21 | KERVT | 0.59 |
| ALYAG | 2.47 | KIPA | 0.27 |
| ARSAN | -0.88 | KRSTL | -0.74 |
| ASLAN | -4.16 | MAKTK | 1.69 |
| BAGFAS | 0.07 | METRO | -1.43 |
| BALAT | 0.20 | MIPAZ | 0.58 |
| BJKAS | -2.67 | NTHOL | 1.27 |
| BISAS | 1.22 | ORMA | 0.45 |
| BOYP | 0.57 | PIMAS | 0.18 |
| BURVA | 0.79 | SAYAS | -1.05 |
| CEMAS | 0.49 | TACTR | 1.09 |
| DEVA | 0.41 | TBORG | -1.74 |

| | | | |
|--------------|-------|--------------|-------|
| EDIP | -1.29 | TEKTU | -1.40 |
| EGGUB | -0.36 | VANGD | -0.20 |
| EMNIS | -0.39 | YATAS | 0.52 |
| FRIGO | 0.01 | ZOREN | -1.52 |
| GEREL | -0.62 | | |

Kolmogorov-Smirnov and Shapiro-Wilk tests were used to determine whether the obtained M_i values has normal distribution. At this stage, the analysis was performed based on the study of Findik and Öztürk (2016). Findings obtained in this test are shown in Table 15.

Table 15: Normality Test

| | Kolmogorov-Smirnov ^a | | | Shapiro-Wilk | | |
|-------|---------------------------------|----|--------|--------------|----|-------|
| | Statistic | df | Sig. | Statistic | Df | Sig. |
| M_i | 0.103 | 41 | 0.200* | 0.954 | 41 | 0.099 |

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

In Table 15, it was decided that M_i values have normal distribution because the probability value is higher than 0,05 both in the Kolmogorov-Smirnov test (0.20 > 0.05) and in the Shapiro-Wilk test (0.09 > 0.05).

Because the values of M_i have normal distribution, the calculated values of M_i ;

$$Z_i = \frac{M_i - \bar{M}}{\sigma} \quad (11)$$

can be converted to standard normal distribution value through this formula. In this formula, \bar{M} is the arithmetic mean of the values of M_i and σ is the standard deviation of the values of M_i . The standardized values of M_i (Z_i) calculated by equation (11) are shown in Table 16.

Table 16: Standardized M_i (Z_i) Values

| FIRM | Z_i | FIRM | Z_i |
|--------------|-------------------------|---------------|-------------------------|
| ACSEL | 0,51 | IHLAS | 0,21 |
| AEFES | -0,42 | IZFAS | -0,04 |
| AFYON | -0,07 | IZTAR | -0,78 |
| AKENR | 0,77 | KARSN | 1,41 |
| AKSEN | -0,08 | KERVIT | 0,58 |
| ALYAG | 2,13 | KIPA | 0,32 |
| ARSAN | -0,63 | KRSTL | -0,52 |
| ASLAN | -3,33 | MAKTK | 1,49 |

| | | | |
|---------------|-------|--------------|-------|
| BAGFAS | 0,15 | METRO | -1,08 |
| BALAT | 0,26 | MIPAZ | 0,57 |
| BISAS | 1,10 | NTHOL | 1,14 |
| BJKAS | -2,10 | ORMA | 0,46 |
| BOYP | 0,56 | PIMAS | 0,25 |
| BURVA | 0,74 | SAYAS | -0,77 |
| CEMAS | 0,50 | TACTR | 0,99 |
| DEVA | 0,44 | TBORG | -1,34 |
| EDIP | -0,97 | TEKTU | -1,06 |
| EGGUB | -0,20 | VANGD | -0,07 |
| EMNIS | -0,22 | YATAS | 0,52 |
| FRIGO | 0,10 | ZOREN | -1,15 |
| GEREL | -0,41 | | |

The probability of manipulation Z_i values shown in Table 16 according to the normal distribution function was calculated by the K-Means Clustering analysis method. The M_i values obtained in this process are divided into three homogeneous groups. SPSS 22 program was used for cluster analysis. The clustering analysis results using Z_i value are given in Table 17.

Table 17: Initial Cluster Center

| | <i>Cluster</i> | | |
|--|----------------|----------|----------|
| | 1 | 2 | 3 |
| Z_i | -2.71 | -0.21 | 1.04 |
| <i>The number of companies included in this cluster.</i> | 2 | 28 | 11 |

According to the results in Table 17 if the Z_i values are;

- $Z_i < -2.71$, firms don't tend to manipulate their financials,
- $-2.71 \leq Z_i < 1.04$, tendency of firms to manipulation of financial statement is low,
- $1.04 \leq Z_i$, it was decided that the tendency of companies for manipulation is high.

Cluster and manipulation tendency of the companies subject to this analysis are presented in Table 18.

Table 18: Breakdown of the Companies by Their Manipulation Tendency

| No Manipulation | Tendency for | Low Manipulation Tendency | High Manipulation Tendency |
|-----------------|--------------|--|--|
| ASLAN BJKAS | | ACSEL AEFES AFYON AKSEN ARSAN BAGFAS BALAT CEMAS DEVA EDIP EGGUB EMNIS FRIGO GEREL IHLAS IZFAS IZTAR KIPA KRSTL METRO ORMA PIMAS SAYAS TBORG TEKTU VANGD YATAS ZOREN | AKENR ALYAG BISAS BOYP BURVA KARSN KERV T MAKTK MIPAZ NTHOL TACTR |

At the beginning stage of the analysis, sample was divided into two categories as manipulator and control firms and 20 firms were regarded as companies with a high tendency to make manipulation. Through this analysis, 11 firms out of these 20 firms were confirmed in terms of manipulation. This indicates that the success rate in sample selection is 55%.

The firms were grouped as firms with no or low tendency and a high tendency for manipulation. Average index values for the periods t-1, t and t + 1 were calculated for the companies included each group and the obtained data are presented in Table 19.

Table 19: Average Index Values of Companies with Low and High Manipulation Tendency

| | Companies with Low Manipulation Tendency | | | Companies with High Manipulation Tendency | | |
|-------------|--|-------------------|---------------------|---|-------------------|---------------------|
| | Mean _{t-1} | Mean _t | Mean _{t+1} | Mean _{t-1} | Mean _t | Mean _{t+1} |
| TRI | 1.02 | 1.24 | 1.06 | 1.68 | 2.15 | 1.43 |
| GMI | 1.27 | 1.32 | 1.06 | 0.98 | 3.90 | 0.62 |
| AQI | 1.94 | 1.88 | 0.91 | 1.34 | 0.94 | 1.99 |
| AI | 2.78 | 9.24 | 0.67 | 0.79 | 2.86 | - 1.87 |
| MSA | 1.10 | 1.02 | 0.99 | 1.15 | 1.45 | 0.99 |
| LVGI | 1.05 | 1.02 | 1.00 | 1.10 | 0.87 | 1.11 |
| TATA | - 0.01 | - 0.04 | 0.03 | - 0.11 | 0.13 | - 0.09 |
| ICR | 1.02 | 1.27 | 1.06 | 1.30 | 1.33 | 1.48 |
| FSR | 1.08 | 1.42 | 3.12 | 1.14 | 3.24 | 0.85 |

When the data in Table 19 are examined in terms of TRI index, it can be accepted that all firms are manipulating. Because the TRI values of all firms at time t (the year they perform seasoned equity offering) are higher than their previous and next year values. Similarly, based on GMI index values, it was determined that the value of GMI in the period in which the seasoned equity offering was abnormally higher than the other years. The AQI index tends to fall in firms that do not manipulate, while in manipulator firms it appears that it has been significantly lowered in the year the manipulation made. It has been observed that AI index is rising extremely in all firms performed seasoned equity offerings and this increase is higher than in firms with low tendency of manipulation. It was observed that MSA value tends to fall over time in firms with a low tendency for manipulation. But for the firms that have a high tendency to manipulate, it increased at the time of seasoned equity offering but then fell in the following years. It was determined that LVGI value tends to fall over time in firms with a low tendency for manipulation while for the firms that have a high tendency to manipulate, first, it decreased at the time of issue but then fell in the next year. TATA value reduced at the time of issue but in next year it starts to increase for firms with a low tendency for manipulation and in firms have a high tendency to manipulate, it increased in issue period then starts to fall. It was determined that the value of ICR increased in the issuing year when they performed seasoned equity offering by the firms with low propensity to manipulate and decreased in the following year, it also increased continuously in firms with high tendency to manipulate. Finally, FSR value tends to increase constantly in firms with low propensity to manipulate, while in firms with a high tendency to manipulate, it tends to increase in the year they perform the issuance and decrease again in the following year.

The Paired Sample Statistics t test was used to test whether there is a significant difference between firms in high and low propensity for manipulation in terms of the index values for the period t + 1 (the period after manipulation). This test is effective in testing whether a group's measurements of two different qualities are different (Akdag, 2011). The purpose of

this analysis is to test whether the behavior of manipulator companies significantly differentiate financial data compared to non-manipulator. The test results are presented in Table 20.

Table 20: Paired Samples Test

| | Paired Differences | | | | | T ist. | df | Sig. (2-tailed) prob. |
|-------------------------------|--------------------|----------------|-----------------|---|-------|--------|----|-----------------------|
| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
| | | | | Lower | Upper | | | |
| <i>TRI – TRI^m</i> | 0.545 | 0.620 | 0.187 | 0.128 | 0.962 | 2.915 | 10 | 0.015** |
| <i>GMI- GMI^m</i> | -0.193 | 2.015 | 0.607 | -1.547 | 1.160 | -0.319 | 10 | 0.757 |
| <i>AQI- AQI^m</i> | 1.070 | 2.637 | 0.795 | -0.700 | 2.842 | 1.347 | 10 | 0.208 |
| <i>AI- AI^m</i> | -3.359 | 7.218 | 2.176 | -8.208 | 1.490 | -1.543 | 10 | 0.154 |
| <i>MSA- MSA^m</i> | -0.031 | 0.482 | 0.145 | -0.356 | 0.292 | -0.219 | 10 | 0.831 |
| <i>LCGI- LVGI^m</i> | 0.129 | 0.547 | 0.165 | -0.238 | 0.496 | 0.782 | 10 | 0.452 |
| <i>TATA- TATA^m</i> | -0.106 | 0.226 | 0.068 | -0.258 | 0.045 | -1.559 | 10 | 0.150 |
| <i>SCR- SCR^m</i> | 0.303 | 1.354 | 0.408 | -0.605 | 1.213 | 0.744 | 10 | 0.474 |
| <i>FSR- FSR^m</i> | -0.832 | 1.504 | 0.453 | -1.843 | 0.178 | -1.836 | 10 | 0.096* |

Note: * and** suggest that there is a significant difference between groups at 10% and 5% significance level respectively.

Table 20 shows that there is a significant difference between the manipulator and non-manipulator companies based on the value of TRI and FSR. Based on these findings, it can be inferred that firms with a high propensity, performed the manipulative transactions through these variables.

5. CONCLUSION

Many studies in the literature show that firms may manipulate their financials before seasoned equity offerings in order to maximize their issue revenue. For the purpose of misleading current and potential investors they may apply some techniques include period profit increasing techniques, period profit decreasing techniques and other techniques. All these mentioned techniques are conducted through earning management, income smoothing and creative accountings methods.

In this study, we tried to find out whether sample firms that perform SEO during the 2010 – 2015 period in Borsa Istanbul may apply financial manipulation. For this purpose, we divided sample into 2 sections as manipulator firms and control firms through observations based on reports and bulletins of regulator institutions such as Borsa Istanbul and Capital Market Board. Then we used 9 financial ratios were defined both in Beneish's study (1999) and Küçüksözen's study (2004) as independent variables in the model. Probit analysis was conducted to see effects of all these independent variables on determining whether firms apply manipulation or not. Then we made robust tests and calculated possibility of manipulation for each firm in the sample. We performed cluster analysis to see tendency of all firms for the manipulation and we grouped all firms as high and low tendency for manipulation based on average index values.

In this study, we figure it out firms may apply financial manipulation before SEOs in order to increase issue revenue. We observed that most of manipulations were performed through period profit increasing techniques. Approximately 90% of manipulation techniques were constitute period increasing methods. Underrecognition of provision for doubtful receivables from related and unrelated parties, miscalculation of deferred tax expenses, underrecognition of losses and amortization expenses, showing brand value in the balance sheet and finally recognition of consignment sales as real sales in the income statement are most frequently used methods among the period profit increasing techniques.

In the model, three financial ratios include Asset Quality Index, Inventories / Sales, Total Accruals / Total Assets were found statistically significant on determining whether firms may make manipulation. In other words, we found that sample firms use these three variables in order to make manipulation. According to previous studies in the literature, accruals particularly discretionary accruals and inventories are the most subject to financial manipulation. Therefore, our findings are consistent with the previous literature. Our model's average estimating power was calculated as 70,23. We predicted manipulator and control firms with 75 and 66,67 accuracy ratio respectively. According to model's reliability test 11 firms were found as have high manipulation tendency. Considering 20 firms were defined as manipulators at the initial step of the study based on observations it is possible to say that our model's success rate for estimating manipulator firms is 55.

REFERENCES

- ACFE. (2010). Report to the nation on occupational fraud and abuse. The Association of Certified Fraud Examiners
- Acharya, V. V., Lambrecht, B. M. (2015). A Theory of Income Smoothing When Insiders Know More Than Outsiders. *The Review of Financial Studies*, 28 (9): 2534-2574.
- AICPA. (2002). Consideration of fraud in a financial statement audit. 1719 -1770.
- Akdağ, M. (2011). SPSS’de istatistiksel analizler. <https://cms.inonu.edu.tr/uploads/old/5/1328/spss-testleri.doc>. [Erişim Tarihi: 09.08.2017].
- Beneish, D. M. (1997). Detecting GAAP violation: implications for assessing earnings management among firms with extreme financial performance. *Journal of Accounting and Public Policy*. 16 (3): 271-309.
- Beneish, D. M. (1999). The detection of earnings manipulation. *Financial Analyst Journal*. 55 (5): 24-26.
- Shu, P. G., Chiang, S. J. (2014). Firm size, timing and earnings management of seasoned equity offerings. *International Review of Economics & Finance*. 29 (1): 177-194.
- Beneish, D. M. (2001). Earnings management: a perspective. *Managerial Finance*. 27 (12): 3-17.
- Çelik, İ. E. (2016). The relationship between accounting practices and effects of financial crisis in Turkey: a case study on an oil company. *Emerging Markets Journal*. 6 (1): 47-58.
- Deangelo, L. E. (1986). Accounting numbers as market valuation substitutes: a study of management buyouts of public stockholders. *The Accounting Review*. 61 (3): 400-420.
- Fang, C. (2017). Empirical research on accrual and real earnings management: evidence from seasoned equity offerings. *Proceedings of the 14th International Conference on Innovation & Management*, 1121-1126.
- Fındık, H., Öztürk, E. (2016). Measurement of financial information manipulation with the help of Beneish Model: a research on BIST manufacturing industry. *Journal of Business Research Turk*. 8(1): 483-499.
- Healy, P. M. (1985). The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics*. 7 (1-3): 85-107.
- Islam, M. S., Uddin, M., Ahmad, S. (2002). The operating performance of firms conducting seasoned equity offerings In Bangladesh. *Journal of Business Studies*. 23 (2): 1-42.
- Jo, H., Kim, Y. (2008). Ethics and disclosure: a study of the financial performance of firms in the seasoned equity offerings market. *Journal of Business Ethics*. 80 (4): 855-878.
- Jones, J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*. 29 (2): 193 – 228.
- Kothari, S. P., Mizik, N., Roychowdhury, S. (2016). Managing for the moment: the role of earnings management via real activities versus accruals in SEO valuation. *American Accounting Association*. 91 (2) : 559-586.
- Küçüksözen, C. (2004). Finansal bilgi manipülasyonu: nedenleri, yöntemleri, amaçları, teknikleri, sonuçları ve İmkb şirketleri üzerine ampirik bir çalışma. Doktora Tezi, Ankara Üniversitesi, Sosyal Bilimler Enstitüsü.
- Li, S., Richie, N. (2016). Income smoothing and the cost of debt. *China Journal Accounting Research*. 9 (3): 175 – 190.
- Mulford, W. C., Comiskey, E. E. (2002). *The financial numbers game – detecting creative accounting practices*. New York: John Wiley & Sons Inc.
- Rezaee, Z. (2005). Causes, consequences and deterrence of financial statement fraud. *Critical Perspectives on Accounting*. 16 (3) : 277 – 298.
- Spathis, C. T. (2002). Detecting false financial statements using published data: some evidence from Greece. *Managerial Auditing Journal*, 17 (4) : 179 – 191.
- Tassadaq, F., Malik, A. Q. (2015). Creative accounting and financial reporting: model development and emprical testing. *International Journal of Economics and Financial Issues*. 5 (2): 544-551.
- Tekin, E. (2017). 2010-2014 yılları arasında Türkiye’de halka açık şirketlerde manipülasyon üzerine Beneish Modeli ile ampirik çalışma. Yayınlanmamış Doktora Tezi, Başkent Üniversitesi, Sosyal Bilimler Enstitüsü İşletme Anabilim Dalı Muhasebe – Finansman Bölümü.
- Teoh, S. H., Welch, I., Wong, T. J. (1998). Earnings management and the underperformance of seasoned equity offerings. *Journal of Financial Economics*. 50 (1): 63 - 99.
- Uluslan, H. (2008). Değerleme esasları ve finansal tabloların niteliksel özellikleri açısından incelenmesi. *Anadolu Üniversitesi Sosyal Bilimler Dergisi*. 8 (1): 129-154.
- Zhang, X. (2016). Income smoothing, idiosyncratic risk & CEO turnover. *Journal of Mathematical Finance*. 6 (1): 1 – 16.



MEASURING THE PERFORMANCE OF PRIVATE PENSION SECTOR BY TOPSIS MULTI CRITERIA DECISION-MAKING METHOD

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ABSTRACT

Purpose- In this study, a sector-based research has been conducted for the performances of private pension companies operated between 2006 and 2016, in Turkey. Moreover, the changes in sectoral performance have been analysed for the determined years and results interpreted.

Methodology- Performance has been analysed by using a multi criteria decision-making technique, TOPSIS. During the study, performance measurement factors have been determined as nine financial ratios below.

Findings- In the end of the analysis, performance scores for each year have been calculated and the results have been ranked. Therefore, ranks of each year examined in success rating have been identified. Among the years examined, 2008 has the highest performance while 2006 has the lowest.

Conclusion- When the results examined, it is observed that sector's performance have increased since 2013. In addition, the coefficient is thought to be state subsidy amounting to 25% of employees' paid contributions to private pension account, which was initiated on January 1st, 2013.

Keywords: Multi criteria decision making techniques, private pension, private pension sector, TOPSIS.

JEL Codes: G20, G22, G23, M40, M49

1. INTRODUCTION

Private pension is a system that allows individuals to contribute from their earnings, and get retired after a while. In private pension system, the participant has the right to determine the contribution he/she is going to invest. Individuals participate in the system by signing private pension contracts. After having paid contributions for a particular time and having got to the statutory age, individuals qualify for a pension.

Personal (private) pension system has been performing in Turkey since October 27th 2003. Being a part of social security reform, it does not only serve that purpose, but also takes an important role in the improvement of financial system (İşseveroğlu & Hatunoğlu, 2010).

Being based on voluntary participation in Turkey, the total net asset value of the system's mutual funds reached to 53, 4 billion TL in 2016, while it was 276 million in 2006. As of 2016, the number of participants partaking in the system was about 6, 6 million individuals. While the sector employed 12.135 people in 2006, the number of employees approached to 40.000 by the end of 2016. The sector achieved growth in comparison with the developed countries. When Turkey's population characteristics and the size of private pension systems in developed countries are considered, it is observed that the results are low. By the end of 2015, while the ratio of mutual pension fund assets' total value to gross national product was 5% in Turkey, the same ratio was over 170% in Netherlands in the same year. For this reason, it is considered that private pension system will continue its growth in Turkey.

2. LITERATURE REVIEW

In his study where he evaluates the performances of life and non-life insurance companies operating in Turkish insurance sector by dividing them into two and using data envelopment analysis, Çiftçi concludes that the different efficiencies of insurance companies result from the big differences in scale efficiency and is rather a problem of those companies working inefficiently (2004).

In the end of their study where they measure multi criteria performances of private pension funds in Turkey between January 2007 and December 2008 with TOPSIS method, Alptekin and Şıklar sort those funds by their performances (2009).

In their study where they measure performance by grey relational analysis method, Peker and Baki, evaluate performance with the help of liquidity, leverage and profitability ratios and conclude that a company with high liquidity ratios could have high performance as well(2011)

Dalkılıç measures the efficiency of insurance companies operating in Turkey through 2008-2010 period by using data enveloping, data oriented, input oriented variable yield BCC model and total factor efficiency index. In this study, Dalkılıç concludes that in comparison with 2008, efficiency of insurance companies increased in 2009, while it went down in 2010 (2012).

Karakaya et al identify in their study where they measured efficiency degrees of 14 private pension companies in Turkey by using data enveloping analysis that, some companies are inefficient since they use their marginal capacities (2014).

In their study where they measure performances of 36 non-life insurance companies' operated in Turkey between 2011 and 2016 by using VIKOR method, Bülbül and Baykal have grouped the companies as steady and unsteady. Moreover, by identifying the possible factors that lead to performance changes, they have provided performance-improving suggestions (2017).

Köse and Türkel have provided performance-improving suggestions for low-performing companies in their study where they analysed the performance evaluations of 26 non-life insurance companies of Turkish Insurance Sector by Gray Relational Analysis Method in 2014-2016 period (2017).

In their study where they compare the performances of 15 pension companies operated in Turkey between 2012 and 2016 by using principal components and clustering analyses, Kırkağaç and Dalkılıç conclude that Ziraat Emeklilik ranked number nine and Anadolu Hayat Emeklilik had the highest performance in 2012. In addition, they state that Ziraat Emeklilik ranked first in the following years (2017).

Gürol and Hazar compare the performances of life and non-life insurance companies by using CAMELS method and conclude that the companies operating in the field of life/pension are more efficient than the ones that are active in non-life/pension branch (2017).

Özaktaş evaluates the efficiency of insurance companies operated in Turkey between 2002 and 2015 by the help of three different data envelopment analyses. In this study, Özaktaş concludes that being listed or unlisted on the stock exchange does not create a major effect on insurance companies' efficiency degrees. In addition, Özaktaş states that efficiency degrees of foreign-invested companies are higher than the degrees of domestic ones only in portfolio management. Lastly, Özaktaş deduces that domestic corporations have higher averages than medium and small scaled ones (2017).

When foreign studies regarding the performance measurement of private pension companies are considered, it can be stated that, Barros and Garcia (2006), Teresa and Garcia (2010) Portugal; Barros, Ferro and Romero Argentina (2008); Wu, Yong, Vela and Liang (2007) Canada, Barrientos and Boussofiane (2005)Chile have conducted studies related to performance measure in pension sector.

3. DATA AND METHODOLOGY

In this study, TOPSIS multi criteria decision-making method has been used, in order to measure the performance of Turkey's private pension sector. Chen and Hwang (1991) presented TOPSIS method by referring to the Works of Hwang and Yoon (1981) (Demirelli, 2010).

TOPSIS is a technique that enables using the best choice among all alternatives. (Özdemir, 2015). In this technique, ideal and negative ideal solution values are determined via factor values that belong to the alternatives. Those alternatives are sorted according to their status with respect to ideal and negative ideal solutions.

During the study, performance measurement factors have been determined as nine financial ratios below. These ratios have been included in measurements as equiponderant.

Table 1: Financial Ratios Used in Performance Measurement

| |
|---|
| Shareholders Equity/Total Assets |
| Financial Investments of Risk Life Insurance Policy/Total Assets |
| Short Term Liabilities/ Total Assets |
| Pension Technical Income/Pension Technical Expense |
| Net Period Profit/Total Assets |
| Net Period Profit/Shareholders Equity |
| Net Period Profit/ Number of Sector Employees |
| (Pension Technical Income-Pension Technical Expense)/Number of Participants |
| Net Period Profit / Number of Contracts |

When making analysis by TOPSIS method, the first step is to create decision matrix for each alternative together with the factor values determined.

$$A_{ij} = \begin{bmatrix} a_{11} & a_{12} & \dots & a_{1p} \\ a_{21} & a_{22} & \dots & a_{2p} \\ \vdots & \vdots & \ddots & \vdots \\ a_{m1} & a_{m2} & \dots & a_{mp} \end{bmatrix}$$

See Table 2 for the Decision Matrix of this study.

Table 2: Decision Matrix

| | Shareholders Equity/Total Assets | Financial Investments of Risk Life Insurance Policy/Total Assets | Short Term Liabilities/ Total Assets | Pension Technical Income/Pension Technical Expense | Net Period Profit/Total Assets | Net Period Profit/Shareholders Equity | Net Period Profit/ Number of Sector Employees | (Pension Technical Income-Pension Technical Expense)/Number of Participants | Net Period Profit / Number of Contracts |
|-------------|----------------------------------|--|--------------------------------------|--|--------------------------------|---------------------------------------|---|---|---|
| 2006 | 0,11 | 0,55 | 0,48 | 0,45 | 0,01 | 0,08 | 6405,59 | -137,33 | 68,10 |
| 2007 | 0,11 | 0,47 | 0,46 | 0,58 | 0,02 | 0,18 | 16567,08 | -92,03 | 130,56 |
| 2008 | 0,11 | 0,41 | 0,45 | 1,01 | 0,02 | 0,17 | 17857,22 | 1,15 | 126,87 |
| 2009 | 0,10 | 0,35 | 0,49 | 1,03 | 0,02 | 0,16 | 17470,59 | 5,56 | 124,19 |
| 2010 | 0,10 | 0,28 | 0,48 | 1,15 | 0,01 | 0,14 | 17963,55 | 24,73 | 118,46 |
| 2011 | 0,13 | 0,23 | 0,47 | 1,00 | 0,01 | 0,11 | 19283,04 | 0,12 | 117,20 |
| 2012 | 0,11 | 0,20 | 0,49 | 1,02 | 0,01 | 0,12 | 21663,29 | 3,94 | 125,01 |
| 2013 | 0,10 | 0,16 | 0,49 | 0,79 | 0,01 | 0,12 | 17348,08 | -42,09 | 98,59 |
| 2014 | 0,09 | 0,12 | 0,38 | 0,87 | 0,01 | 0,15 | 20591,12 | -24,75 | 113,46 |
| 2015 | 0,08 | 0,09 | 0,37 | 0,94 | 0,01 | 0,17 | 22959,87 | -10,78 | 117,40 |
| 2016 | 0,07 | 0,08 | 0,37 | 1,03 | 0,02 | 0,23 | 33320,87 | 5,43 | 169,74 |

In order to prevent negative effects of decision matrix’s value differences on the results of analysis, decision matrix is subjected to a normalization process. Normalization has been applied according to the formula below, and **Table 3** represents the normalized matrix of the study.

$$n_{ij} = \frac{a_{ij}}{\sqrt{\sum_{i=1}^m a_{ij}^2}}$$

(i=1,...,m ve j=1,...,p)

$$N = \begin{bmatrix} n_{11} & n_{12} & \dots & n_{1p} \\ n_{21} & n_{22} & \dots & n_{2p} \\ \vdots & \vdots & \ddots & \vdots \\ n_{m1} & n_{m2} & \dots & n_{mp} \end{bmatrix}$$

Table 3: Normalized Matrix

| | Shareholders Equity/Total Assets | Financial Investments of Risk Life Insurance Policy/Total Assets | Short Term Liabilities/ Total Assets | Pension Technical Income/Pension Technical Expense | Net Period Profit/Total Assets | Net Period Profit/Shareholders Equity | Net Period Profit/Number of Sector Employees | (Pension Technical Income-Pension Technical Expense)/Number of Participants | Net Period Profit / Number of Contracts |
|-------------|----------------------------------|--|--------------------------------------|--|--------------------------------|---------------------------------------|--|---|---|
| 2006 | 0,34 | 0,54 | 0,32 | 0,15 | 0,19 | 0,16 | 0,10 | -0,79 | 0,17 |
| 2007 | 0,33 | 0,46 | 0,31 | 0,19 | 0,40 | 0,35 | 0,25 | -0,53 | 0,32 |
| 2008 | 0,32 | 0,40 | 0,30 | 0,33 | 0,38 | 0,34 | 0,27 | 0,01 | 0,32 |
| 2009 | 0,30 | 0,35 | 0,33 | 0,34 | 0,34 | 0,32 | 0,26 | 0,03 | 0,31 |
| 2010 | 0,31 | 0,27 | 0,32 | 0,38 | 0,29 | 0,27 | 0,27 | 0,14 | 0,29 |
| 2011 | 0,37 | 0,23 | 0,31 | 0,33 | 0,28 | 0,22 | 0,29 | 0,00 | 0,29 |
| 2012 | 0,33 | 0,19 | 0,33 | 0,33 | 0,27 | 0,24 | 0,32 | 0,02 | 0,31 |
| 2013 | 0,29 | 0,16 | 0,33 | 0,26 | 0,24 | 0,24 | 0,26 | -0,24 | 0,25 |
| 2014 | 0,25 | 0,12 | 0,25 | 0,29 | 0,26 | 0,30 | 0,31 | -0,14 | 0,28 |
| 2015 | 0,23 | 0,09 | 0,25 | 0,31 | 0,27 | 0,33 | 0,34 | -0,06 | 0,29 |
| 2016 | 0,22 | 0,08 | 0,25 | 0,34 | 0,35 | 0,45 | 0,50 | 0,03 | 0,42 |

After getting normalized matrix in TOPSIS method, we reached weighted normalized matrix by weighting each factor with its share in the total factors share.

$$V = \begin{bmatrix} v_{11} & v_{12} & \dots & v_{1p} \\ v_{21} & v_{22} & \dots & v_{2p} \\ \vdots & \vdots & \ddots & \vdots \\ v_{m1} & v_{m2} & \dots & v_{mp} \end{bmatrix}$$

Table 4: Weighted Normalized Matrix

| | Shareholders Equity/Total Assets | Financial Investments of Risk Life Insurance Policy/Total Assets | Short Term Liabilities/ Total Assets | Pension Technical Income/Pension Technical Expense | Net Period Profit/Total Assets | Net Period Profit/Shareholders Equity | Net Period Profit/Number of Sector Employees | (Pension Technical Income-Pension Technical Expense)/Number of Participants | Net Period Profit / Number of Contracts |
|------|----------------------------------|--|--------------------------------------|--|--------------------------------|---------------------------------------|--|---|---|
| 2006 | 0,04 | 0,06 | 0,04 | 0,02 | 0,02 | 0,02 | 0,01 | -0,09 | 0,02 |
| 2007 | 0,04 | 0,05 | 0,03 | 0,02 | 0,04 | 0,04 | 0,03 | -0,06 | 0,04 |
| 2008 | 0,04 | 0,04 | 0,03 | 0,04 | 0,04 | 0,04 | 0,03 | 0,00 | 0,04 |
| 2009 | 0,03 | 0,04 | 0,04 | 0,04 | 0,04 | 0,04 | 0,03 | 0,00 | 0,03 |
| 2010 | 0,03 | 0,03 | 0,04 | 0,04 | 0,03 | 0,03 | 0,03 | 0,02 | 0,03 |
| 2011 | 0,04 | 0,03 | 0,03 | 0,04 | 0,03 | 0,02 | 0,03 | 0,00 | 0,03 |
| 2012 | 0,04 | 0,02 | 0,04 | 0,04 | 0,03 | 0,03 | 0,04 | 0,00 | 0,03 |
| 2013 | 0,03 | 0,02 | 0,04 | 0,03 | 0,03 | 0,03 | 0,03 | -0,03 | 0,03 |
| 2014 | 0,03 | 0,01 | 0,03 | 0,03 | 0,03 | 0,03 | 0,03 | -0,02 | 0,03 |
| 2015 | 0,03 | 0,01 | 0,03 | 0,03 | 0,03 | 0,04 | 0,04 | -0,01 | 0,03 |
| 2016 | 0,02 | 0,01 | 0,03 | 0,04 | 0,04 | 0,05 | 0,06 | 0,00 | 0,05 |

By TOPSIS method, after getting the weighted normalized matrix, it is necessary to identify maximum values of each column on condition of sticking to the structure of problem. These maximum values are ideal solution values. After that, minimum values of each column are obtained. These become the negative solution values (Özdemir, 2015).

Ideal Solution Values:

$$A^+ = \{v_1^+, v_2^+, \dots, v_p^+\}$$

Negative Ideal Solution Values:

$$A^- = \{v_1^-, v_2^-, \dots, v_p^-\}$$

After identifying ideal and negative ideal solution values, we reached to the results in Table 5.

Table 5: Ideal and Negative Ideal Solution Points

| | Shareholders Equity/Total Assets | Financial Investments of Risk Life Insurance Policy/Total Assets | Short Term Liabilities/ Total Assets | Pension Technical Income/Pension Technical Expense | Net Period Profit/Total Assets | Net Period Profit/Shareholders Equity | Net Period Profit/Number of Sector Employees | (Pension Technical Income-Pension Technical Expense)/Number of Participants | Net Period Profit / Number of Contracts |
|--------------------------------|----------------------------------|--|--------------------------------------|--|--------------------------------|---------------------------------------|--|---|---|
| Ideal Solution | 0,04 | 0,06 | 0,03 | 0,04 | 0,04 | 0,05 | 0,06 | 0,02 | 0,05 |
| Negative Ideal Solution | 0,02 | 0,01 | 0,04 | 0,02 | 0,02 | 0,02 | 0,01 | -0,09 | 0,02 |

After ideal and negative ideal solution values have been identified, the distance from those points is obtained by the calculation of Euclidean distance.

$$d_{ij} = \sqrt{\sum_{k=1}^p (x_{ik} - x_{jk})^2}$$

For each decision point, relative proximity to the ideal solution is calculated at this stage. The proximity will be between 0 and 1. As long as the result gets close to 1, it approaches to the ideal solution. However, if it comes close to 0, it approaches to the negative solution. The distances of the years examined from the ideal and negative ideal solutions are calculated and the results are represented in **Table 6**.

Ideal Distance:

$$S_i^+ = \sqrt{\sum_{j=1}^n (v_{ij} - v_j^+)^2}$$

Negative Ideal Distance:

$$S_i^- = \sqrt{\sum_{j=1}^n (v_{ij} - v_j^-)^2}$$

Table 6: Distances from Ideal and Negative Ideal Solutions in the Years Examined

| Years | Distance From Ideal Solution | Distance From Negative Ideal Solution |
|-------|------------------------------|---------------------------------------|
| 2006 | 0,125311 | 0,053138 |
| 2007 | 0,084367 | 0,065976 |
| 2008 | 0,039288 | 0,104841 |
| 2009 | 0,043412 | 0,104071 |
| 2010 | 0,049268 | 0,112461 |
| 2011 | 0,056027 | 0,096844 |
| 2012 | 0,055219 | 0,099313 |
| 2013 | 0,076964 | 0,066858 |
| 2014 | 0,068693 | 0,080414 |
| 2015 | 0,064866 | 0,090901 |
| 2016 | 0,055954 | 0,11358 |

At the final stage of TOPSIS method, performance scores of each alternative are calculated by the formula below. Scores of the years examined calculated by TOPSIS method, are represented in Table 7.

$$C_i^* = \frac{S_i^-}{S_i^- + S_i^+}$$

$$0 \leq C_i^* \leq 1$$

$$i=1 \dots n$$

Table 7: Performance Results of the Years Examined

| | |
|-------------|-------------|
| 2006 | 0,297776201 |
| 2007 | 0,438836793 |
| 2008 | 0,727408624 |
| 2009 | 0,705646351 |
| 2010 | 0,695366284 |
| 2011 | 0,633502457 |
| 2012 | 0,642671561 |
| 2013 | 0,464863633 |
| 2014 | 0,539302873 |
| 2015 | 0,583570322 |
| 2016 | 0,669954236 |

When performance results of the years are sorted, the success rating has shaped as it is represented in **Table 8**.

Table 8: Performance Ranking of the Years Examined

| | |
|-------------|----|
| 2006 | 11 |
| 2007 | 10 |
| 2008 | 1 |
| 2009 | 2 |
| 2010 | 3 |
| 2011 | 6 |
| 2012 | 5 |
| 2013 | 9 |
| 2014 | 8 |
| 2015 | 7 |
| 2016 | 4 |

4. FINDINGS AND DISCUSSIONS

As a result of this study where the performance of Turkish Private Pension Sector between 2006 and 2016 is analysed by a multi criteria decision-making method, TOPSIS, it can be concluded that among 11 years examined, 2008 has the highest performance score while 2006 has the lowest.

In Turkey, private pension companies made loss during the first years of private pension system that started in 2003. It is thought that the loss of companies have led to the performance decrease in 2006. In the following years, with the sector making profit, performance scores of each year and their place in performance ranking have increased.

Besides the fact that 2008 has the highest performance score among the years examined, it is observed that the scores of 2009 and 2010 are notably good. The costs that the sector bare during its first years, have reached to a break-even point within 5-6 years and fund amounts have increased as well. These are thought to be the reasons behind those performance scores. Although 2008 is the year of global financial crisis, also 2009 and 2010 are the years when the effects of crisis still continued, private pension sector has increased its funds above 30% in both years.

Despite increasing funds, since it was the year of the financial crisis, the companies were deliberate and they started to manage more funds while keeping shareholders equity at the same level. This, therefore, have resulted in performance increase.

When the results examined, it is observed that sector's performance have increased since 2013. In addition, the coefficient is thought to be state subsidy amounting to 25% of employees' paid contributions to private pension account, which was initiated on January 1st, 2013.

REFERENCES

- Alptekin, N., Şıklar, E. (2009). Türk hisse senedi emeklilik yatırım fonlarının çok kriterli performans değerlendirilmesi: Topsis metodu. *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi*.
- Barrientos, A., Boussofiane, A. (2005). How efficient are the pension funds managers in Chile. *Revista de Economía Contemporânea*, 289-311.
- Barros, C. P., Garcia, M. T. (2006). Performance evaluation of pension funds management companies with DEA. *Risk Management and Insurance Review*, 165-188.
- Barros, C. P., Ferro, G., Romero, C. (2008). Technical efficiency and heterogeneity of Argentina pension funds. Working Paper.
- Bülbül, S. E., Baykal, K. B. (2017). Hayat dışı branşlarda faaliyet gösteren Türk sigorta şirketlerinin finansal performans analizi: Vikor yönetimi. *3rd National Insurance and Actuarial Congress*, (p. 1-9). Karabük.
- Çiftçi, H. (2004). Türk sigorta sektörünün sorunları; DEA analizi ile Türk sigorta şirketlerinin etkinlik düzeylerinin belirlenmesi. *Çukurova Üniversitesi Sosyal Bilimler Dergisi*, 121-149.
- Dalkılıç, N. (2012). Türkiye'de hayatdışı sigortacılık sektöründe etkinlik analizi. *Muhasebe ve Finansman Dergisi*, 71-90.
- Demirelli, E. (2010). TOPSIS çok kriterli karar verme sistemi: Türkiye'deki kamu bankaları üzerine bir uygulama. *Girişimcilik ve Kalkınma Dergisi*, 101-112.
- Gürol, B., Hazar, A. (2017). Türkiye'de faaliyet gösteren hayat dışı ve hayat emeklilik sigorta şirketlerinin performanslarının karşılaştırılması. *3rd National Insurance and Actuarial Congress*, (p. 17-22). Karabük.
- İşseveroğlu, G., Hatunoğlu, Z. (2010). Türkiye'de bireysel emeklilik sisteminin makro ekonomik dinamiklere etkisi kapsamında Swot analizi. *Muhasebe ve Finansman Dergisi*, 155.
- Karakaya, A., Kurtaran, A., Dağlı, H. (2014). Bireysel emeklilik şirketlerinin veri zarflama yönetimiyle etkinlik ölçümü: Türkiye örneği. *Yönetim ve Ekonomik Araştırmalar Dergisi*.
- Kırkağaç, M., Dalkılıç, N. (2017). Türkiye'de faaliyet gösteren emeklilik şirketlerinin performanslarının temel bileşenler analizi ve kümeleme analizi ile karşılaştırılması. *3rd National Insurance and Actuarial Congress*, (p. 130-136). Karabük.
- Köse, A., Türkel, U. (2017). Gri ilişkisel analiz yöntemi ile hayat dışı branşlarda Türk sigorta sektörünün değerlendirilmesi. *3rd National Insurance and Actuarial Congress*, (p. 10-16). Karabük.
- Özaktan, F. D. (2017). Hayat dışı sigorta sektöründe etkinlik analizi: Türkiye uygulaması. *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 30-44.
- Özdemir, M. (2015). TOPSIS. Çok kriterli karar verme yöntemleri (p. 134). içinde Bursa: Dora Kitap.
- Peker, İ., Baki, B. (2011). Gri ilişkiler analiz yöntemiyle Türk sigortacılık sektöründe performans ölçümü. *Karadeniz Teknik Üniversitesi İktisadi ve İdari İncelemeler Dergisi*, 1-17.
- Teresa, M., Garcia, M. (2010). Efficiency evaluation of the Portuguese pension funds management companies. *Journal of International Financial Markets*, 259-266.
- Wu, D., Yang, Z., Vela, S., Liang, L. (2007). Simultaneous analysis of production and investment performance of Canadian life and health insurance companies using DEA. *Computers and Operations Research*, 180-198.



BUDGET PRACTICES AND ONE-YEAR SALARY CASE IN THE OTTOMAN EMPIRE*

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ABSTRACT

Purpose- When the financial structure of the Ottoman Empire was examined, a similar budget implementation as in Western countries was organized in 1855 with the central administration budget for the first time, in other words the general budget under the name of " Hazine-i Celile Muvazene Defterinin Suret-i Tanzimine Dair Nizamname"

Methodology- Although there is no current budget practice as it is now, there is some kind of definite accounts documenting the yearly income and expenditures of the central treasury and reflecting the final accounts of the year. In this framework, the Ottomans were allocating the revenues from certain sources to certain services. In this period, the calculation of the state revenues and the annual expenditures of the public expenditures and the registration of the records were done. Income was not based on expenses, instead the expenses was based on income.

Findings- Therefore, although the Ottoman Empire did not have a proper budget structure as it is in present time, it does not mean that the income and expenses were not recorded. As a matter of fact, this study will examine the possession of a bureaucratic state structure of the Ottomans and emphasize that every financial practice is kept a record.

Conclusion- In addition, this study will focus on how the Ottoman Empire had set out a budget policy since its foundation and explain the importance of transition into Western budgetary practices. However, based on the sources of the Prime Ministry Ottoman archives, one year salary conditions will be tried to be determined according to the month income of the top level official of the Ottoman Empire of 1887.

Keywords: Budget, Ottoman Empire, salary, financial structure, definite account.

JEL Codes: N11, Z23, O10

OSMANLI İMPARATORLUĞU'NDA BÜTÇE UYGULAMALARI VE BİR YILLIK MAAŞ ÖRNEĞİ

ÖZET

Amaç- Osmanlı İmparatorluğunun mali yapısı incelendiğinde Batılı ülkelerde ki uygulamalara benzer bütçe uygulaması, 1855'de ilk kez merkezi idare bütçesi diğer bir ifade ile genel bütçe, "Hazine-i Celile'nin Muvazene Defterinin Suret-i Tanzimine Dair Nizamname" adı ile düzenlenmiştir.

Yöntem- Günümüzde ki bütçe uygulaması olmasa da devletin merkezi hazinesine ait bir yıllık gelir ve giderlerini kayıt altına alan ve yılsonu kesin hesap durumlarını yansıtan bir çeşit kesin hesap belgeleri mevcuttu.

Bulgular- Bu çerçevede Osmanlılar belli kaynaklardan elde edilen gelirlerin belli hizmetlere tahsisini gerçekleştirmekte idi. Bu dönemde devlet gelirleri ile kamu giderlerinin yıldan yıla hesaplanması ve deftere kaydedilmesi usuldendi. Gidere göre gelir değil gelire göre gider esas alınmaktaydı. Dolayısıyla Osmanlı İmparatorluğunun her ne kadar günümüze uygun bir bütçe yapısına sahip olmaması gelir ve giderlerinin kayıt altına alınmadığı anlamına gelmez. Nitekim bu çalışmamızda Osmanlıların bürokratik bir devlet yapısına sahip olması irdelenecek ve her mali uygulamanın kaydının tutulduğu vurgulanacaktır.

Sonuç- Ayrıca Osmanlı İmparatorluğunun kuruluştan itibaren nasıl bir bütçe politikası belirledikleri üzerinde durulacak ve Batılı anlamda bütçe uygulamalarına neden geçildiğinin önemi açıklanacaktır. Bununla birlikte Başbakanlık Osmanlı arşiv kaynaklarına dayalı olarak 1887 tarihli Osmanlı İmparatorluğunun üst düzey ricalinin aylara göre bir yıllık maaş durumları tespit edilmeye çalışılacaktır.

Anahtar Kelimeler: Bütçe, Osmanlı İmparatorluğu, maaş, mali yapı, kesin hesap.

JEL Kodları: N11, Z23, O10

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1. GİRİŞ

Osmanlı Devleti kuruluş itibarıyla kendinden önceki Türk-İslam devletlerinin idari-mali yapılarından etkilendiği gibi devletin gelir ve giderlerini bir cetvel şeklinde tezin yöntemi ile kayıt altına almıştır. Bu yöntem modern anlamda bir bütçe şeklinde olmasa da devletin kamu harcamalarını gerçekleştirmek için bazı gelirlerle ihtiyaç duymuş olması, bütçe kavramının önemini artırmıştır. Bütçenin bilindiği üzere iki ayağı söz konusudur. Bunlar gelirler ve giderlerdir (Sayar, 1970: 3). Bütçenin bir yanını teşkil eden gelirler konusunda, Osmanlı Devleti daha kuruluş esnasında devlete ait bir gelir kaynağının olması gerekliliğine inanmış ve bu hususta Osman Bey'in pazar rüsumunu resmileştirmesi bütçe açısından ilk örnek olarak gösterilebilir (Sayın, 2000: 15).

Osmanlı Devleti ilk başlarda gelir giderlerini kayıt altına alırken harcamalarını şer'i hükümlere göre "tahsisat varidat usulü" şeklinde bir uygulamaya göre gerçekleştirdi. (Feyzioğlu, 1981: 26). Örneğin; "Hazine-i hümayun kethüdasının Nezâretindeki Hazine-i hümayun kısmına ait en mühim defter-i harc-ı hassa-i hümayun varidat ve sarfiyyat defterleri ile Cib-i hümayun defterleridir". (Uzunçarşılı, 1978;79). Harc-ı Hassa Defteri her aya mahsus ayrı ayrı yapılan sarfiyatı ve o aylardaki varidatı göstermesi bize önemli bir ipucu vermektedir. Bu bakımından devlet bütün harcamaları ve gelirleri kayıt altına alması uygulaması Osmanlı Devleti'nin bir diğer özelliği olan bürokratik devlet olma vasfını göstermektedir. Osmanlı Devletinde her yıl bütçe düzenlemesi yapılmaktaydı. Yılları itibarıyla gelir-gider hesaplarının gösteren bir cetvel düzenlenir, hazineye giren meblağın ne kadarının harcandığını kayıt edilirdi. Kısacası devlet gidere göre değil gelire göre bir harcamayı benimsemiştir (Tabakoğlu, 2012: 265). Osmanlı Devleti mali sisteminde bir bütçe geleneğinin olduğu, ancak bu bütçelerin gerek batılı ülkelerde gerekse de günümüz modern parlamenter sistemlerde kullanılan bütçelerle aynı olduğu anlamına gelmez. Genel olarak bütçe kayıtları, merkezi hazinenin gelir ve giderlerini kayıt altına almaya yönelik olarak düzenlenmiştir (Belin, 1931: 175).

XVI. yüzyılın ikinci yarısı ile birlikte, Osmanlı fetihlerin optimum bir noktaya ulaşması ve diğer taraftan Akdeniz havzasının potansiyel ekonomik üstünlüğü Atlantik ağırlıklı yeni bir ekonomik dünya sistemine kayması ve farklı dinamiklerin geleneksel yapıları biçimlendirici etkileri ile birlikte ticaretin ve buradan elde edilen sermayenin dolaşımındaki mücadeleler sonrası el değiştirmesi ve var olan yapıların yerini yeni yapılara bırakması sonucunda Osmanlı Devleti olumsuz yönde etkilenecektir (İnalçık, 2000).

XVI. yüzyıl ikinci yansından itibaren Tımar sistemi yerini iltizama, sipahinin de bir nevi görevini devralan mültezime bıraktığı bir dönemdir. Devletin mali yapısı; merkezi hazine (hazine-i amire), tımar alanları ve padişah hazinesinden yani iç hazineden meydana gelmiştir (Cezar, 1985: 28). Tımar sisteminin zayıflaması sonucu bu yolla sağlanan vergi gelirleri azalınca, bütçe açıklarının finanse edilmesinde iç hazine kaynakları kullanılma yolunu tercih edilmiştir. Padişaha ait olduğu kabul edilen ve coğrafi sınırlarının hızla genişlediği dönemlerde oldukça zenginleşen iç hazineden, merkezi hazineye nakit para, altın, gümüş gibi değerli madenlerin aktarımı gerçekleştirilmiştir. Savaşların sıklıkla yaşandığı 1670'ler ve 1680'lerde iç hazineden merkezi hazineye yılda ortalama 100 milyon akçenin üzerinde kaynak ayrımı yapılmıştır. Fakat XVII. yüzyılda, II. Viyana kuşatmasının ardından giderek büyüyen askeri harcamalar karşısında iç hazinenin sınırlı kaynakları da yetersiz kalmaya başlamıştır. Nitekim XVIII. yüzyılın başlarına gelindiğinde iç hazinenin kaynakları büyük ölçüde tüketilmiştir (Pamuk, 1993: 130).

Bu gelişmeler karşısında XVII. yüzyılın sonlarına doğru, krizlerin yoğunlaştığı eyaletlerden gelen irsaliyelerin azalması sonucu merkezi idare gelir kaygısına düşmüş; bazı eyalet hazinelerini kaldırarak vergi toplama yetkisini iltizam yoluyla voyvodalara ve muhassıllara bırakmıştı. Bu uygulama, bir anlamda eyalet hazinelerini devletin tekelden çıkarılma anlamına gelmekte idi (Akkuş, 2013: 147-178).

Yukarıda da söz edildiği üzere XVII. ve XVIII. yüzyıllarda merkezi otoritenin giderek güç kaybetmesi, önce mukataaların iltizam sistemiyle mültezimlere verilmesi ve mültezimlerin elinin güçlenmesi arkasından malikâne divani siteme dönüşmesi ile birlikte ayan sınıfın ortaya çıkması merkezi otoritenin zayıflamasına yol açmıştır (Özvar, 2009: 217-218). Devlet vergilerin ancak bir kısmını toplayabilir hale gelmesi sonucu merkezi hazinenin gelir giderleri denkleştirmekte güçlüklerle karşılaşmıştır. Nitekim bu konuda Ahmet Lütfi Efendi, hazinenin giderleri karşılama güçlüğü ile karşı karşıya kaldığında "edna bir emrî işaretle bir günde tahvilsiz binlerce kise almır verilir" şeklinde dile getirmesi devlet hazinesinin bütçe açıklarını geçici tedbirlerle ortadan kaldırdığına işaret etmektedir (Lütfi, 1984: 105). Tanzimat dönemi bütçelerine değinildiğinde daha ayrıntılı bir şekilde izah edileceği üzere 1851 yılında hazinenin açıklarını kapatmak üzere Fuat Paşa'nın girişimleriyle İç borçlanmanın (esham) dışında dış borçlanma gibi yöntemlere başvurulması gündeme gelmiştir (Cevdet, 1985: 23). Ancak Kırım savaşı sırasında 1854'de İngiltere'den oldukça yüksek faizle ilk dış borçlanma gerçekleşecektir (Tabakoğlu, 2012:289).

Parlamenter sistemlerde bütçeler, aynı zamanda yürütme organının kamu harcamaları yapma ve bu harcamaları karşılamak için kamu gelirlerini toplama yetkisini gösteren belgelerdir. Yürütme organı bu yetkiyi güçler ayrılığı gereği yasama organından almaktadır (Şahin, 2013:835-868). Bu anlamda ilk uygulama İngiltere'de 1689'da vergilerin onay hakkı gerekliliğini kabul eden kanunun yürürlüğe girmesi ile başlamıştır. Daha sonra Fransa'da restorasyon döneminde (1814-1830) hazırlanan 1816 bütçe devreye girmiştir. Ancak bu bütçe uygulaması 31 Mayıs 1861 tarihli kararname ile hukuki bir statü kazanmıştır. Fransız bütçe sistemi İngiltere'den sonra devreye girmiş olmasına rağmen Avrupa ülkeleri ile Türkiye'ye bir model olmuştur (Öner; 2009:6).

2. KLASİK DÖNEMDE BÜTÇE UYGULAMASI

Osmanlı Devlet hazinesinin yıllık gelir ve gider rakamlarını içeren cetveller kuruluşundan itibaren mevcuttu. Konuya ilişkin yapılan çalışmalarda söz konusu cetvellerin, Tanzimat dönemine kadar hazinenin gelir ve giderlerini gösteren tablolar olduğunu yönündedir. Ayrıca bu cetvellerin modern anlamda bir bütçe özelliği taşımadığı, envanter yahut kesin hesap mahiyetinde olduğunu, çoğunlukla yıl sonunda tutulan hesap özetleri niteliği taşımasıdır (Sahillioğlu, 1989: 44-46).

XVI. ve XVII. Yüzyıllarda dünyada henüz bütçe deyimi bilinmiyordu. Osmanlılar “icmal-i varidat ve masarifati-ı hıazane-i amire” veya “muhasabe-i varidat ve mesarifati-ı hıazane-i amire” adıyla hesap defterleri tutmuşlardır. Bu defterlere hazinenin gelir ve gider özeti veya hazinenin gelir ve gider muhasabesi denilmektedir. 16. Yüzyıl ve sonrasında mali sistem Dış Hazine, İç Hazine (Padişah/Enderun Hazinesi) ve Tımar olmak üzere üçlü kurumsal bir yapı üzerinden şekillenmiştir. Bu dönemde tımar uygulamasında tabi gelirler yereldeki Askeri harcamalara ve bunların maaşlarına ayrılıyordu. Ancak yereldeki bu gelirler merkezi hazine gelirlerini kapsayan devlet bütçesi içerisinde yer almıyordu. Diğer taraftan İç Hazine, Dış Hazine’ye adeta kaynak teşkil etmekteydi. XVI. yüzyılın sonundan itibaren taşra mali yapısı yeni bir uygulama ile merkezi hazinenin şubesi biçiminde çalışan ve gelir fazlasını (irsaliye) merkeze gönderen taşra defterdarlıkları (eyalet hazineleri) ile tımar-zeamet hesaplarını tutan tımar defterdarlıklarını da dâhil eden bir yapıya dönüştü (Akkuş, 2013: 147-178).

Osmanlı merkezi bütçesi, merkez bürokrasisi olan Divan-ı Hümayun ve buna bağlı kalemler, şeyhülislam ve ilmiye teşkilatı, askeri teşkilat, defterdarlık ve maliye teşkilatlarının giderlerinden ibaretti. Merkezi bütçeye ilave olarak eyalet ve vakıflar bütçeleri bulunmakta ve merkez bütçeleri bunlardan aktarılan gelirlerle birlikte hesaplanmaktaydı. Eyalet ve vakıflar kendi gelirleri ile giderlerini karşılamakta ve gelir fazlalarını merkeze göndermekteydiler. Dolayısıyla Osmanlı merkez bütçeleri, birçok kamu hizmetinin yerelde ve yerinden, vakıflar aracılığıyla, gerçekleştirdiği söylenebilir (Yeşilyurt & Cural, 2015: 159-175). Tanzimat öncesi dönemler genellikle Osmanlılar bütçeleri oluştururken, modern anlamda bütçe ilkeleri arasında bulunan kapsamlılık (genellik) niteliğine yer verilmemiştir (Öner, 2009: 12). Ancak mevcut bütçeler devletin bütün gelir ve giderleri içerisinde sadece merkezi idarenin belirli gelir ve giderlerini içermektedir. Osmanlı yönetiminde olan bölgelerden toplanan vergi gelirleri, has, zeamet ve tımar şeklinde veya çeşitli imtiyaz ve vergi muafiyetleri durumunda askeri ve idari hizmetlerin karşılığı olarak bırakılmış, bazı vergiler ise dini, kültürel veya toplumsal açıdan karşılanması gereken bazı ihtiyaçların giderilmesi adına kurulmuş olan vakıflara tahsis edilmiştir (Barkan, 1955:194-195).

Başlıca merkezi hazine gelirlerinin %90’ı aşağı yukarı eşit paylara sahip üç tür vergiden sağlanıyordu. Bunlar; aşar ve ağnam resmi, emlak vergisi, gümrük resimleri ve dolaylı vergiler ile birlikte ganimet, maden resmi, gümrük resmi, esnaftan alınan ihtisab resimleri, barış veya savaş zamanında toplanan çeşitli orfi vergiler ile eyaletlerin gelir fazlası ve imtiyazlı eyaletlerin yıllık maktu vergilerinden oluşmaktaydı. Geri kalan miktar, gayrimüslim uyruklulardan alınan cizye ile Mısır, Boğdan, Eflak ve Sırbistan’dan alınan vergilerdi (Tabakoğlu, 2012: 282).

Gelirlerin yaklaşık üçte birini oluşturan aşar, aynı olarak ödeniyordu ve alışılmış vergi tahsilat yöntemi ise iltizamdı. Osmanlı İmparatorluğu, Gülhane Hatt-ı Hümayununda açıklanan program doğrultusunda, dolaylı vergi tahsilatı (iltizam) yerine doğrudan tahsilat denemeleri yapmış, fakat deneyimli personel olmadığından dolayı bu denemeler hazine gelirlerinde önemli bir azalmaya yol açmıştır. Bu nedenle, iltizam sistemine geri dönmek mecburiyetinde kalınmıştır (Tabakoğlu, 1985: 121-128).

Merkezi hazinenin gider kalemlerine bakıldığında, kapıkulu askerlerin aylığı (ulufe ve cülus bahşişleri), tersane giderleri, askeri giderler, in’am ve ihsanlar (bağış ve yardım) oluşturmaktaydı (Öner, 2009: 10). Bununla birlikte şu noktayı belirtmek gerekirse, kadılık müessesesinde yer alan görevliler (kadı, naib ve bunlara yardımcı görevliler) ve taşra yönetiminde çalışan kadrolara yapılan maaş ödemelerini karşılayan tımar gelirleri ile bu kadrolara tahsis edilen *harç*, *avaid* ve *caiz* gibi birtakım gelirler bütçelerde gösterilmemiştir (Genç ve Özvar, 2006:8-10). Devletin gelir ve giderlerinin tümünün merkezi hazinede yer almamasının nedeni taşra teşkilatı ve tımar (dirlik) rejimi uygulamasından ileri geldiği söylenebilir.

Osmanlılarda modern anlamda bütçenin olmaması Osmanlı Devleti’nin güvenilir mali kayıtlarının olmadığı anlamına gelmez. Nitekim bu konuda Tabakoğlu (1985), söz konusu gelir ve giderlerin kayıt altına alınmasına yönelik olarak bütçe tanımlanmasında bir yanlışlığın ve eksikliğin olmadığını ileri sürmektedir. Ömer Lütfi Barkan ve Halil Sahillioğlu’nun yapmış olduğu çalışmalara göre ilk Osmanlı bütçesi 11.3.1524-10.3.1525 tarihlidir. Daha sonra 1527-1528, 1547-1548, 1567-1568, 1660-1661 ve 1669-1670 yıllarına ait bütçeler yayımlanmıştır (Barkan,1955; Sahillioğlu,1989). Barkan ve Sahillioğlu’nun öncü çalışmalarını 1980’li yıllardan itibaren Ahmet Tabakoğlu, Yavuz Cezar ve Tefik Güran’ın eserleri takip etmiştir (Genç ve Özvar, 2006: 7). Son yıllarda ise Mehmet Genç ve Erol Özvar’ın Osmanlı Bankası Arşiv ve Araştırma Merkezi adına yaptıkları “Osmanlı Maliyesi Kurumlar ve Bütçeler 1-2” adlı çalışmadır (Çiçek & Dikmen, 2015: 83-98).

Tanzimat dönemine kadar geçen devrede Osmanlı Devletinin safi varidat ve masrafları müfredatıyla çeşitli defterlere kayıt olunmuştur. Tahmin esasına dayanan genel bir devlet bütçesinin yapılmasına ihtiyaç duyulmamıştır. Daha öncede belirttiğimiz gibi Osmanlılar 16. Yüzyılın sonlarına dek mali problemlerle ciddi şekilde karşılaşmadıklarından gelire göre hareket etmekte olduklarından dolayı tahmini bütçe ihtiyacı hissetmemiş olabilirler. XVII. yüzyılda tutulan muvazene defterleri tahmin ve tasdik esasına dayanmayan ve harcama yapıldıktan sonra tutulan hazine hesap hülasalarıydı. I. Ahmet zamanında 1609’da Ayni Ali Efendi

tarafından tanzim edilen İstanbul'un senelik masraflarına dair cetveli. IV. Mehmet döneminde 1654 yılında Tarhuncu Ahmet Paşa Layıhası ile 1660 tarihli Eyyubi Efendi'nin ve 1653-54 yılına ait Ali Ağa'nın hazırladıkları cetveller bütçe niteliğinde en meşhurlardır. Tarhuncu layıhasındaki bütçenin geliri 14.503 kese (7.250.000 akçe), gideri ise 16.400 kese (8.200.000 akçe) idi¹. Bu layihadan bütçenin 1900 kese (950.000 akçe) açığı olduğu ve 1,5 yıllık gelirin de önceden alındığı belirtilmiştir (Belin, 1931: 49-50). Bütçeye benzeyen bu hesap defterlerindeki varidat ve masraf miktarları masraf lehine görülen açık miktarları da belirtilmiştir (Karamürsel, 1940:118-119).

Tanzimat öncesi bütçelerinde, avarız gibi bazı vergiler aynı-bedeni olarak tahsil edilebildiği için, bu vergilerin sadece nakdi olarak toplanılan kısmı bütçelerde yer alıyordu (Tabakoğlu, 2012: 283). On yedinci yüzyılın sonlarından itibaren alınan *imdad-ı hazariye* ve *seferiye* ile *kalemiye* vergileri de bütçede yer almamaktaydı. Bütçeden maaş tahsisatı yapılmadığı için merkez ve taşra kadrosunun büyük bir kısmı bütçe dışında, tarifeye bağlı ücret-harç benzeri gelirleri mevcuttu. Ayrıca mukataaların vergilendirme masrafları ile mültezimlerin kârları da devlet bütçesine dâhil edilmemiştir. Dolayısıyla On dokuzuncu yüzyıla kadar bütçede tüm gelirlerin sadece % 25-40'ı yer almaktaydı (Akkuş, 2013: 152). Tanzimat'tan önce vergi gelirleri bütçelerde tekalif-i şer'iye ve örfiye olarak ikiye ayrılmış iken, Tanzimat'tan sonra düzenlenen muvazene defterlerinde değişik bir tasnif şekline gidilmiştir. Bu tasnife göre vergi ve cizye geliri, miri emlak geliri ile emirliklerin maktu vergileri ve aşar, ağnam, gümrük ve rüsum gelirleri yer almıştır. Bu tasnif şekli 1861 yılına kadar devam etmiş daha sonra dolaylı ve dolaysız vergiler haline dönüştürülmüştür. 1908'e kadar devam eden bu yöntem 1909'da yeni bir yöntemle hazırlanan bütçeler vergi, vergi dışı gelirlere göre isimlendirilmiştir.

3. TANZİMAT DÖNEMİ BÜTÇE UYGULAMALARI

Kamu maliyesinde günümüzdeki merkezîyetçilik anlayışı ve usulü Tanzimat'la başlamıştır (Şahin, 2013: 853-868). Osmanlı devletinde Tanzimat'ın ilanından yaklaşık bir yıl önce 1838'de defterdarlık teşkilatı yerine Maliye Nezareti kurulmuş ve mevcut hazinelerin 1840'da Redif ve Mansûre Hazineleri ile Hazine-i Âmire birleştirilerek Hazine-i Celile-i Maliye adıyla tek hazine sistemine geçilmiştir. Osmanlı Devleti Bütçe kavramını ilk olarak bu dönemde çerçeve karar 1845'te ortaya çıkmış dolayısıyla sistemin değişmesiyle en önemli icraat 1846'dan itibaren modern anlamda tahmini bütçelerin devreye sokulmasıdır (Güran, 1989:7). Tanzimat Fermanındaki "Devlet-i Aliye'nin berren ve bahren mesarif-i askeriye vesairesi dahi kavanin-i icabiye ile tahdit ve tebyid olunup ona göre icra olunması lazimedendir" (Düstur, I.Tertip, c.1., s. 4-7), ifadesinde Kavanin-i icabiye ile masrafların tahdit ve tebyini hükmünün gelersiz masraf yapılamayacağına göre gelirin de kayıt altına alındığını göstermektedir. Bu ifadelerden Tanzimat Fermanında dolaylı olarak bütçe vurgulanmaktadır. 1856 Islahat Fermanında da "... sa1tanat-ı seniyyenin beher sene için varidat ve masarifat defterlerinin tanzim ve iraesî hakkında muahhar bir nizam-ı mahsus yapılmış olduğundan bunun temami-i icra-ı ahkâmına itina Olunması" (Düstur, I.Tertip, c.1., s. 7) cümlesi ile bütçe için daha açık bir ifade kullanarak muvazene defteri nizamname hüküm altına alınmıştır (Şener, 2007:5). Tanzimat Fermanı herkesten maddi gücü nispetinde vergi tahsil edilmesini, arpalık ve aidat usulünün terk edilerek yerine maaş sisteminin ikame edilmesini ve Hassa Hazinesi ile giderlerinin Maliye Hazinesi'ne dâhil edilmesini önermekteydi (Feyzioğlu, 1983: 27). Tanzimat'tan sonra genel bir toparlanmanın olduğu göz önüne alınırsa, ilk bütçenin yapılış tarihi 1846/47 mali yılı olarak görülmektedir. 1845 yılında Osmanlı İmparatorluğu modern bir bütçenin hazırlanması ve her yıl bu tip bütçelerin hazırlanmasını öngören ve bunun esaslarını getiren bir çerçeve karar ortaya çıkmıştır (Gürsaka1, 2010: 115-131). Nizamiye hazinesinin yürürlüğe girmesinden itibaren Eyalet ve sancaklarda maliye işlerinin yürütülmesi ve vergilerin doğrudan hazine adına toplanması için muhassıllar görevlendirilmiştir. Söz konusu uygulamadan verim alınmadığından dolayı 1842'de iltizam sistemine yeniden dönülerek muhassıllıklar kaldırılmış ve eyaletlere defterdarlar atanmıştır (Kılıç, 2002:359). Artık devletin hazineleri tüm gelir ve giderlerini bünyesinde toplayacak şekilde tek bir hazine olarak faaliyet gösterecektir. Maliye Nezâreti tüm malî işleri kontrol eden bir idare haline getirilerek bütçede olması gereken birlik ve genellik prensiplerine uygun bütçelerin hazırlanması imkân dâhiline girmiştir. Buna karşılık Tanzimat'ın ilk yıllarında bütçeyle ilgili herhangi bir düzenlemeye de gidilmemiştir (Şahin, 2013: 853-868).

Osmanlı devleti öteden beri uygulaya geldiği mali takvimde de değişikliğe gitmiştir. Bütçeler XVI. yüzyılda güneş yılına, XVII. yüzyılın ikinci yarısı ile XVIII. yüzyılda ise ay yılına göre hazırlanmıştır (Tabakoğlu, 1985: 77). Ayrıca Osmanlı mukataa gelirleri güneş yılına (365 gün), giderler ise ay yılına (354 gün) göre düzenlendiğinden ay ve güneş yılı arasında her yıl ortaya çıkan 11 günlük fark sebebiyle ay yılı erken bitiyor; her 33. yılda gün farkları biriktiğinden yeni bir ay yılına giriliyordu. Dolayısıyla gider yılı bir sene önce başladığından giderleri karşılayacak gelirler söz konusu olmuyor ve bütçede karmaşıklıklara neden oluyordu bu duruma "Sıvış yılı buhranları" olarak da ifade edilmektedir (Özvar, 2006: 227). Hazine hesapları, nihayet 1842 Haziranından itibaren güneş yılına/Rumi takvime (Mart-Şubat) göre tutulmaya başlanmıştır (Akkuş, 2013:150). Bir diğer gelişmede Osmanlı Devleti mali ve para politikasına yönelik yeni bir uygulamaya geçmiştir. 1844 yılında, paranın değerini korumak amacıyla, Batılı ülkelerin önerileri doğrultusunda, Tashih-i Sikke ya da Tashih-i Ayar olarak adlandırılan bir para reformu yapılmıştır. Bu reformla; altın ve gümüşe dayalı yeni bir para sistemine (çift metal sistemi) geçilmiş ve ondalık sistem benimsenerek lira ve kuruş esaslı devreye girmiştir (Öner, 2005: 306). Esasında Osmanlı Devleti'nde modern anlamda bütçelerin hazırlanması ve daha sonraki dönemlerde de uygulanmasında bütçe gelir-gider tahminleri bir önceki yıl hesapları dikkate alınarak çıkartılır ve bütçenin bir örneği padişaha, bir örneği de Meslis-i Vâlâ'ya sunulmak üzere yayımlanırdı (Şener, 2007:8; Şahin, 2013: 853-868).

¹Bir yük 100000 akçe; Bir kese 500 akçe karşılığıdır.

1846-1855 yılları arasında bütçeler söz konusu usule göre hazırlanmakla birlikte, bununla ilgili yapılmış herhangi bir hukuki düzenleme bulunmamaktaydı. Daha sonra 1855 yılında bütçelerin hazırlanması, onaylanması ve denetlenmesi ile ilgili esasları belirleyen Hazine-i Celîlenin Muvazene Sureti Tanzimine Dair Nizamname kabul edilmiştir. Bu dönemde kesin hesap sonuçlarını Meclis-i Muhâsebe-i Maliye'nin incelemesi öngörülmüştür. (Şahin, 2013:853-868) Bu nizamname ile bütçe, yasama organı tarafından devlet gelirleri ve giderlerini denetler mahiyette bir nitelik kazanması üzerine izne tabi tutulmuştur (Şener, 2007: 10).

1864 tarihli "vilayet nizamnamesi" daha sonra 9 Kanun-ı Sani 1286/22 Ocak 1871 tarihli "İdare-i Umumiye-i Vilayet Nizamnamesi" çıkarılarak illerde defterdarlık, kazalarda muhasebe ve mal müdürlükleri ihdas edildi. Batılı anlamda hazırlanan ilk bütçe 1863-1864 mali yılı bütçesidir. Bütçede kesin hesabın zorunlu olarak gösterilmesi ancak 1874'de gerçekleşmiştir (Öner, 2009: 37). Bütçe komisyonu hem devlet memurları hem de maliyeye ait işlerde uzman kişiler olarak Meclis-i Vükela marifetiyle seçilecek ve Bütçe Komisyon'u gelirlerin sıhhat ve doğruluğunu ve masrafların meşruiyeti ve gerekliliğini tasdik edecek her türlü araştırma ve inceleme yapmaya yetkili olacaktı (Şahin, 2013: 853-868). Bütçe Komisyonu'nun 1873 tarihli bütçeye ait olarak hazırladığı rapora göre komisyonda İstanbul'da bulunan bankaların ve mali müesseselerin temsilcileri bulunmaktaydı. Bu açıklamalardan devlet bütçesinin yabancıların katıldığı bir kurul tarafından hazırlandığı anlaşılmaktadır. Bu dönem Bütçe Komisyonu tarafından hazırlanan bütçeler görülen eksikliklerden ve teknik açıdan yeterli bütçeler değildi. Çünkü merkezleşme yönünde hareket eden devletin gelir ve giderleri doğru bir şekilde tahmin edilemiyordu. Ayrıca devlet daireleri hazırlanan bütçelere bağlı kalmak istemeyerek bütçe dışı harcamalar yapmakta ve devlet sürekli olarak borçlandırılmaktaydı. Nitekim konumuz dışında tuttuğumuz 1881'de Osmanlı Devleti moratoryum ilan etmiştir. Duyun-u umumiye sürekli borçlanma neticesi olarak ortaya çıkmıştır (Tabakoğlu, 2012: 290).

4. II. MEŞRUTİYET DÖNEMİ BÜTÇE UYGULAMALARI

Bütçe hakkı yani vergilerin esas ve oranlarıyla bunların harcanacağı yerlerin ve miktarının belirlenmesi 1876'da yürürlüğe giren ilk anayasa olarak kabul edilen Kanun-ı Esasî ile tanınmıştır. Bu anayasanın 20, 25, 96 ve 97. Maddelerinde verginin tasdiki ve bütçe hakkı kayıtlara girmiştir. Bu hükümlerle Osmanlı Anayasası vergi tasdik hakkı ve bütçe hakkını açık ve kesin bir şekilde kabul etmektedir. Yine anayasanın 98. ve 102. maddelerinde bütçenin yıllık olma prensibi ile gelir ve giderlerin bölümler itibarıyla tasdik edilmesi yöntemi tespit edilmiştir: Bütçe yani "Muvazene-i Umumiye Kanunu, Meclisi Umimide madde be madde tetkik ve kabul olunur". "Varidat ve masarifatı muhammenin müfredatını cami olmak üzere ona merbut cetveller nizamden tayin olunan nümunesine tevfikeyan aksam ve fusul ve mevaddı müteaddideye münkasem olarak bunların müzakeresi dahi fasıl fasıl icra edilir" (m.98). "Muvazene kanunu hükmü bir seneye mahsustur" (m.102). Gelir ve giderlerin kalem kalem kayıt altına alınacağı açıkça belirtilmiştir (Feyzioğlu, 1983: 29; Şahin, 2013:853-868).

Kanun-ı Esasî, bütçe hakkını Mebusan Meclisi ile Ayan Meclisinden kurulu Meclis-i Umumi'ye vermiştir. Kanun-ı Esasî'de kanuni dayanağı olmaksızın kimseden vergi, resim adı altında para tahsil edilemeyeceği, devlet gelir ve giderlerinin her yıl Muvâzen-i Umumiye Kanunu ile tasdik edildikten sonra icra edileceği ve vergilerin tahsiline bütçe kanunu ile her yıl yeniden meşruiyet verilmesi gerektiği belirtilmiştir. Ancak bu esaslar, 1908'de II. Meşrûtiyet'in ilanına kadar fiilen uygulanamamış, vergiler padişahların iradeleriyle toplanmaya ve padişahın uygun gördüğü yerlere harcanmaya devam edilmiştir. (Şahin, 2013:853-868). Tanzimat sonrasında oluşturulan heyetler ve kurumlarla padişahın yasama yetkisi ve bu arada halka malî yükümlülükler koyma gücü pašalar ve bürokratlar tarafından sınırlandırılmaya çalışılmıştır. Diğer taraftan 1910'dan itibaren ülke içerisinde yapılan her harcama ve toplanılan her gelir devlet bütçe/hazine kayıtlarında yer alacaktı. Böylece bütçenin "genellik ilkesi" de kabul edilmiş ve kayıtlara girmiş oluyordu (Akkuş, 2013: 150). Gelir ve gider kalemlerinden oluşan yerel ve merkezi bütçelerin birleştirilmesi "Birlik ilkesine" tam anlamıyla uyum ise 1909-10 mali yılı bütçesiyle gerçekleşmiştir. Aşağıda 1880 ile 1910 yılları arasında dairelere göre ayrılan bütçe rakamları yer almaktadır.

Tablo 1: 1880-1910 Yılları Arasında Dairelere Göre Bütçenin Dağılımı

| Daireler | 1880-1881 Bütçe/Lira | 1909-1910 Bütçe lira |
|--|----------------------|----------------------|
| Donanma | 989.015 | 1.228.840 |
| Hazine-i Hassa | 156.218 | 522.570 |
| Dahiliye | 1.032.133 | 1.085.112 |
| Yasama Kurumları (Devlet Şurası hariç) | 112.500 | 215.346 |
| Maliye | 1.503.594 | 2.723.234 |
| Duyun-ı Umumiye | 6.507.009 | 8.294.262 |
| Ordu (Donanma ve Tophane hariç) | 7.237.385 | 8.280.542 |
| Sadrazam | 35.554 | 34.490 |
| Adalet | 403.990 | 651.917 |
| İlmiye | 189.768 | 485.433 |
| Eğitim | 96.414 | 660.527 |

Kaynak: Devlet-i Aliye'nin 1296 yılına ait Muvazene-i Umumiyesi ve .Devlet-i Osmaniye'nin 1323 yılı Bütçesi; Keskinlikç, Pdf.

Tablo 2: 1870-1915 yılları arasında bütçede yer alan kalemlere göre gelir dağılımı

| Gelir Kalemleri | 1870 | 1875 | 1880 | 1890 | 1900 | 1910 | 1915 |
|--------------------------|-----------|-----------|------------|------------|------------|------------|------------|
| A'şar | 1.114.730 | 1.392.000 | 5.000.000 | 4.039.776 | 4.443.619 | 6.746.950 | 4.800.000 |
| Doğrudan Alınan Vergiler | 635.000 | 635.000 | 2.250.000 | - | - | - | - |
| Gümrükler | 415.386 | 415.000 | 1.800.000 | 2.024.700 | 2.655.000 | 4.217.752 | 4.440.000 |
| Ağnam | 320.286 | 403.960 | 1.650.000 | 1.786.696 | 2.015.066 | 1.804.141 | 1.620.500 |
| Rub'î Öşür | 193.991 | 348.000 | | | | | |
| Duhan | | | 1.000.000 | | | | |
| Dersaadet Ak. Emlak | | | | 2.402.887 | 2.544.800 | 2.599.420 | 2.800.000 |
| Maktu vergi | | | | 1.136.360 | | | |
| Bedel-i nakti | | | | | 1.289.612 | | |
| Tuz | | | | | | 950.000 | |
| Temetu' vergisi | | | | 870.385 | | | |
| Toplam | 2.679.393 | 3.193.960 | 11.700.000 | 11.124.444 | 12.794.845 | 16.657.875 | 14.610.500 |

Kaynak: (Keskinkılıç, Pdf.)

Toplam gelirler içerisinde en fazla 16.657.875 lira 1910 yılına ait bütçe olduğu görülmektedir.

Tablo 3: 1870-1915 Yılları Arasında Bütçede Yer Alan Kalemlere Göre Gider Dağılımı

| Kalemler | 1870 | 1875 | 1880 | 1890 | 1900 | 1910 | 1915 |
|----------------------|----------|-----------|-----------|-----------|-----------|-----------|------------|
| Duyun-ı Umumiye | | | | | | 8.374.480 | 15.577.625 |
| Duyun-ı Um. Ana para | 849.638 | 1.440.640 | | | | | |
| Esham-ı Um. Faizi | 261.653. | 766.377 | | | | | |
| Nizamiye | 650.923 | 780.583 | 5.363.049 | 5.130.000 | 5.391.240 | | |
| Dahiliye | 512.462 | 551.549 | 870.632 | | | | |
| Hazine-i Hasa | 207.483 | 367.551 | | | | | |
| Duyun-ı Dahiliye | | | 2.816.763 | | | | |
| Duyun-ı Hariciye | | | 2.096.479 | | | | |
| Maliye | | | 1.322.007 | | 1.056.598 | 3.168.544 | 3.134.805 |
| Duyun-ı Muntaz. | | | | 4.250.699 | 5.091.239 | | |
| Duyun-ı G. Mun. | | | | 1.294.691 | 2.092.835 | | |
| Fevkalede Nizam. | | | | 1.093.038 | | | |
| Jamdarma | | | | 1.193.200 | 1.153.475 | 1.757.019 | 2.228.521 |
| Bahriye | | | | | | 1.640.311 | 1.592.245 |
| Harbiye | | | | | | 9.000.000 | 6.044.107 |

Kaynak, (Keskinkılıç, pdf.)

Tablo 4: 1870-1915 Yılları Arasında Bütçede Yer Alan Kalemlere Göre Gelir-Gider Dağılımı

| Yıllar | 1870 | 1875 | 1880 | 1890 | 1900 | 1910 | 1915 |
|-------------|-----------|-----------|------------|------------|------------|------------|------------|
| Gelir | 3.678.962 | 4.776.588 | 16.115.840 | 17.767.424 | 19.612.280 | 26.015.100 | 26.836.438 |
| Gider | 4.141.859 | 5.785.819 | 17.039.651 | 19.927.286 | 20.878.723 | 35.693.783 | 35.657.545 |
| Bütçe açığı | 462.897 | 1.009.231 | 923.811 | 2.159.862 | 1.266.443 | 9.678.683 | 8.821.107 |

Kaynak; Keskinkılıç, Pdf.).

1887 tarihli muhasebe kayıtlarında hazinenin gelirlerinden Osmanlı ailesine mensup olanlar ile saray hizmetinde bulunan bir kesimine ödenen maaşlar aşağıda gösterilmiştir. Osmanlı Devleti'nin üst düzey ricaline ve hanedan üyelerine ödenen maaşlar Rumi takvime göre (Mart, Nisan, Mayıs, Haziran, Temmuz, Ağustos, Eylül, Teşrin-i Evvel, Teşrin-i Sani, Kânun-i Evvel, Kânun-i Sani, Şubat aylarında birkaç istisna dışında her ay maaş ödenmekte idi. Bu verilere bakıldığında en fazla 500.000 kuruş ile "Devletlü Valide Sultan Alişan Hazretleri"ne ödenen maaş öne çıkmaktadır. Diğerlerine kademeli olarak belli oranlarda maaş bağlandığı görülmektedir. Maaş büyüklüğüne göre tablo-V'de isimleri sıralanmıştır.

Tablo 5: Aylık Olarak Ödenen Maaşlar

| İsimleri | Rümi takvime göre her ay maaşlar ödenmiştir | Maaş Miktarı/Krş. |
|---------------------------------|---|-------------------|
| Valide Sultan Alişan Hazretleri | | 500.000 |
| Adile Sultan | | 200.000 |
| Fatma Sultan | | 125.000 |
| Refika Sultan | | 125.000 |
| Cemile Sultan | | 125.000 |
| Murat Efendi | | 125.000 |
| Abdulhamid Efendi | | 100.000 |
| Reşat Efendi | | 100.000 |
| Burhanettin Efendi | | 35.000 |
| Kemalettin Efendi | | 40.000 |
| Nureddin Efendi | | 30.000 |
| Süleyman Efendi | | 20.000 |
| Vahideddin Efendi | | 20.000 |
| Behiçe Sultan | | 15.000 |
| Seniha Sultan | | 15.000 |
| Mediha Sultan | | 15.000 |
| Naile Sultan | | 15.000 |
| Alaaddin Efendi | | 16.330 |
| Seniye Hanım Sultan | | 50.000 |
| Feride Hanım Sultan | | 50.000 |
| Kadın Rab'i Sultan Mahmud Han | | 34.744 |
| Baş İkbal Müşarün-ileyh | | 34.744 |
| İkbal Salis Müşarün-ileyh | | 34.744 |
| Kadın Sani Abdulmecid Han | | 20.000 |
| Kadın Salis Müşarün-ileyh | | 20.000 |
| Kadın Rab-i müşarün-ileyh | | 20.080 |
| Kadın Hams Müşarün-ileyh | | 20.000 |
| Baş İkbal Müşarün-ileyh | | 20.080 |
| İkbal Sani Müşarün-ileyh | | 15.000 |
| İkbal Salis Müşarün-ileyh | | 15.000 |
| Müşarün-ileyhin civarları | | 17.430 |
| Kayıkcıyan Saltanat ve saire | | 82.063 |

Kaynak: BOA, *Devlet-i Aliye-i Osmaniyenin 1303/1887 tarihli Varidât ve Masârifât Defteri*, s.9.

5.SONUÇ

Osmanlı merkezi bütçesi, merkez bürokrasisi olan Divan-ı Hümayun ve buna bağlı kalemler, şeyhülislam ve ilmiye teşkilatı, askeri teşkilat, defterdarlık ve maliye teşkilatlarının giderlerinden ibaretti. Merkezi bütçeye ilave olarak eyalet ve vakıflar bütçeleri bulunmakta ve merkez bütçeleri bunlardan aktarılan gelirlerle birlikte hesaplanmaktaydı. Eyalet ve vakıflar kendi gelirleri ile giderlerini karşılamakta ve gelir fazlalarını merkeze göndermekteydiler. Dolayısıyla Osmanlı merkez bütçeleri, birçok kamu hizmetinin yerelde ve yerinden, vakıflar aracılığıyla, gerçekleştirdiği söylenebilir

Tanzimat öncesi dönemler genellikle Osmanlılar bütçeleri oluştururken, modern anlamda bütçe ilkeleri arasında bulunan kapsamlılık (genellik) niteliğine yer verilmemiştir. Ancak mevcut bütçeler devletin bütün gelir ve giderleri içerisinde sadece merkezi idarenin belirli gelir ve giderlerini içermektedir. Osmanlı yönetiminde olan bölgelerden toplanan vergi gelirleri, has, zeamet ve tımar şeklinde veya çeşitli imtiyaz ve vergi muafiyetleri durumunda askeri ve idari hizmetlerin karşılığı olarak bırakılmış, bazı

vergiler ise dini, kültürel veya toplumsal açıdan karşılanması gereken bazı ihtiyaçların giderilmesi adına kurulmuş olan vakıflara tahsis edilmiştir.

Esasında Osmanlı Devleti’nde modern anlamda bütçelerin hazırlanması ve daha sonraki dönemlerde de uygulanmasında bütçe gelir-gider tahminleri bir önceki yıl hesapları dikkate alınarak çıkartılır ve bütçenin bir örneği padişaha, bir örneği de Meslis-i Vâlâ’ya sunulmak üzere yayımlanırdı.

Tanzimat sonrasında oluşturulan heyetler ve kurumlarla padişahın yasama yetkisi ve bu arada halka malî yükümlülükler koyma gücü paşalar ve bürokratlar tarafından sınırlandırılmaya çalışılmıştır. Diğer taraftan 1910’dan itibaren ülke içerisinde yapılan her harcama ve toplanılan her gelir devlet bütçe/hazine kayıtlarında yer alacaktı. Böylece bütçenin “genellik ilkesi” de kabul edilmiş ve kayıtlara girmiş oluyordu.

Ayrıca bütçelerde Osmanlı ailesine mensup olanlar ile saray hizmetinde bulunan bir kesimine ödenen maaşlarda kayıt altına alınmıştır. Böylece devleti’nin üst düzey ricaline ve hanedan üyelerine ödenen maaşlar Rumi takvime göre her ay ödenmekte idi.

KAYNAKÇA

- Akkuş, Y. (2013). Osmanlı devlet ve vilayet bütçeleri (1840-1913) nasıl okunmalıdır?. ODTÜ Gelişme Dergisi, 40 (Ağustos), 2013, 147-178.
- Başbakanlık Osmanlı Arşivi.
- Maliye Vâridât Muhasebesi Defterleri.
- Barkan, Ö. L. (1960). H. 954–955 (M.1547–1548) malî yılına ait bir Osmanlı bütçesi. İFM, 19, Sermet Matbaası, İstanbul.
- Barkan, Ö. L. (2000). Osmanlı Devleti’nin sosyal ve ekonomik tarihi, tetkikler-makaleler, I. İÜ Rektörlük Yayını No:4214, İF Yayını No:565, TİİTAM Yayını No:3, (Yay. Haz. Hüseyin Özdeğer), İstanbul.
- Barkan, Ö. L. (1955). Osmanlı İmparatorluğu bütçelerine ait notlar. İstanbul Üniversitesi İktisat Fakültesi Mecmuası, 17/1–4, İstanbul.
- Belin, M. (1931). Osmanlı İmparatorluğu’nun iktisadi tarihi. (Çev. Oğuz Ceylan), Gündoğan, Ankara.
- Cevdet Paşa. (1986). Tezakir, 1-12. (Yay. C. Baysun), Ankara.
- Çiçek, H. G., Dikmen, S. (2015). Osmanlı Devleti’nde bütçenin ve bütçe hakkının tarihsel gelişimi. Ekonomik ve Sosyal Araştırmalar Dergisi, 11/ 2, 83-98.
- Düster. I Tertip C.I
- Ezar, Y. (1985). Tanzimat’a doğru Osmanlı maliyesi. C: 4, Tanzimat’tan Cumhuriyet’e Türkiye Ansiklopedisi, İletişim Yayınları, İstanbul, s. 924-933.
- Feyzioğlu, B. N. (1983). Modern anayasalarda bütçe hakkı. İstanbul Üniversitesi İktisat Fakültesi Maliye Araştırma Merkezi Konferansları, 29, 3-28.
- Genç, M., Özvar, E. (2006). Osmanlı maliyesi kurumlar ve bütçeler 1,2. Osmanlı Bankası Arşive ve Araştırma Merkezi, I. Baskı, İstanbul.
- Güran, T. (1989). Tanzimat döneminde Osmanlı maliyesi: bütçeler ve hazine hesapları (1841–1861). TTK Yayınları, Ankara.
- Gürsakan, G. G. (2010). Osmanlı ve büyük güçlerin askeri harcamalarına karşılaştırmalı bir bakış (1840-1900). Akademik Bakış, 4/7, 115-131.
- İnalçık, H. (2000). Osmanlı İmparatorluğu’nun ekonomik ve sosyal tarihi (1300-1600). I Eren, İstanbul.
- Karamürsel, Z. (1940). Osmanlı malî tarihi hakkında tetkikler. TTK Yayını, VIII/11, Ankara.
- Keskinkılıç, E. file:///C:/Users/PC/Downloads/5000085456-5000119412-1-PB%20(1).pdf. Erişim: 03.05.2018.
- Kılıç, S. (2002). 1855 bütçe nizamnamesi ve uygulaması. Türkler, 16, Ankara.
- Lütfi, A. E. (1984). Vak’anüvis Ahmet Lütfi Efendi tarihi. (Yay. Haz. M.Münir Aktepe), IX, İstanbul.
- Öner, E. (2009). Osmanlı Devlet 1912 yılı hazine genel hesabı ve kesin hesap kanunu tasarısı. Maliye Bakanlığı, 2009/398, Ankara.
- Öner, E. (2005). Osmanlı İmparatorluğu ve Cumhuriyet Döneminde malî idare. TC Maliye Bakanlığı APKKB Yayını, 2005/369, Ankara.
- Özvar, E. (1999). Rum eyaletine ait H. 1043-44/M. 1634-35 tarihli “bütçe”nin tahlili. Yeni Türkiye Yay., Osmanlı 3, İktisat, G. Eren (der.), Ankara, 150-157.
- Özvar, E. (2006). Osmanlı Devleti’nin bütçe harcamaları (1509-1788). Osmanlı Maliyesi: Kurumlar ve Bütçeler, C: 1, s. 197-238.
- Pamuk, Ş. (1998). Osmanlı-Türkiye iktisadî tarihi 1500-1914. Gerçek Yayınevi, İstanbul.
- Sahillioğlu, H. (1989). 1524–1525 Osmanlı bütçesi. İÜİFM,41/1–4, İstanbul.
- Sayar, N. S. (1970). Kamu maliyesi bütçe prensipleri ve tatbikatı, C. II. İstanbul.

- Sayın, A. V. (2000). Tarih-i mali: kuruluşundan Kanuni döneminin sonuna kadar Osmanlı maliye tarihi (1299-1566). Ankara: Maliye Bakanlığı. Araştırma, Planlama, ve Koordinasyon Kurulu Başkanlığı, 2000/356.
- Şahin, H. (2013). Osmanlı bütçe sisteminin tekâmülü, 1839–1922. *International Journal Of Social Science*, 6/ 2, 853-868.
- Şener, A. (2007). Sona doğru Osmanlı. Birleşik Kitabevi, Ankara.
- Tabakoğlu, A. (2012). Türk iktisat tarihi. Dergâh Yayınları, Tarih Dizisi, İstanbul.
- Tabakoğlu, A. (1985). Gerileme dönemine girerken Osmanlı maliyesi. *Dergah Yayınları*, İstanbul.
- Uzunçarşılı, İ. H. (1978). Osmanlı Devleti maliyesinin kuruluşu ve Osmanlı Devleti iç hazinesi. *Bellekten*, 42/165. 67-93.
- Yeşilyurt, Ş., Cural, M. (2015). Osmanlı İmparatorluğu'nda bütçe dengesinin gelişimi: 1643-1918. *AKÜ İİBF Dergisi*, VII/II, 159-175.



EARNINGS MANAGEMENT AND ECONOMIC VALUE ADDED IN CHINA, AFRICAN AND LATIN-AMERICAN MARKETS: A STUDY OF LOGISTICS MODEL, SUPPORT VECTOR MACHINES AND ROUGH SET THEORY

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ABSTRACT

Purpose- This study to predict the association between earnings management and EVA, evaluated it for accuracy.

Methodology- This study through logistic regression model (excluding OLS regression model), Support Vector Machines and Rough Set Theory

Findings- Empirical results show that RST model exhibited the highest accuracy in China and Africa nations. SVM model exhibited the highest accuracy in Latin-America nations.

Conclusion- Our results provide critical implications for managers, researchers, investors, and regulators. Managers should analyze whether EVA motivates managers to engage in earnings management behavior. For researchers, we adopted logit, SVM and RST model to predict effect of earnings management on economic value added; For investors, they can analyze the true value of enterprises, regardless of whether enterprises have adopted earnings management. Regulators (e.g., governments) should establish stricter security measures and laws or rules for listed firms to prevent earnings management following a financial tsunami and to encourage them to report their "real" true value.

Keywords: Earnings management, economic value added, logistics model, support vector machines, rough set theory.

JEL Codes: M40, M41, M49

1. INTRODUCTION

Earnings management is managers exercise judgment in financial reporting and in structuring transactions to adjust financial reports, either to mislead stakeholders about the reported accounting numbers of a company (Healy & Wahlen, 1999). Economic value added (EVA), is used to evaluate economic value, assess funds, and efficiently allocate resources, and it involves using adjustment items to reflect the true economic value of a firm. However, EVA is also based on financial statements for measuring opponents; it is highly probable that EVA motivates managers to engage in earnings management behavior. Wang et al., (2015) and Liu (2016) analyze effect of earnings management on economic value added. However, these results presented only investigate whether earnings management influences a firm's EVA from the perspective of capital cost. In addition, they do not conduct several diagnostic tests (including an accuracy evaluation). Thus, this finding has caused some commentators to question the reliability and comparability of the emerging body of empirical evidence.

Economic value added is the only criterion which calculates the value of the company in real terms and is the fundamental indicator to measure the performance and determining of the value of the company. Investors' concern of the return of principle as well as profit of their investment has led us to forecast status of economic value added as a basis to evaluate companies' performance. Predicting the status of economic value added is one of the ways that can be used to exploit investment opportunities and also to avoid waste of resources (Hajabedi et al, 2016). Methods for economic value added have been extensively researched. Classical statistical techniques influenced the formation of these models such as linear regression (Shiri et al., 2013), Neural Networks (Shiri et al., 2013), Genetic Algorithms (Hajabedi et al, 2016). However, other

models have not been used directly to forecast the level of economic value added in advance. The main contribution of this study to the literature is that, based on our research, it is the first study to predict the association between earnings management and EVA through logistic regression model, support vector machines and rough set theory, evaluated it for accuracy.

We adopted real earnings management (REM) activities and discretionary accrual (DA) items to measure earnings management, and both unadjusted and adjusted EVA for determining EVA. Because countries have relatively distinct governments, cultures, laws, and economic conditions, enterprises operate in unique systems and environments; hence, they cannot be considered equivalently. International investors paid closer attention to China, Africa (e.g., Egypt, Nigeria, South-Africa, Kenya, Morocco) and Latin-America nations (e.g., Mexico, Brazil, Argentina, Chile, Peru, Colombia) after the 2008 financial tsunami because they were growing. Thus, we have developed logistic regression model (Logit), support vector machines (SVM) and rough set theory (RST), evaluated it for accuracy, and compared in China, Africa and Latin-America nations, based on these models.

The remainder of the paper is organized as follows. Section 2 presents a brief review of the related literature. Section 3 provides details of the research design and sample selection procedure and develops our model. Section 4 presents our empirical findings. Section 5 contains a summary and conclusions.

2. LITERATURE REVIEW

2.1. Economic Value Added (EVA)

EVA is calculated “after subtracting the cost of capital from the operating profits (Stewart, 1991). Manorselvi and Vijayakumar (2007) revealed that the traditional measures of performance do not reflect the real value addition to shareholders wealth and EVA has to be explained shareholders value addition. Destri et al.,(2012) showed that a performance and cost measurement system that integrates the Economic Value Added criteria (EVA) with Process Based Costing (PBC). Zhao and Wang (2012) showed that it is important and practical to replace traditional indicators with EVA indicator in the performance evaluation of commercial banks. Teker et al.,(2011) showed that Economic Valued Added is a recent financial tool that helps to determine the true shareholder wealth contribution of a bank. Hence, EVA results and ranking of banks convey critical information for decision makers. Shil and Das (2012) showed that a discussion of possible changes to corporate strategies and business performance when the integrated ABC (activity based costing) and-EVA system is implemented in a manufacturing company for pricing their products. Chen et al., (2014) showed that the improved EVA-ABC (Activity based Costing) based DuPont analysis system can reduce the negative impacts of accounting principles and objectively reflect the operating performance of the enterprise. Wang & Wang (2016) indicated that EVA can’t significantly reduce the listed state-owned corporations’ overinvestment, but it has different inhibition effect on different growth corporations. The EVA can significantly reduce low growth listed state-owned corporations’ overinvestment, which suggests the EVA evaluation system can improve low growth corporations’ investment situation. Saha et al.,(2016) indicated that Malaysian banks step into Basel-III era; a close look at their performance on risk adjusted basis using EVA would throw significant light on their relative strengths and weaknesses. Maitah et al., (2015) indicated that the relationship between economic value added and stock prices, and analyzed the benefit of the use of economic value added in the creating process of investment policies that can be helpful to get extraordinary returns. Victoria & Kamoche (2016) indicated that there was a positive relationship between profitability and adoption of EVA by the insurance firms in Kenya. They also indicated a high potential for increasing adoption of EVA for performance measurement which should be leveraged on by key industry stakeholders to spearhead expectation of use of EVA to evaluate the performance of specific firms.

Regarding the factors that influence EVA, Chen & Qiao (2008) indicated that earnings ability (i.e., EPS) and management ability (i.e., account receivable turnover, assets turnover) are significantly positively related to EVA. Martani & Saputra (2009) showed that corporate governance index, sales growth, leverage, size, and age of the firm are significantly positively related to EVA. Bhasin (2012) showed that return on capital employed, earnings per share are positively related to EVA. Abraham et al., (2017) show that earnings yield significantly explained economic value added. The analysis is conducted both across industries and within the oil and gas, computer software, biotechnology and retail industries.

2.2. Earnings Management

In literature, many studies (e.g. Phan et al.,2017; Gleason et al.,2017; Zhou & Wu,2016; Gras-Gil et al.,2016; Dhole et al.,2016; Hsieh et al.,2016; Campa & Camacho-Miñano, 2015; Ali & Zhang,2015; Ifada & Wulandari,2015; Chen et al.,2015; Liu et al., 2014; Badolato et al.,2014; Datta et al,2013; Alves,2012; Hochberg,2012; Feng et al.,2011; Zang, 2011; Badertscher, 2011; Peni & Vahamaa,2010; Lin & Hwang,2010; Liu et al.,2010; Mitani,2010; García-Meca & Sánchez-Ballesta,2009 ; Banderlipe,2009; Chih et al.,2008; Cohen et al.,2008; Ali et al.,2008; Cornett et al., 2008; Noor et al.,2007; Ding et al.,2007; Davidson et al.,2007; Ebrahim, 2007) related to earnings management only focus on

identifying some related factors which can significantly affect earnings management. However, these factors have not been used directly to forecast the level of earnings management in advance (Tsai & Chiou, 2009). In order to help the investors in the stock market, it is necessary to develop a model which is able to predict the level of earnings management. Methods for predicting earnings management have been extensively researched. Classical statistical techniques influenced the formation of these models such as neural networks (Tsai & Chiou, 2009; Hoglund, 2012; Pourhasan & Mansour, 2014; Mahmoudi et al., 2017); decision trees (Tsai & Chiou, 2009); Benford's Law (Lin & Wu, 2014). data mining (Chen et al. 2015). Therefore, determining the strategy and finding tools to predict the level of earning management to use in decision making of financial statements users can be very beneficial.

Previous research has also examined earnings management via consideration of the decomposition of total accruals to their abnormal or discretionary components (e.g., Collins et al., 2017; Phan et al., 2017; Gras-Gil et al., 2016; Dhole et al., 2016; Hsieh et al., 2016; Zhu et al., 2015; Chen et al., 2015; Liu et al., 2014; Datta et al., 2013; Dechow et al., 2012; Alves, 2012; Zang, 2011; Badertscher, 2011; Peni & Vahamaa, 2010; García-Meca & Sánchez-Ballesta, 2009; Huang et al., 2007; Piot & Janin, 2007). If an accrual model estimates the coefficient within the same industry, it assumes that firms in the same industry have similar accrual-generating processes. However, the uniform accrual-generating process assumption may not be proper for firms with extreme performance within the industry, leading to biased discretionary accrual estimates (Wu, 2014).

Second, managers can manage earnings by real operating decisions (referred to as real-based earnings management; REM). These actions deviate from normal business practices, with the primary objective of misleading stakeholders on underlying economic performance (Phan et al., 2017; Dhole et al., 2016; Chen et al., 2015; Chen et al., 2012; Zang, 2011; Badertscher, 2011; Mizik, 2010; Bhojraj et al., 2009).

3. METHODOLOGY

Using earnings management to predict economic value added, this study collected data from 2009 to 2016 from COMPUSTAT database and corporate website (excluding banking sectors such as banks, securities firms, and insurance firms). Microeconomic variables such as risk free (fixed deposit interest rate in one year) and return of market (portfolio) were used to calculate economic value added in China, Africa and Latin-America nations, incorporating data from the world development indicators (indicators from the World Bank) or stocks exchange. Variables and research model of this research are as follows.

3.1. Earnings Management

3.1.1. Discretionary Accruals (DA)

DAs represent the component of total accruals that is more susceptible to manipulation by managers, and is has been used frequently in prior studies as a proxy for earnings management, where the absolute value of ε_{it} to measure DAs were adopted.

$$\frac{MACC_{it}}{TA_{it-1}} = \frac{\beta_{0t}}{TA_{it-1}} + \frac{\beta_{1t}\Delta NETREV_{it}}{TA_{it-1}} + \frac{\beta_{2t}PPE_{it}}{TA_{it-1}} + \varepsilon_{it} \quad (1)$$

where $MACC_{it}$ is the total accruals calculated as the change in non-cash current assets minus the change in current liabilities minus the depreciation expense for year t; TA_{it-1} denotes the assets for year t-1; $\Delta NETREV_{it}$ is the change in net revenue for year t; and PPE_{it} is the gross fixed assets for year t. (Jones, 1991)

$$\frac{ACC_{it}}{TA_{it-1}} = \frac{\beta_0}{TA_{it-1}} + \beta_1 \frac{\Delta SALES_{it} - \Delta AR_{it}}{TA_{it-1}} + \beta_2 \frac{PPE_{it}}{TA_{it-1}} + \varepsilon_{it} \quad (2)$$

where ACC_{it} represents the total accruals calculated as the continuing operating net profit minus the cash flow from operations for year t; TA_{it-1} denotes the assets for year t-1; $\Delta SALES_{it}$ is the change in sales for year t; ΔAR_{it} is the change in account receivables for year t; and PPE_{it} is the gross fixed assets for year t. (Dechow et al., 1995)

$$\frac{CAC_{it}}{TA_{it-1}} = \beta_1 \frac{1}{TA_{it-1}} + \beta_2 \frac{\Delta REV_{it} - \Delta REC_{it}}{TA_{it-1}} + \varepsilon_{it} \quad (3)$$

where CAC_{it} is the change in income before extraordinary items minus operating cash flow minus depreciation and amortization expenses; TA_{it-1} denotes the assets for year $t-1$; ΔREV_{it} is the change in net revenue for year t ; and ΔREC_{it} represents the change in account receivables for year t . (Louis, 2004)

$$\frac{WCA_{it}}{A_{it-1}} = \beta_0 \frac{1}{TA_{it-1}} + \beta_1 \frac{\Delta CR_{it}}{TA_{it-1}} + \beta_2 ROA_{it-1} + \varepsilon_{it} \quad (4)$$

where WCA_{it} represents the total accruals calculated as the continuing operating net profit minus the cash flow from operations for year t ; TA_{it-1} represents the assets for year $t-1$; ΔCR_{it} is the change in net revenue for year t ; and ROA_{it-1} is the return on assets for year t . (Matsumoto, 2002)

3.1.2. Real Earnings Management

Roychowdhury (2006) developed empirical models for estimating the typical levels of real business activities, as reflected in the cash flow from operations, production costs, and discretionary expenditures. We use Models 5-7 to estimate the absolute value of ε_{it} to measure the abnormal level (namely, REM)

$$\frac{CFO_{it}}{TA_{it-1}} = \beta_0 \frac{1}{TA_{it-1}} + \beta_1 \frac{SALES_{it}}{TA_{it-1}} + \beta_2 \frac{\Delta SALES_{it}}{TA_{it-1}} + \varepsilon_{it} \quad (5)$$

$$\frac{PROD_{it}}{TA_{it-1}} = \beta_0 \frac{1}{TA_{it-1}} + \beta_1 \frac{SALES_{it}}{TA_{it-1}} + \beta_2 \frac{\Delta SALES_{it}}{TA_{it-1}} + \beta_3 \frac{\Delta SALES_{it-1}}{TA_{it-1}} \varepsilon_{it} \quad (6)$$

$$\frac{DISEXP_{it}}{TA_{it-1}} = \beta_0 \frac{1}{TA_{it-1}} + \beta_2 \frac{SALES_{it-1}}{TA_{it-1}} + \varepsilon_{it} \quad (7)$$

where CFO_{it} is the cash flow from operations for year t ; $PROD_{it}$ is the sum of the cost of goods for sales and the change in inventory for year t ; $DISEXP_{it}$ represents discretionary expenses according to the sum of advertising, R&D, and sales, as well as general and administrative expenses for year t ; TA_{it-1} is the assets for year t ; $SALES_{it}$ is the sales for year t ; $\Delta SALES_{it}$ is the change in sales for year t ; $\Delta SALES_{it-1}$ is the change in sales for year $t-1$; and $SALES_{it-1}$ represents the sales for year $t-1$.

3.2. Economic Value Added (EVA)

This research defines the EVA model in three ways (Huang & Liu, 2010).

3.2.1. EVA1: (unadjusted EVA) = NOPAT - (WACC¹ × IC)

NOPAT = Pretax operating income (1- cash tax rate)

Invest capital(IC) = asset- non bear debt²- short term securities investment - construction in process

¹Weight average capital cost (WACC) = [(interest expense/debt) × (debt/capital) × (1-tax rate)] + equity cost × (equity/capital); equity cost is measured by CAPM model (risk free is calculated by fixed deposit interest rate in one year; market return is calculated by return of market portfolio)

²No bear debt = account payable + account notes + accrued expense + pre-earned revenue + other account payable + account tax payable + other current liabilities

3.2.2. EVA2: adjusted EVA (join adjusted items) = NOPAT- (WACC× IC)

NOPAT = pretax operating income (1-cash tax rate) + adjustment items³

Invest capital(IC) = asset-non bear debt -short term securities investment - construction in process + adjusted items

3.2.3. EVA3: adjusted EVA (join economic depreciation adjusted items)

= NOPAT-(WACC× IC) = pretax operating income (1-cash tax rate) +adjustment items ± economic depreciation adjusted items⁴

Invest capital= asset- non bear debt - short term securities investment- construction in process + adjusted items

According to the distribution of the Economic value added, we can classify the Economic value added into two groups. The labels "1" is defined as "economic value added is within or above zero. However, in order to segregate the observations within or above zero, the label "0" represents the economic value added is below zero.

3.3. Model

The paper adopts logistic regression model, support vector machines (SVM) and rough sets theory (RST) to estimate parameters.

(1) Logistic Regression Model

$$\lambda = \ln \frac{p}{1-p} = \beta_0 + \beta_1 x_1 + \dots + \beta_i x_i \quad (8)$$

According to the definition of logistic function

$$p = \frac{\exp(\alpha + \beta x)}{1 + \exp(\alpha + \beta x)} \quad (9)$$

$$1-p = \frac{1}{1 + \exp(\alpha + \beta x)} \quad (10)$$

$\alpha, \beta_1, \dots, \beta_m$ are return parameters in the model

When the dependent variable is 0, 1 variable, the results are in two situations of occurrence (the dependent variable is 1) or non-occurrence (the dependent variable is 0). The model expressions are as follows:

$$P(Y=1) = \frac{\exp(\lambda)}{1 + \exp(\lambda)} \quad (11)$$

$$P(Y=0) = \frac{\exp(\lambda)}{1 + \exp(\lambda)} \quad (12)$$

Equation (11) and (12) show that $P(Y=1) = 1 - P(Y=0)$

(2) Support Vector Machines (SVM)

Support vector machines are a set of related supervised learning methods used for classification and regression. Viewing input data as two sets of vectors (two classes classification) in an high dimensional transformed space, an SVM seeks to construct a separating hyper-plane in that space, one which maximizes the margin between the two data sets. To calculate the margin, two parallel hyper-planes are constructed, one on each side of the separating hyper-plane, which are "pushed up against" the two data sets. Intuitively, a good separation is achieved by the hyper plane that has the largest distance to the neighboring data points of both classes, since in general the larger the margin the better the generalization error of the classifier. That is, based on the structured risk minimization principle, SVMs seek to minimize an upper bound of the generalization error instead of the empirical error as in neural networks.

$$y = \text{sign}(w^T \phi(X) + b), y \in \{-1, 1\} \quad (13)$$

where y is output (1 for type A, -1 for type B); $\phi(X)$ is a nonlinear mapping from the input space to the high dimensional transformed space. SVMs exploit the idea of mapping input data into a high dimensional reproducing kernel Hilbert space

³ Adjust items = un-amortization research expense(5 years, Straight-line method) + un-amortization marketing expense(5 years, Straight-line method) + allowance for account receivable + allowance for loss on inventory + allowance for loss on short term investment securities.

⁴ Economic depreciation adjusted items is measured by funds method.

(RKHS) where classification could be easily performed. Coefficients W and b are estimated by the following optimization problem

$$\min_{w,b} R(w, \xi) = \frac{1}{2} \|w\|^2 + c \sum_{i=1}^m \xi_i \tag{14}$$

with $y_i (w^T \phi(X) + b) \geq 1 + \xi_i, i=1, \dots, m, \xi_i \geq 0$

c is a prescribed parameter to evaluate the trade-off between the empirical risk and the smoothness of the model.

(3) Rough Set

Rough sets theory (RST) is a machine-learning method has proved to be a powerful tool for uncertainty and has been applied to data reduction, rule extraction, data mining and granularity computation. Here, we illustrate only the relevant basic ideas of RST that are relevant to the present work.

By an information system we understand the 4-tuple $S=(U,A,V, f)$, where U is a finite set of objects, called the universe, A is a finite set of attributes, $V = \bigcup_{a \in A} V_a$ is a domain of attribute a , and $f : U \times A \rightarrow V$ is called an information function such that $f(x, a) \in V_a, \forall a \in A, \forall x \in U$. In the classification problems, an information system is also seen as a decision table assuming that $A = C \cup D$ and $C \cap D = \emptyset$, where C a set of condition attributes and D is a set of decision attributes

Let $S = (U, A, V, f)$ be an information system, every $P \subseteq A$ generates an in-discernibility relation $IND(P)$ on U , which is defined as follows:

$$IND(P) = \{(x, y) \in U \times U : f(y, a) = f(x, a), \forall a \in P\} \tag{15}$$

$U/IND(P) = \{C_1, C_2, \dots, C_K\}$ is a partition of U by P , every C_i is an equivalence class. For $\forall x \in U$ the equivalence class of x in relation to $U/IND(P)$ is defined as follows:

$$[x]_{U/IND(P)} = \{y \in U : f(y, a) = f(x, a), \forall a \in P\} \tag{16}$$

Let $P \subseteq A$ and $X \subseteq U$. The P -lower approximation of x (denoted by $P_*(x)$) and the P -upper approximation of x (denoted by $P^*(x)$) are defined as follows:

$$\begin{aligned} P_*(x) &= \{y \in U : [y]_{U/IND(P)} \subseteq X\} \\ P^*(x) &= \{y \in U : [y]_{U/IND(P)} \cap X \neq \emptyset\} \end{aligned} \tag{17}$$

where $P_*(x)$ is the set of all objects from U which can certainly be classified as elements of x employing the set of attributes P . $P^*(x)$ is the set of objects of U which can be classified as elements of x using the set of attributes P . Let $P, Q \subseteq A$, the positive region of classification $U/IND(Q)$ with respect to the set of attributes P , or in

Short, P -positive region of Q is defined as $POS_P(Q) = \bigcup_{X \in U/IND(Q)} P(X)$.

$POS_P(Q)$ contains objects in U that can be classified to one class of the classification $U/IND(Q)$ by attributes P . The dependency of Q on P is defined as

$$\gamma_P(Q) = \text{card}(POS_P(Q)) / \text{card}(U) \tag{18}$$

An attribute a is said to be dispensable in P with respect to

Q , if $\gamma_P(Q) = \gamma_{P - \{a\}}(Q)$; otherwise a is an indispensable

attribute in P with respect to Q . \subset

Let $S = (U, A, V, f)$ be a decision table, the set of attributes

$P(P \subseteq C)$ is a reduce of attributes C , which satisfies the following

Conditions:

$$\gamma_P(D) = \gamma_C(D), \gamma_P(D) \neq \gamma_{P'}(D) \quad \forall P' \subset P. \tag{19}$$

A reduce of condition attributes C is a subset that can discern decision classes with the same Accuracy as C , and none of the attributes in the reduced can be eliminated without decreasing its discernable capability

3.4. Variables Selection

To pick out the factors that are informative and closely related to the economic value added, we employ feature selection. In fact, the feature selection is a part of the complex and comprehensive of data mining. We employ paired t-test to evaluate significance of difference of each factor between economic value added above and below zero. Thus, we use the following variables (Vijaykumar,2010; Chen and Qiao , 2008): market value added is used to the market value of the firm's equity minus the book value of the firm's equity; earnings per share is used to net income/outstanding shares; account receivable turnover is used to net credit sales/ average account receivables; asset turnover is used to sales or revenues/total assets

3.5. Robustness Test

In order to avoid possible bias from extreme values, the study also adopt those samples only include the sample data of from the 5th percentile to the 95th percentile as measures for the robustness test (Huang & Liu, 2011)

4. EMPIRICAL RESULTS

4.1. Descriptive Statistics

According to the descriptive statistics shown in Table 1, the mean EVA1 (unadjusted items), EVA2 (adjusted items) and EVA3 (join adjusted items and economic depreciation adjusted items) is lower in China. According to performance index (US\$ billions), EVA1 (unadjusted items) or EVA2 (adjusted items) are in Latin-America nations and EVA3 (join adjusted items and economic depreciation adjusted items) is higher in Africa nations. In addition, the earnings per share above zero and the positive market value added show that financial conditions have been conservative in these nations.

Tables 2-8 show the descriptive statistics obtained through the earnings management model. Abnormal cash flow from operations had stronger explanatory power ($R^2=0.494$) in China. Abnormal discretionary expenses had stronger explanatory power for earnings management ($R^2=0.512$) in African nations. Discretionary working capital accruals had stronger explanatory power for earnings management ($R^2=0.519$) in Latin-America nations. Overall, these empirical results show that real business activities (e.g., abnormal cash flow from operations or abnormal discretionary expenses) are more effective for explain earnings management in these nations.

Table 1: Descriptive Statistics - All Samples (US\$ billions, per value or %)

| | China | Africa | Latin America |
|--------------|---------|---------|---------------|
| $EVA_{it,1}$ | 89.442 | 155.242 | 195.462 |
| $EVA_{it,2}$ | 79.518 | 136.421 | 173.367 |
| $EVA_{it,3}$ | 77.463 | 105.247 | 99.127 |
| MVA_{it} | 128.362 | 112.079 | 117.352 |
| EPS_{it} | 1.25 | 1.49 | 1.38 |
| ART_{it} | 0.341 | 0.446 | 0.524 |
| AT_{it} | 0.221 | 0.247 | 0.386 |
| Sample | 12392 | 2416 | 5616 |

where $EVA_{it,n}$ is the economic value added ($n=1$ for unadjusted EVA; $n=2$ for adjusted EVA, join adjusted items; $n=3$ for adjusted EVA, join adjusted items and economic depreciation adjusted items); MVA_{it} represents a firm's market value added for year t ; EPS_{it} is the earnings per share for year t ; and ART_{it} denotes the account receivable turnover for year t ; AT_{it} denotes the asset turnover for year t . *** indicates statistic significant at 1% level; ** at 5% level; and * at 10% level.

Table 2: Descriptive Statistics of the Estimated Cross-Section of the Jones Model

| Dependent Variable: $MACC_{it} / TA_{it-1}$ | | | |
|---|-----------|-----------|---------------|
| | China | Africa | Latin America |
| $1/TA_{it-1}$ | 0.055 | 0.072 | 0.084 |
| $\frac{\Delta NETREV_{it}}{TA_{it-1}}$ | 0.062*** | -0.091 | 0.377*** |
| $\frac{PPE_{it}}{TA_{it-1}}$ | 0.062*** | -0.159** | 0.084 |
| F-value | 12.389*** | 10.679*** | 11.721*** |
| R^2 | 0.255 | 0.156 | 0.183 |
| Sample | 12392 | 2416 | 5616 |

where $MACC_{it}$ is the total accruals calculated as the change in non-cash current assets minus the change in current liabilities minus the depreciation expense for year t ; TA_{it-1} is the assets for year $t-1$; $\Delta NETREV_{it}$ is the change in net revenue for year t ; PPE_{it} is the gross fixed assets for year t . *** indicates statistic significant at 1% level; ** at 5% level; and * at 10% level.

Table 3: Descriptive Statistics for the Estimated Cross Section of the Modified Jones Model

| Dependent Variable: ACC_{it} / TA_{it-1} | | | |
|--|-----------|-----------|---------------|
| | China | Africa | Latin America |
| $1/TA_{it-1}$ | -0.178** | 0.221 | -0.187*** |
| $\frac{\Delta SALES_{it} - \Delta AR_{it}}{TA_{it-1}}$ | 0.445*** | 0.276*** | 0.319*** |
| $\frac{PPE_{it}}{TA_{it-1}}$ | 0.192 | -0.256** | -0.282** |
| F-value | 11.458*** | 11.847*** | 15.467*** |
| R^2 | 0.224 | 0.238 | 0.342 |
| Sample | 12392 | 2416 | 5616 |

where ACC_{it} represents the total accruals calculated as the continuing operating net profit minus the cash flow from operations for year t ; TA_{it-1} denotes the assets for year $t-1$; $\Delta SALES_{it}$ is the change in sales for year t ; ΔAR_{it} is the change in account receivables for year t ; and PPE_{it} is the gross fixed assets for year t . *** indicates statistic significant at 1% level; ** at 5% level; and * at 10% level.

Table 4: Descriptive Statistics for the Estimated Cross-Section of Current Discretionary Accruals

| Dependent Variable: CAC_{it} / TA_{it-1} | | | |
|---|-----------|-----------|---------------|
| | China | Africa | Latin America |
| $1/TA_{it-1}$ | 0.092** | 0.055 | 0.072 |
| $\frac{\Delta REV_{it} - \Delta REC_{it}}{TA_{it-1}}$ | -0.041 | -0.072** | 0.128*** |
| F-value | 12.006*** | 11.446*** | 14.115*** |
| R^2 | 0.317 | 0.308 | 0.352 |
| Sample | 12392 | 2416 | 5616 |

where CAC_{it} is the change in income before extraordinary items minus operating cash flow minus depreciation and amortization expenses; TA_{it-1} denotes the assets for year $t-1$; ΔREV_{it} is the change in net revenue for year t ; and ΔREC_{it} represents the change in account receivables for year t . *** indicates statistic significant at 1% level; ** at 5% level; and * at 10% level.

Table 5: Descriptive Statistics for the Estimated Cross-Section of Working Capital Accruals

| | Dependent Variable: WCA_{it} / TA_{it-1} | | |
|------------------------------------|--|-----------|---------------|
| | China | Africa | Latin America |
| $1/TA_{it-1}$ | -0.118 | 0.367** | -0.528*** |
| $\frac{\Delta CR_{it}}{TA_{it-1}}$ | 0.272 | 0.202* | -0.419*** |
| ROA_{it-1} | 0.617* | 0.862*** | -0.868** |
| F-value | 11.005*** | 12.319*** | 16.441*** |
| R^2 | 0.348 | 0.418 | 0.519 |
| Sample | 12392 | 2416 | 5616 |

where WCA_{it} represents the total accruals calculated as the continuing operating net profit minus the cash flow from operations for year t ; TA_{it-1} represents the assets for year $t-1$; ΔCR_{it} is the change in net revenue for year t ; and ROA_{it-1} is the return on assets for year t . *** indicates statistic significant at 1% level; ** at 5% level; and * at 10% level.

Table 6: Descriptive Statistics for the Estimated Cross-Section of Abnormal Cash Flow from Operations

| | Dependent Variable: CFO_{it} / TA_{it-1} | | |
|---------------------------------------|--|-----------|---------------|
| | China | Africa | Latin America |
| $1/TA_{it-1}$ | 0.641* | -1.124*** | -0.781** |
| $\frac{SALES_{it}}{TA_{it-1}}$ | 0.546** | -0.918*** | -0.763 |
| $\frac{\Delta SALES_{it}}{TA_{it-1}}$ | 0.716** | -0.772** | 0.214 |
| F-value | 11.056*** | 10.092*** | 9.265** |
| R^2 | 0.494 | 0.387 | 0.325 |
| Sample | 12392 | 2416 | 5616 |

where CFO_{it} is the cash flow from operations for year t ; TA_{it-1} is the assets for year $t-1$; $SALES_{it}$ is the sales for year t ; $\Delta SALES_{it}$ is the change in sales for year t ; *** indicates statistic significant at 1% level; ** at 5% level; and * at 10% level.

Table 7: Descriptive Statistics for the Estimated Cross-Section of Abnormal Production Costs

| | Dependent Variable: $PROD_{it} / TA_{it-1}$ | | |
|---|---|----------|---------------|
| | China | Africa | Latin America |
| $1 / TA_{it-1}$ | 0.176* | 0.164*** | 0.419*** |
| $\frac{SALES_{it}}{TA_{it-1}}$ | 0.216*** | 0.325*** | -0.116 |
| $\frac{\Delta SALES_{it}}{TA_{it-1}}$ | 0.128 | -0.194 | 0.195** |
| $\frac{\Delta SALES_{it-1}}{TA_{it-1}}$ | -0.204** | -0.216** | -0.292* |
| F-value | 12.446 | 16.184 | 12.105 |
| R^2 | 0.264 | 0.502 | 0.246 |
| Sample | 12392 | 2416 | 5616 |

where $PROD_{it}$ is the sum of the cost of goods for sales and the change in inventory for year t ; TA_{it-1} is the assets for year $t-1$; $SALES_{it}$ is the sales for year t ; $\Delta SALES_{it}$ is the change in sales for year t ; $\Delta SALES_{it-1}$ is the change in sales for year $t-1$. *** indicates statistic significant at 1% level; ** at 5% level; and * at 10% level.

Table 8: Descriptive Statistics for the Estimated Cross Section of Abnormal Discretionary Expenses

| | Dependent Variable: $DISEXP_{it} / TA_{it-1}$ | | |
|----------------------------------|---|-----------|---------------|
| | China | Africa | Latin America |
| $1 / TA_{it-1}$ | 0.652*** | 0.164** | 0.121* |
| $\frac{SALES_{it-1}}{TA_{it-1}}$ | 0.486*** | 0.208*** | 0.194** |
| F-value | 10.442*** | 12.187*** | 12.056*** |
| R^2 | 0.304 | 0.512 | 0.486 |
| Sample | 12392 | 2416 | 5616 |

where $DISEXP_{it}$ represents discretionary expenses according to the sum of advertising, R&D, and sales, as well as general and administrative expenses for year t ; TA_{it-1} is the assets for year $t-1$; $SALES_{it-1}$ represents the sales for year $t-1$. *** indicates statistic significant at 1% level; ** at 5% level; and * at 10% level.

4.2. Empirical Test

The comparisons of predicted and actual classifications are shown in Tables 9-11. Because the financial crisis of 2008 might have restructured the global financial market, we separated data after 2008 to obtain the accuracy of model.

As indicated in Table 9 (China), RST model had the highest accuracy (the accuracy was 57.53%) when the earnings management was DAs of the modified Jones model employed to predict adjusted economic value added (join adjusted items and economic depreciation adjusted items), and logit model possessed the lowest accuracy (the accuracy was 38.07%) when the earnings management was the abnormal level of production costs employed to predict un-adjusted economic value added. In addition, the results show that the RST model has stronger explanatory power (the accuracy was 57.04%) for predicting adjusted economic value added (join adjusted items and economic depreciation adjusted items) when Jones model was employed to predict economic value added; RST model has stronger explanatory power (the accuracy was 57.53%) for predicting adjusted economic value added (join adjusted items and economic depreciation adjusted items) when Modified Jones model was employed to predict economic value added; SVM model has stronger explanatory power (the accuracy was 52.34%) for predicting adjusted economic value added (join adjusted items and economic depreciation adjusted items) when current discretionary accruals was employed to predict economic value added; RST model has

stronger explanatory power (the accuracy was 53.46%) for predicting adjusted economic value added (join adjusted items and economic depreciation adjusted items) when working capital accruals model was employed to predict economic value added ; RST model has stronger explanatory power (the accuracy was 53.88%) for predicting adjusted economic value added (join adjusted items and economic depreciation adjusted items) when abnormal cash flow from operations model was employed to predict economic value added ; RST model has stronger explanatory power (the accuracy was 52.94%) for predicting adjusted economic value added (join adjusted items and economic depreciation adjusted items) when abnormal production costs model was employed to predict economic value added ; logit model has stronger explanatory power (the accuracy was 53.10%) for predicting adjusted economic value added (join adjusted items and economic depreciation adjusted items) when abnormal discretionary expenses was employed to predict economic value added.

As indicated in Table 10 (Africa nations), RST model had the highest accuracy (the accuracy was 57.59%) when the earnings management was the current DAs employed to predict adjusted economic value added (join adjusted items and economic depreciation adjusted items), and logit model possessed the lowest accuracy (the accuracy was 34.41%) when the earnings management was the abnormal level of cash flow from operations employed to predict adjusted economic value added. (join adjusted items). In addition, the results show that the RST model has stronger explanatory power (the accuracy was 54.20%) for predicting adjusted economic value added (join adjusted items and economic depreciation adjusted items) when Jones model was employed to predict economic value added ; RST model has stronger explanatory power (the accuracy was 56.47 %) for predicting adjusted economic value added (join adjusted items and economic depreciation adjusted items) when Modified Jones model was employed to predict economic value added ; RST model has stronger explanatory power (the accuracy was 57.59%) for predicting adjusted economic value added (join adjusted items and economic depreciation adjusted items) when current discretionary accruals was employed to predict economic value added ; RST model has stronger explanatory power (the accuracy was 54.06 %) for predicting adjusted economic value added (join adjusted items and economic depreciation adjusted items) when working capital accruals model was employed to predict economic value added ; RST model has stronger explanatory power (the accuracy was 54.56%) for predicting adjusted economic value added (join adjusted items and economic depreciation adjusted items) when abnormal cash flow from operations model was employed to predict economic value added ; SVM model has stronger explanatory power (the accuracy was 56.15%) for predicting adjusted economic value added (join adjusted items and economic depreciation adjusted items) when abnormal production costs model was employed to predict economic value added ; SVM model has stronger explanatory power (the accuracy was 56.46%) for predicting adjusted economic value added (join adjusted items and economic depreciation adjusted items) when abnormal discretionary expenses was employed to predict economic value added.

As indicated in Table 11 (Latin-America nations), SVM model had the highest accuracy (the accuracy was 64.38%) when the earnings management was DAs of the modified Jones model employed to predict adjusted economic value added (join adjusted items and economic depreciation adjusted items), however SVM model possessed the lowest accuracy (the accuracy was 33.61%) when the earnings management was the abnormal level of cash flow from operations employed to predict un-adjusted economic value added. In addition, the results show that the SVM model has stronger explanatory power (the accuracy was 57.75%) for predicting adjusted economic value added (join adjusted items and economic depreciation adjusted items) when Jones model was employed to predict economic value added ; SVM model has stronger explanatory power (the accuracy was 64.38%) for predicting adjusted economic value added (join adjusted items and economic depreciation adjusted items) when Modified Jones model was employed to predict economic value added ; SVM model has stronger explanatory power (the accuracy was 59.29%) for predicting adjusted economic value added (join adjusted items and economic depreciation adjusted items) when current discretionary accruals was employed to predict economic value added ; Logit model has stronger explanatory power (the accuracy was 53.67%) for predicting unadjusted economic value added when working capital accruals model was employed to predict economic value added ; Logit model has stronger explanatory power (the accuracy was 42.37%) for predicting un adjusted economic value added when abnormal cash flow from operations model was employed to predict economic value added ; Logit model has stronger explanatory power (the accuracy was 48.43%) for predicting adjusted economic value added (join adjusted items and economic depreciation adjusted items) when abnormal production costs model was employed to predict economic value added ; SVM model has stronger explanatory power (the accuracy was 57.14%) for predicting adjusted economic value added (join adjusted items and economic depreciation adjusted items) when abnormal discretionary expenses was employed to predict economic value added.

The significance in difference provides strong evidences in the prediction trends regarding effect of earnings management on economic value added. On the other hands, in order to avoid possible bias from extreme values, the study also adopt those samples only include the sample data of from the 5th percentile to the 95th percentile as measures for the robustness test, the results show that most of them are consistent.

Table 9: The Accuracy of Every Prediction Model: China

| | Economic Value Added | | | | | | | | |
|--------------|----------------------|-------|-------|----------------|-------|-------|----------------|-------|-------|
| | $EVA_{it,n=1}$ | | | $EVA_{it,n=2}$ | | | $EVA_{it,n=3}$ | | |
| | Logit | SVM | RST | Logit | SVM | RST | Logit | SVM | RST |
| DAJ_{it} | 46.09 | 48.32 | 51.05 | 52.60 | 53.48 | 54.89 | 53.91 | 55.38 | 57.04 |
| $DAMJ_{it}$ | 47.92 | 49.94 | 51.28 | 53.22 | 52.72 | 53.42 | 55.01 | 56.16 | 57.53 |
| $DACA_{it}$ | 42.42 | 48.28 | 49.07 | 50.07 | 50.07 | 51.46 | 51.30 | 52.34 | 52.32 |
| $DAWC_{it}$ | 41.24 | 45.30 | 47.05 | 48.34 | 50.41 | 50.43 | 51.03 | 53.42 | 53.46 |
| $ABCFO_{it}$ | 38.76 | 42.92 | 45.21 | 46.44 | 49.20 | 48.41 | 51.20 | 50.98 | 53.88 |
| $ABPC_{it}$ | 38.07 | 42.24 | 46.23 | 46.85 | 46.95 | 49.51 | 52.75 | 51.29 | 52.94 |
| $ABDE_{it}$ | 39.11 | 42.72 | 49.07 | 47.81 | 46.15 | 51.08 | 53.10 | 53.01 | 51.16 |
| Sample | 12392 | | | | | | | | |

where DAJ_{it} denotes the DAs of the Jones model for year t ; $DAMJ_{it}$ represents the DAs of the modified Jones model for year t ; $DACA_{it}$ represents the current DAs for year t ; $DAWC_{it}$ represents the discretionary working capital accruals for year t ; $ABCFO_{it}$ represents the abnormal level of cash flow from operations for year t ; $ABPC_{it}$ denotes the abnormal level of production costs for year t ; $ABDE_{it}$ is the abnormal level of discretionary expenditures for year t ; $EVA_{it,n}$ is the economic value added ($n=1$ for unadjusted EVA; $n=2$ for adjusted EVA, join adjusted items; $n=3$ for adjusted EVA, join adjusted items and economic depreciation adjusted items)

Table 10: The Accuracy of Every Prediction Model: African Nations

| | Economic Value Added | | | | | | | | |
|--------------|----------------------|-------|-------|----------------|-------|-------|----------------|-------|-------|
| | $EVA_{it,n=1}$ | | | $EVA_{it,n=2}$ | | | $EVA_{it,n=3}$ | | |
| | Logit | SVM | RST | Logit | SVM | RST | Logit | SVM | RST |
| DAJ_{it} | 38.93 | 45.18 | 39.66 | 48.48 | 51.89 | 51.47 | 53.29 | 49.38 | 54.20 |
| $DAMJ_{it}$ | 38.34 | 47.83 | 50.28 | 45.33 | 49.26 | 43.81 | 54.06 | 55.25 | 56.47 |
| $DACA_{it}$ | 40.34 | 38.03 | 51.12 | 51.16 | 51.16 | 47.23 | 47.33 | 54.23 | 57.59 |
| $DAWC_{it}$ | 44.40 | 41.20 | 46.97 | 49.20 | 44.75 | 50.51 | 50.23 | 47.88 | 54.06 |
| $ABCFO_{it}$ | 34.41 | 44.35 | 49.29 | 47.26 | 45.18 | 52.33 | 51.44 | 54.30 | 54.56 |
| $ABPC_{it}$ | 45.22 | 36.26 | 44.35 | 49.28 | 49.42 | 46.20 | 48.24 | 56.15 | 54.25 |
| $ABDE_{it}$ | 37.85 | 48.28 | 51.02 | 51.43 | 48.96 | 51.61 | 47.25 | 56.46 | 47.88 |
| Sample | 2416 | | | | | | | | |

where DAJ_{it} denotes the DAs of the Jones model for year t ; $DAMJ_{it}$ represents the DAs of the modified Jones model for year t ; $DACA_{it}$ represents the current DAs for year t ; $DAWC_{it}$ represents the discretionary working capital accruals for year t ; $ABCFO_{it}$ represents the abnormal level of cash flow from operations for year t ; $ABPC_{it}$ denotes the abnormal level of production costs for year t ; $ABDE_{it}$ is the abnormal level of discretionary expenditures for year t ; $EVA_{it,n}$ is the economic value added ($n=1$ for unadjusted EVA; $n=2$ for adjusted EVA, join adjusted items; $n=3$ for adjusted EVA, join adjusted items and economic depreciation adjusted items)

Table 11: The Accuracy of Every Prediction Model (%): Latin-American Nations

| | Economic Value Added | | | | | | | | |
|--------------|----------------------|-------|-------|----------------|-------|-------|----------------|-------|-------|
| | $EVA_{it,n=1}$ | | | $EVA_{it,n=2}$ | | | $EVA_{it,n=3}$ | | |
| | Logit | SVM | RST | Logit | SVM | RST | Logit | SVM | RST |
| DAJ_{it} | 42.72 | 53.48 | 48.66 | 41.41 | 53.79 | 46.64 | 37.95 | 57.75 | 51.60 |
| $DAMJ_{it}$ | 54.01 | 60.07 | 58.95 | 51.93 | 60.38 | 56.45 | 47.22 | 64.38 | 62.08 |
| $DACA_{it}$ | 48.39 | 55.50 | 52.58 | 46.52 | 55.82 | 50.58 | 42.45 | 59.29 | 55.35 |
| $DAWC_{it}$ | 53.67 | 40.23 | 48.81 | 51.62 | 40.75 | 46.72 | 47.47 | 42.97 | 51.28 |
| $ABCFO_{it}$ | 42.73 | 33.88 | 39.22 | 41.53 | 33.61 | 36.91 | 38.02 | 35.99 | 40.41 |
| $ABPC_{it}$ | 48.43 | 38.22 | 44.81 | 46.89 | 38.37 | 42.97 | 42.43 | 40.82 | 47.13 |
| $ABDE_{it}$ | 43.07 | 53.48 | 49.25 | 41.41 | 53.79 | 46.64 | 37.95 | 57.14 | 51.21 |
| Sample | 5616 | | | | | | | | |

where DAJ_{it} denotes the DAs of the Jones model for year t ; $DAMJ_{it}$ represents the DAs of the modified Jones model for year t ; $DACA_{it}$ represents the current DAs for year t ; $DAWC_{it}$ represents the discretionary working capital accruals for year t ; $ABCFO_{it}$ represents the abnormal level of cash flow from operations for year t ; $ABPC_{it}$ denotes the abnormal level of production costs for year t ; $ABDE_{it}$ is the abnormal level of discretionary expenditures for year t ; $EVA_{it,n}$ is the economic value added ($n=1$ for unadjusted EVA; $n=2$ for adjusted EVA, join adjusted items; $n=3$ for adjusted EVA, join adjusted items and economic depreciation adjusted items)

5. CONCLUSION

Several nations have suffered severe losses since the 2008 financial tsunami; consequently, acquiring external funds has become more costly and difficult. Economic value added (EVA), is used to evaluate economic value, assess funds, and efficiently allocate resources, and it involves using adjustment items to reflect the true economic value of a firm. However, EVA is also based on financial statements for measuring opponents, it is highly probable that EVA motivates managers to engage in earnings management behavior. Overall, EVA may not reflect true performance. Thus, managers attempting to adopt earnings management for generating a more favorable image of businesses and for acquiring external funds more cheaply or easily may have affected business capital costs and economic value added (Wang et al., 2015).

We adopted a logit, SVM, RST model to analyze data from 2009 to 2016 from the COMPUSTAT database (including China, Africa nations, Latin America nations). We also adopted REM activities and DA items to measure earnings management, unadjusted EVA, adjusted EVA (join adjusted items, join adjusted items and economic depreciation adjusted items) for determining EVA.

The results indicate that RST model had the highest accuracy when the earnings management was DAs of the modified Jones model employed to predict adjusted economic value added (join adjusted items and economic depreciation adjusted items) in China; RST model had the highest accuracy when the earnings management was the current DAs employed to predict adjusted economic value added (join adjusted items and economic depreciation adjusted items) in Africa nations; SVM model had the highest accuracy when the earnings management was DAs of the modified Jones model employed to predict adjusted economic value added (join adjusted items and economic depreciation adjusted items) in Latin-America nations.

Our results provide critical implications for managers, researchers, investors, and regulators. Managers should analyze whether EVA motivates managers to engage in earnings management behavior. For researchers, we adopted logit, SVM and RST model to predict effect of earnings management on economic value added; however, these models are subjective, and optimal model should be analyzed in the future. Numerous factors affect EVA, such as differences among cultures, national and international laws and regulations, and economic development. Therefore, future studies should examine all relevant factors or devise new theories that predict economic value added. For investors, they can analyze the true value of enterprises, regardless of whether enterprises have adopted earnings management. Regulators (e.g., governments) should establish stricter security measures and laws or rules for listed firms to prevent earnings management following a financial tsunami and to encourage them to report their "real" true value.

Future studies should consider refining the measurement of the earnings management model because not all of them are equal, and it is unlikely that the consequences of engaging in earnings management are equal in all capital markets. In addition, researchers may also consider focusing on identifying intermediary variables affecting these relationships or establishing an optimal theory for explaining the relationship between earnings management and EVA

REFERENCES

- Abraham, R., Harris, J., Auerbach, J. (2017). Earnings yield as a predictor of return on assets, return on equity, economic value added and the equity multiplier. *Modern Economy*, 8,10-24.
- Ali, A., Zhang, W. (2015). CEO tenure and earnings management. *Journal of Accounting and Economics*, 59,60-79.
- Ali, S. M., Salleh, N. M., Hassan, M. S. (2008). Ownership structure and earnings management in Malaysian listed companies: the size effect. *Asian Journal of Business and Accounting*, 1(2),89-116.
- Alves, S. (2012). Ownership structure and earnings management: evidence from Portugal. *Australasian Accounting, Business and Finance Journal*, 6(1),57-74.
- Badertscher, B. A. (2011). Overvaluation and the choice of alternative earnings management mechanisms. *The Accounting Review*, 86(5), 1491-1518.
- Badolato, P. G., Donelson, D. C., Ege, M. (2014). Audit committee financial expertise and earnings management: the role of status. *Journal of Accounting and Economics*,58,208-230.
- Banderlipe, M. R. (2009). The impact of selected corporate governance variables in mitigating earnings management in the Philippines. *DLSU Business & Economics Review*, 19(1),17-27.
- Bhasin, M. (2012). Economic value added and corporate performance measurement: the portrait of a developing country. *International journal of Contemporary Business Studies*, 3(8),19-37.
- Bhojraj, S., Hribar P., Picconi M., McInnis. J. (2009). Making sense of cents: an examination of firms that marginally miss or beat analyst forecasts. *Journal of Finance* ,64(5), 2361-2388.
- Campa, D., Camacho-Miñano, M. M. (2015). The impact of SME's pre-bankruptcy financial distress on earnings management tools. *International Review of Financial Analysis*, 42,222-234.
- Chen, L., Wang, S. Y., Qiao Z. (2014). Dupont model and product profitability analysis based on activity-based costing and economic value added. *European Journal of Business and Management*, 6(30),25-35.
- Chen, L., Qiao, Z. (2008). What influence the company's economic value added? empirical evidence from china's securities market. *Management Science and Engineering*, 2(1),66-76.
- Chen, C. L., Huang, S. H., Fan, H. S. (2012). Complementary association between real activities and accruals-based manipulation in earnings reporting. *Journal of Economic Policy Reform*, 15(2),93-108.
- Chen, F., Chi, D., Wang, Y. (2015). Detecting biotechnology industry's earnings management using Bayesian network, principal component analysis, back propagation neural network, and decision tree. *Economic Modelling*, vol.23, pp.461-510.
- Chen, T. Y., Gu, Z. Y., Kubota, K., Takehara, H. (2015). Accrual-based and real activities based earnings management behavior of family firms in Japan. *The Japanese Accounting Review*,5,21-47.
- Chih, H. L., Shen, C.H., Kang, F. C. (2008). Corporate social responsibility, investor protection, and earnings management: some international evidence. *Journal of Business Ethics*, 79,179-198.
- Cohen, D. A., Dey, A., Lys, T. (2008). Real and accrual-based earnings management in the pre- and post-sarbanes-oxley periods. *The Accounting Review*, 83(3),757-787.
- Collins, D. W., Pungaliya, R. S., Vijh A. M. (2017). The effects of firm growth and model specification choices on tests of earnings management in quarterly settings. *The Accounting Review*, 92(2), 69-100.
- Cornett, M., Marcus, A., Tehranian, H. (2008). Corporate governance and pay-for-performance: the impact of earnings management. *Journal of Financial Economics*, 87, 357-373.
- Datta, S., Iskandar-Datta, M., Singh, V. (2013). Product market power, industry structure, and corporate earnings management. *Journal of Banking and Finance*, 37(8),3273-3285.
- Davidson, W., Xie, B., Xu, W., Ning, Y. (2007). The influence of executive age, career horizon and incentives on pre-turnover earnings management. *Journal of Management & Governance*, 11,45-60.
- Dechow, P., Sloan, R., Sweeny, A. (1995). Detecting earnings management. *The Accounting Review*,70,193-225.

- Dechow, P. M., Hutton, A. P., Kim, J. H., Sloan, R. G. (2012). Detecting earnings management: a new approach. *Journal of Accounting Research*, 50(2), 275-334.
- Destri, A. M. L., Picone, P. M., Minà, A. (2012). Bringing strategy back into financial systems of performance measurement: integrating EVA and PBC. *Business Systems Review*, 1(1),85-120.
- Dhole, S., Manchiraju, H., Suk, I. (2016). CEO inside debt and earnings management. *Journal of Accounting, Auditing and Finance*,31(4),515-550.
- Ding, Y., Zhang, H., & Zhang, J.(2007). Private vs state ownership and earnings management: evidence from Chinese listed companies. *Corporate Governance*, 15(2),223-238.
- Ebrahim, A. (2007). Earnings management and board activity: an additional evidence. *Review of Accounting and Finance*, 6(1),42-58.
- Feng, M., W. Ge, S. Luo., Shevlin, T. (2011). Why do CFOs become involved in material accounting manipulations. *Journal of Accounting and Economics* ,51,21–36.
- García-Meca, E., Sánchez-Ballesta, J. P. (2009). Corporate governance and earnings management: a meta-analysis. *Corporate Governance: An International Review*, 17(5),594-610.
- Gleason, C. A., Pincus, M., Rego, S. O. (2017). Material weaknesses in tax-related internal controls and last chance earnings management. *The Journal of The American Taxation Association*, 39(1),25-44.
- Gras-Gil, E., Manzano, M. P., Fernández, J. H. (2016). Investigating the relationship between corporate social responsibility and earnings management: evidence from Spain. *Business Research Quarterly*, 19,289-299.
- Hajabedi, S., Mousakhani, M., Orooji, A. (2016). Prediction of Economic Value Added status of Tehran Stock Exchanges by using Genetic Algorithm. *Bulletin de la Société Royale des Sciences de Liège*, 85,1102-1118.
- Healy, P. M., Wahlen, J. M. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons*, 13(4), 365-383.
- Hochberg, Y. V. (2012). Venture capital and corporate governance in the newly public firm. *Review of Finance*, 16(2),429-480.
- Hoglund, H. (2012). Detecting earnings management with neural networks. *Expert Systems with Applications*, 39,9564-9570.
- Hsieh, C. I., Ren, Y., Lirely, R. (2016). Earnings management, executive compensation and layoffs. *Academy of Accounting and Financial Studies Journal*, 20(3),84-102.
- Huang, D. T., Liu, Z. C. (2011). The relationships among governance and earnings management: an empirical study on non-profit hospitals in Taiwan. *African Journal of Business Management*, 5(14),5468-5476.
- Huang, D. T., Liu, Z. C. (2010). Board composition and corporate value in Taiwan high technology firms. *The International Journal of Organizational Innovation*, 2(4),126-138.
- Huang, H-W., Mishra, S., Raghunandan, K. (2007). Types of non audit fees and financial reporting quality. *Auditing: A Journal of Practice and Theory*, 26(1), 133-145.
- Ifada, L. M., Wulandari, N. (2015). The effect of deferred tax and tax planning toward earnings management practice: an empirical study on nonmanufacturing companies listed in Indonesia stock exchange in the period of 2008-2012. *International Journal of Organizational Innovation*, 8(1), 155-170.
- Jones, J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, ,29,1-31.
- Lin, F. Y., Wu, S. F. (2014). Comparison of cosmetic earnings management for the developed markets and emerging markets: some empirical evidence from the United States and Taiwan. *Economic Modelling*, 36,466-473.
- Liu, C., Yuen, C. Y., Yao, L. J., Chan, S. H. (2014). Differences in earnings management between firms using US GAAP and IAS/IFRS. *Review of Accounting and Finance*, 13(2), 134-155.
- Liu, Z. J. (2016). Effect of earnings management on economic value added: a cross-country study. *South African Journal of Business Management*, 47(1), 29-36.
- Liu, Y., Ning, Y., Davidson III, W. N. (2010). Earnings management surrounding new debt issues. *The Financial Review*,45, 659-681.
- Lin, J. W., Hwang, M. I. (2010). Audit quality, corporate governance, and earnings management: a meta-analysis. *International Journal of Auditing*, 14, 57-77.
- Louis, H. (2004). Earnings management and the market performance of acquiring firms. *Journal of Financial Economics*, 74,121-148.
- Mahmoudi, S., Mahmoudi, S., Mahmoudi A. (2017). Prediction of earnings management by use of multilayer perceptron neural networks with two hidden layers in various industries. *Journal of Entrepreneurship, Business and Economics*, 5(1), 216-236.
- Maitah, M., Saleem, N., Malec, K., Boubaker, M., Gouda, S. (2015). Economic value added and stock market development in Egypt. *Asian Social Science*, 11(3),126-134.

- Manorselvi, A., Vijayakumar, A. (2007). Performance of Indian automobile industry: economic value added approach. *Management and Labour Studies*, 32(4),451- 467.
- Martani, D., Saputra, Y. E. (2009). The impact of corporate governance to the economic value added listed company in BEI 2003-2004. *China-USA Business Review*, 8(3),26-40.
- Matsumoto, D. A. (2002). Management's incentives to avoid negative earnings surprises. *Accounting Review*,77,483-514.
- Mitani, H.(2010). Additional evidence on earnings management and corporate governance. *FSA Research Review*, 6,1-22.
- Mizik, N. (2010). The theory and practice of myopic management. *Journal of Marketing Research*,47,594–611.
- Noor, R. M., Mastuki, N., Aziz, Z. (2007). Earnings management and deferred tax. *Malaysian Accounting Review*, 6(1), 1-17.
- Peni, E., Vahamaa, S. (2010). Female executives and earnings management. *Managerial Finance*, 36(7),629-645.
- Phan, H. V., Khieu, H. D., Golec, J. (2017). Does earnings management relieve the negative effects of mandatory pension contributions. *Financial Management*, spring, 89-128.
- Piot, C., Janin, R. (2007). External auditors, audit committees and earnings management in France. *European Accounting Review*, 16(2),429-454.
- Pourhasan, R. A. A., Mansour, G. (2014). Comparison of earnings management prediction using neural networks model and modified linear Jones model. *Asian Journal of Research in Social Sciences and Humanities*, 4(7),456-465.
- Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics*, 42(3),335-370.
- Saha, A., Ahmad, N. H., Yeok, S. G. (2016). Evaluation of performance of Malaysian banks in risk adjusted return on capital (RAROC) and economic value added (EVA) framework. *Asian Academy of Management Journal of Accounting and Finance*, 12(1), 25-47.
- Shil, N. C., Das, B. (2012). Right product pricing: application of activity-based costing (ABC)-and- economic value added (EVA) as an integrated tool. *African Journal of Business Management*, 6(44),10826-10833.
- Shiri, M. M., Salehi, M., Bahrami, M. (2013). Prediction of economic value added of Iranian listed companies. *СОВРЕМЕННАЯ ЭКОНОМИКА: ПРОБЛЕМЫ, ТЕНДЕНЦИИ, ПЕРСПЕКТИВЫ*,9,45-55.
- Stewart, G. B. (1991). *The quest for value*. New York: Harperbusiness.
- Teker, D., Teker, S., Sönmez, M. (2011). Economic value added performances of publicly owned banks: evidence from Turkey. *International Research Journal of Finance and Economics*, 75,132-138.
- Tsai, C. F., Chiou, Y. J. (2009). Earnings management prediction: a pilot study of combining neural networks and decision trees. *Expert Systems with Applications*, 36,7183-7191.
- Victoria, I. A. O., Kamoche, K. (2016). An assessment of the adoption of economic value added (EVA) as a performance measure in the Kenya insurance industry. *International Journal of Finance and Accounting*, 1(1),107-124.
- Vijaykumar, A. (2010). Economic value added and market value added: an empirical study of relationship. *College Sadhana*, 2(2),141-148.
- Wang, Y. S., Jiang, X., Liu, Z. J., Wang, W. X. (2015). Effect of earnings management on economic value added: a China study. *Accounting and Finance Research*,4,(3),9-19.
- Wang, Y., Wang, Y. (2016). Economic value added, corporation growth and overinvestment-based on state-owned corporations. *Modern Economy*, 7,1640-1652.
- Wu, R. S. (2014). Predicting earnings management: a nonlinear approach. *International Review of Economics and Finance*, 30, 1-25.
- Zang, A. Y. (2011). Evidence on the tradeoff between real manipulation and accrual manipulation. *The Accounting Review*, 87(2),675-703.
- Zhao, X., Wang, T. (2012). Economic value added for performance evaluation: a financial engineering. *Systems Engineering Procedia*, 5,379-387.
- Zhou, Z., Wu, C. F. (2016). Consistent analyst expectation error and earnings management: evidence from China. *Emerging Markets Finance & Trade*, 52,2128-2148.
- Zhu, T., Lu, M., Shan, Y., Zhang, Y. (2015). Accrual-based and real activity earnings management at the back door: evidence from Chinese reverse mergers. *Pacific-Basin Finance Journal*,.35(A), 317-339.



THE LINK BETWEEN FINANCIAL TRANSPARENCY AND KEY FINANCIAL RATIOS: A CASE FROM TURKEY

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ABSTRACT

Purpose- Since globalization movements in the capital markets change the information requirements expected from the financial statements to a great extent today, companies tend to provide more reliable, transparent and quality financial and non-financial information within the framework of corporate transparency. These trends also affect the financial reporting processes especially financial disclosures. The purpose of this study is to evaluate disclosures that are essential to an investor's understanding and analysis of the economics underlying the information in financial reports.

Methodology- It focuses on relationship between financial transparency and key financial ratios. In order to reach this aim financial transparency and disclosure checklist is established and companies are classified according to their transparency levels. Using a sample of publicly traded companies from BIST 100 (excluding finance sector) for the year 2016, Standard & Poor's (S&P) methodology is applied for assessment of financial transparency and disclosure (T&D) levels based on their annual reports and websites.

Findings- The results reveal that transparency level has statistical differences among the group means of some key financial ratios. High quality disclosure also means more accountable and transparent companies for investors.

Conclusion- The study also evaluates the relationship between the firm-specific T&D scores and financial performance of BIST 100 firms. This paper sufficiently contributes towards literature on financial disclosures. High quality disclosure has significant influence on investors and lenders who must assess risks and returns and decide where to place their money best, strengthen the efficiency of capital allocation as well as offer the benefit of reducing the costs of capital.

Keywords: Financial statements, financial ratios, financial transparency, disclosure, Borsa Istanbul (BIST) 100.

JEL Codes: M41, M40, G30

1. INTRODUCTION

After many financial scandals of European and American companies in 2000's (Enron, Tyco, Parmalat and etc.) the issue of voluntarily disclosure and transparency in a financial reporting process led a deep interest from the view of investors. After these scandals many regulations and voluntarily disclosures took a part in today's financial reporting. Today financial reporting is a deep concept beyond the disclosure of financial statements. Attention of investors has turned to not only the effectiveness of corporate governance practices but also to transparency and disclosure of information.

Corporate governance refers to the quality, transparency, and dependability of the relationships between the shareholders, board of directors, management, and employees that define the authority and responsibility of each in delivering sustainable value to all the stakeholders. Transparency is clearly linked to the debate about governance reform, as it embodies one of the core principles corporate governance. It is presented as an overarching cornerstone of the OECD

corporate governance guidelines: “Investor confidence and market efficiency depend on the disclosure of accurate timely information about corporate performance. To be of value in the global capital markets, disclosed information should be clear, consistent and comparable” (OECD,1998)

Corporate Governance Principles developed by OECD in 1999, then updated in 2004 and the 2015 revision of the Principles of Corporate Governance addresses these and other emerging issues that are increasingly relevant.

Standard & Poor’s has a study that examines the transparency and disclosure (T&D) practices of major public companies around the globe. Since T&D are fundamental components of corporate governance greater transparency and better disclosure keep corporate stakeholders better informed about the way a company is being managed. In addition, studies suggest that better disclosure has a positive impact on the efficient functioning of capital markets.

Corporate transparency is defined as the widespread availability of relevant, reliable information about the periodic performance, financial position, investment opportunities, governance, value, and risk of publicly traded firms. This why the issue of transparency is so important while measuring the financial performance.

In this study in order to examine the relationship between the transparency level and the financial performance indicators of Turkish companies a transparency checklist is established by using Standard & Poor’s study. The rest of the paper is organized as follows: Section 2 provides a detailed survey of past studies. Section 3 explains the data (variables employed) and methodology while the results are presented in Section 4. Finally, Section 5 gives the conclusion.

2. LITARATURE REVIEW

Sandeep et al. (2002) use a dataset to examine Transparency & Disclosure scores (T&D score) in 19 emerging markets for 354 firms representing 70% of S&P/IFCI Index market capitalization over the 3 years ending in 2000. For 3 years, the differences between countries, economic sectors and trends are analyzed. The study finds that emerging markets in Asia and South Africa have significantly greater transparency and clarity compared to emerging markets in Latin America, Eastern Europe and the Middle East.

Aksu & Kosedag (2006) evaluate the T&D practices of the 52 biggest firms in the Istanbul Stock Exchange (ISE), hinge on their English and local language annual reports and websites. Standard & Poor’s (S&P) scoring methodology is used which is customised version of the 98 desirable T&D attributes they used in several other countries. The results of the paper provide considerable support for prior findings in developed markets, they also provide an insight on how specific agency problems faced by ISE firms impact their T&D scores.

Madhani (2007), discusses the role of voluntary disclosure and transparency in financial reporting and highlights risks and costs associated with voluntary disclosure. The study claims that, voluntary disclosure practices increase investor awareness and trust, reducing the uncertainty of the returns to the capital suppliers which is expected to reduce the firm’s cost of external capital to increase its value. Disclosure practices mitigate the political costs of non-compliance and reduce the risk of higher taxes, litigation and too much regulation.

Haat et al. (2008) examine the effect of good corporate governance practices on corporate transparency and performance of Malaysian listed companies. Sample consist of 75 companies listed on BMB in 2002 and hierarchical regression is applied to test the relationship between among corporate governance, transparency and performance. The results show that there is a significant negative relation between performance and audit quality. Furthermore, disclosure and timeliness are not significant contributing factors in the relationship between corporate governance and market performance.

Adiloglu & Vuran (2012) investigate the transparency levels of financial information disclosures in corporate governance reports and annual reports are calculated by establishing a transparency checklist for the year 2010. Manova analysis is employed to investigate the relationship between the transparency levels and financial performance indicators. The results indicate that transparency level is statistically significant with return on asset, total debt / total assets, longterm debt / total assets and corporate governance index variables.

Arbatlı & Escolano (2015) investigate whether financial transparency has an effect on market perceptions of sovereign risk or not. The results indicate that financial transparency has a positive and significant effect on ratings in advanced and developing economies, respectively – but its effect works through different channels in advanced and developing economies. In advanced economies, financial transparency is related with better financial outcomes, leading indirectly to higher credit ratings.

Sharif & Lai (2015) examine the effects of disclosure in corporate governance practices on firm performance, bankruptcy risk, leverage and dividend policy in public listed companies. To measure disclosure and transparency more accurately, the recommended practices of the Malaysian Code on Corporate Governance 2012 (MCCG 2012) is used. The results show that corporate disclosure practices have positive effects on company performance and negative effects on company leverage.

And also, the paper did not find any significant relationship between corporate transparency levels with bankruptcy risk and dividend payouts.

Achoki et al. (2016) examine general and strategic disclosure, financial disclosure, forward looking disclosure, social board disclosure as a proxy for measuring voluntary disclosure and firm characteristics and how they affect the financial performance of commercial banks in Rwanda. Return on Equity is used as financial performance measurement. Sample of the study consists of 14 commercial banks in Rwanda. The result of the paper indicates a positive relationship between financial, forward looking and board and social disclosure and return on equity.

Qui et al. (2016) investigate the link between a firm's environmental and social disclosures and its profitability and market value. The findings prove that there is relation between profitability and social disclosures and there is no relation between environmental disclosures and profitability. Furthermore, it is determined that firms with greater economic resources make more extensive disclosures which yield net positive economic benefits.

Torchia & Calabrò (2016) examine the link between board of directors' structure and financial transparency and disclosure (T&D). The paper analyses financial T&D and board structure of Italian listed companies. Multiple linear regression analysis is applied. The results show a significant relation between board structure and the level of financial T&D. Specifically, it is found a positive and significant relationship between the independent directors' ratio and the level of financial T&D and a negative relationship between board size and the level of financial T&D.

Akhigbe et al. (2017) analyze the relation between transparency and bank holding company (BHC) profit efficiency using these measures of transparency for 1996 through 2014. Their findings indicate that transparency has a positive effect on bank financial performance.

Zulfikar et al. (2017) aim to examine an independent commissioner against mandatory disclosure of financial performance as a moderating variable. The sample in this research includes 117 banking companies listed in Bank Indonesia during the years of 2013-2015. The statistical method used is Moderated Regression Analysis (MRA) with multiple linear analysis. Based on the statistical test, the results indicate that the independent commissioner negatively affects mandatory disclosure. The financial performance of independent commissioners strengthens such relationship.

Hadi et al. (2018) aim to analyze the effect of local government characteristic and accountability performance on the financial disclosure based on WEB-ICT and how it's implications for local government financial performance as a response to the public information disclosure requirements. 307 regencies and cities local government in Indonesia is selected as samples for the study. The result shows that local governments with better performance accountability levels and have greater or more mature characteristics will disclose wider financial information through the website. It indicates that local government characteristic and accountability of local government performance has a positive influence on financial disclosure based on web-ICT.

3. DATA AND METHODOLOGY

This study investigates relationship between the financial performance indicators and the transparency level of companies operating in manufacturing sector. Sample of this study comprise of the 64 largest manufacturing companies which are listed in BIST 100 index during the year 2016. Distribution of companies by sectors are shown in Figure 1.

Figure 1: Distrubution of Companies by Sectors



It focuses on sources of information that are most easily accessible by local and international investors which are the latest available English language and local language company annual reports and the English and Turkish web sites. In this context, the transparency levels of financial information disclosures in annual reports are calculated by creating a transparency checklist. In the transparency checklist, 17 criteria obtained from Standard & Poor's scoring methodology.

If the relevant information in the annual report is determined, "1" is given to the company. On the contrary, the company gets "0" point. The points for each company are totalized and the transparency score is calculated by dividing total score to 17. After calculating this transparency level score of 64 companies, these companies are divided into 3 categories as shown in Table 1. MANOVA Analysis is conducted to investigate if there is a significant difference between means of at least one financial ratio of at least two groups of transparency categories.

Table 1: Category Diversification of Firms

| Category | Name of the Category | Transparency Level | # of Companies |
|----------|----------------------|--------------------|----------------|
| 1 | Least Transparent | 48%-below | 26 |
| 2 | Transparent | 49%-87% | 35 |
| 3 | Most Transparent | 88%-100% | 3 |

Financial performance indicators are calculated in order to analyze relationship between financial performance and transparency level of disclosure. The financial statements are gathered from the annual reports of selected companies. 8 financial performance indicators and 2 dummy variable (Corporate Governance Index, Sustainability Index), totally 10 dependent variables are shown in Table 2:

Table 2: Financial Performance Indicators Used in the Paper

| Financial Ratios | Financial Ratios |
|-------------------|----------------------------|
| Current Ratio | Return on Asset |
| Acid-test Ratio | Debt to Equity |
| Net Profit Margin | CFOA to Net Income |
| Operating Margin | Sustainability Index |
| Return on Equity | Corporate Governance Index |

In order to evaluate group differences across the financial ratios simultaneously MANOVA (Multivariate Analysis of Variance) is employed by SPSS 21. Multivariate analysis of variance evaluates differences among centroids (composite means) for a set of dependent variables when there are two or more levels of an independent variables (groups) (Tabachnick et al., 2007). Manova analysis is applied in four steps:

- Multivariate tests: to test the basic assumption of Manova,
- Levene's Test of Equality of Error Variances: to test for equality of error variances across dependent variables,
- Test of Between-Subjects Effect: to investigate if the independent variable differ on all of the dependent measures,
- Post hoc tests: to test the significance of differences in levels of an independent factor in comparison to a dependent variable.

4. FINDINGS AND DISCUSSIONS

Table 3 involves the most commonly used multivariate tests (Pillai's Trace, Wilk's Lambda, Hotelling's Trace and Roy's Largest Root) and the basic hypothesis of Manova (the population means on the multiple dependent variables are equal across groups) is tested by the multivariate tests.

Table 3: Multivariate Tests

| Effect | | Value | F | Hypothesis df | Error df | Sig. | Partial Eta Squared |
|--------------|--------------------|-------|---------|---------------|----------|------|---------------------|
| Intercept | Pillai's Trace | ,846 | 28,561b | 10,000 | 52,000 | ,000 | ,846 |
| | Wilks' Lambda | ,154 | 28,561b | 10,000 | 52,000 | ,000 | ,846 |
| | Hotelling's Trace | 5,493 | 28,561b | 10,000 | 52,000 | ,000 | ,846 |
| | Roy's Largest Root | 5,493 | 28,561b | 10,000 | 52,000 | ,000 | ,846 |
| TRANSPERANCY | Pillai's Trace | ,793 | 3,486 | 20,000 | 106,000 | ,000 | ,397 |
| | Wilks' Lambda | ,349 | 3,606b | 20,000 | 104,000 | ,000 | ,409 |
| | Hotelling's Trace | 1,460 | 3,723 | 20,000 | 102,000 | ,000 | ,422 |

Since the significance level of all tests are smaller than 5 %, each of the four measures indicate that there is a significant difference between the means of at least one dependent variable (financial ratio) of at least two groups of independent variable (transparency levels of firms).

Table 4 displays the results of Levene's test for equality of error variances across financial performance indicators. As it is seen in the table, it can be deduced that equal variances are assumed for variables with significance level > 0,05.

Table 4: Levene's Test of Equality of Error Variances

| | F | df1 | df2 | Sig. |
|----------------------------------|---------|-----|-----|------|
| CurrentRatio | 19,182 | 2 | 61 | ,000 |
| ROA | ,015 | 2 | 61 | ,985 |
| ROE | 1,512 | 2 | 61 | ,229 |
| AcidTest | 1,093 | 2 | 61 | ,342 |
| Net Profit Margin | 135,642 | 2 | 61 | ,000 |
| Operating Margin | 138,632 | 2 | 61 | ,000 |
| CFOA | ,884 | 2 | 61 | ,418 |
| Debt To Equity | 1,698 | 2 | 61 | ,192 |
| BIST Sustainability Index | 21,086 | 2 | 61 | ,000 |
| BIST CG Index | 9,636 | 2 | 61 | ,000 |

Subsequent to significant results are obtained by multivariate tests, for further investigation the test of between subjects effect is employed in relation to each of the dependent variables. The Test of Between- Subjects Effects investigates if there is a significant difference between the means of at least one financial ratio of at least two groups of the transparency levels.

Table 5: Test of Between-Subjects Effect Table

| Source | Dependent Variable | Type III Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared |
|----------------------|----------------------------------|-------------------------|------|-------------|--------|------|---------------------|
| Transparency | CurrentRatio | 32,149 | 2 | 16,074 | 5,944 | ,004 | ,163 |
| | ROA | 115,076 | 2 | 57,538 | ,925 | ,402 | ,029 |
| | ROE | 1525,387 | 2 | 762,694 | 2,141 | ,126 | ,066 |
| | AcidTest | 1,838 | 2 | ,919 | ,284 | ,754 | ,009 |
| | Net Profit Margin | 8,576 | 2 | 4,288 | 14,107 | ,000 | ,316 |
| | Operating Margin | 20,203 | 2 | 10,101 | 13,435 | ,000 | ,306 |
| | CFOA | 87,129 | 2 | 43,564 | 4,469 | ,015 | ,128 |
| | Debt To Equity | 15202,729 | 2 | 7601,364 | 14,954 | ,000 | ,329 |
| | BIST Sustainability Index | 1,751 | 2 | ,876 | 3,854 | ,027 | ,112 |
| BIST CG Index | 1,826 | 2 | ,913 | 4,670 | ,013 | ,133 | |

The results indicate that transparency levels reveal the differences across the financial ratios namely Current Ratio, Net profit Margin, Operating Margin, CFOA to Net Income, Debt to Equity, Sustainability Index Corporate Governance Index for 5% significance level.

As shown in table 6, for each dependent variable post hoc tests are computed. According to Levene Test, while the error variance of CFOA and Debt to Equity are equal, the rest of them are not. Therefore For CFOA and Debt to Equity Tukey Test, for the other Tamhane Test are considered. After applying Tukey Test, for CFOA, there is a significant difference between third and first, third and second categories for 5% significance level and for Debt to Equity, there is a significant difference between first and second, first and third categories for 5% significance level. After results are obtained from Tamhane Test, for Sustainability Index and CG Index there is a significant difference between third and first category and third and second category for 5 % significance level. For the others, there is no significant difference between each category for 5% significance level.

Table 6: Multiple Comparisons

| Dependent Variable | | (I) code | (J) code | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---------------------------|-----------|----------|----------|-----------------------|------------|-------|-------------------------|-------------|
| | | | | | | | Lower Bound | Upper Bound |
| CFOA | Tukey HSD | Low | Medium | ,028 | ,808 | ,999 | -1,914 | 1,969 |
| | | | High | -5,504 | 1,904 | ,014 | -10,077 | -0,931 |
| | | Medium | Low | -,028 | ,808 | ,999 | -1,969 | 1,914 |
| | | | High | -5,531 | 1,878 | ,013 | -10,043 | -1,020 |
| | | High | Low | 5,504 | 1,904 | ,014 | 0,931 | 10,077 |
| | | | Medium | 5,531 | 1,878 | ,013 | 1,020 | 10,043 |
| | Tamhane | Low | Medium | ,028 | ,787 | 1,000 | -1,914 | 1,969 |
| | | | High | -5,504 | 3,222 | ,527 | -27,593 | 16,585 |
| | | Medium | Low | -,028 | ,787 | 1,000 | -1,969 | 1,914 |
| | | | High | -5,531 | 3,201 | ,526 | -28,228 | 17,165 |
| | | High | Low | 5,504 | 3,222 | ,527 | -16,585 | 27,593 |
| | | | Medium | 5,531 | 3,201 | ,526 | -17,165 | 28,228 |
| Debt To Equity | Tukey HSD | Low | Medium | -28,837 | 5,837 | ,000 | -42,859 | -14,815 |
| | | | High | -47,824 | 13,747 | ,003 | -80,848 | -14,800 |
| | | Medium | Low | 28,837 | 5,837 | ,000 | 14,815 | 42,859 |
| | | | High | -18,987 | 13,563 | ,347 | -51,568 | 13,595 |
| | | High | Low | 47,824 | 13,747 | ,003 | 14,800 | 80,848 |
| | | | Medium | 18,987 | 13,563 | ,347 | -13,595 | 51,568 |
| | Tamhane | Low | Medium | -28,837 | 6,152 | ,000 | -44,088 | -13,586 |
| | | | High | -47,824 | 7,064 | ,000 | -68,977 | -26,671 |
| | | Medium | Low | 28,837 | 6,152 | ,000 | 13,586 | 44,088 |
| | | | High | -18,987 | 5,936 | ,084 | -41,236 | 3,262 |
| | | High | Low | 47,824 | 7,064 | ,000 | 26,671 | 68,977 |
| | | | Medium | 18,987 | 5,936 | ,084 | -3,262 | 41,236 |
| BIST Sustainability Index | Tukey HSD | Low | Medium | -,216 | ,1234 | ,194 | -,513 | ,080 |
| | | | High | -,731 | ,2906 | ,038 | -1,429 | -,033 |
| | | Medium | Low | ,216 | ,1234 | ,194 | -,080 | ,513 |
| | | | High | -,514 | ,2867 | ,180 | -1,203 | ,175 |
| | | High | Low | ,731 | ,2906 | ,038 | ,033 | 1,429 |
| | | | Medium | ,514 | ,2867 | ,180 | -,175 | 1,203 |
| | Tamhane | Low | Medium | -,216 | ,1234 | ,233 | -,520 | ,087 |
| | | | High | -,731 | ,0887 | ,000 | -,958 | -,504 |
| | | Medium | Low | ,216 | ,1234 | ,233 | -,087 | ,520 |
| | | | High | -,514 | ,0857 | ,000 | -,730 | -,299 |
| | | High | Low | ,731 | ,0887 | ,000 | ,504 | ,958 |
| | | | Medium | ,514 | ,0857 | ,000 | ,299 | ,730 |
| BIST CG Index | Tukey HSD | Low | Medium | -,151 | ,1145 | ,392 | -,426 | ,124 |
| | | | High | -,808 | ,2696 | ,011 | -1,455 | -,160 |
| | | Medium | Low | ,151 | ,1145 | ,392 | -,124 | ,426 |
| | | | High | -,657 | ,2660 | ,042 | -1,296 | -,018 |
| | | High | Low | ,808 | ,2696 | ,011 | ,160 | 1,455 |
| | | | Medium | ,657 | ,2660 | ,042 | ,018 | 1,296 |
| | Tamhane | Low | Medium | -,151 | ,1133 | ,467 | -,429 | ,128 |
| | | | High | -,808 | ,0788 | ,000 | -1,009 | -,606 |
| | | Medium | Low | ,151 | ,1133 | ,467 | -,128 | ,429 |
| | | | High | -,657 | ,0814 | ,000 | -,862 | -,453 |
| | | High | Low | ,808 | ,0788 | ,000 | ,606 | 1,009 |
| | | | Medium | ,657 | ,0814 | ,000 | ,453 | ,862 |

5. CONCLUSION

The purpose of this paper is to examine the relationship between the transparency level and the financial performance indicators of 64 manufacturing companies which are listed in BIST-100 index during the year 2016. Initially, the transparency levels of financial information disclosures in annual reports are calculated by establishing a transparency checklist for the year 2016. After calculating this transparency level scores of 64 companies, these companies are divided into 3 categories which are previously mentioned in this study.

MANOVA analysis is used to test the relationship between the transparency level and the financial performance indicators. The results indicated that transparency level has statistically significant effect between the group means of four variables. These are CFOA to Net Income, Debt to Equity, Sustainability Index and Corporate Governance Index.

- For Debt to Equity ratio variable; there is a significant difference between first and second category and first and third category for 5 % significance level. The mean of the first group is smaller than the second and third one.
- For CFOA/Net Income ratio variable; there is a significant difference between third and first category and third and second category for 5 % significance level. The mean of the third group is greater than the first and second one.
- For Sustainability Index and CG Index there is a significant difference between third and first category and third and second category for 5 % significance level. The mean of the third group is greater than the first and second one.

For further researches, financial performance indicators and criterias in transparency disclosure checklist can be developed. In this study, only transparency of the financial information disclosure is examined. It can be also generalized for all Transparency and Disclosure issues. To attain more financial information disclosure for Turkish market, all companies listed in BIST can be added to sample of the study.

REFERENCES

- Achoki, I., Kule, J., Shukla, J. (2016). Effect of voluntary disclosure on the financial performance of commercial banks in Rwanda. A study on selected banks in Rwanda. *European Journal of Business and Social Sciences*, September, Vol. 5, No. 6, p.167–184.
- Adiloglu, B., Vuran, B. (2012). The relationship between the financial ratios and transparency levels of financial information disclosures within the scope of corporate governance: evidence from Turkey. *The Journal of Applied Business Research*, vol. 28, no. 4, p. 543-554.
- Akhigbe A., McNulty J. E., Stevenson B. A. (2017). Additional evidence on transparency and bank financial performance. *Review of Financial Economics*, 32, p. 1-6.
- Aksu, M., Köseadağ, A. (2006). Transparency and disclosure scores and their determinants in the Istanbul Stock Exchange. *Corporate Governance: An International Review*, vol.14, no. 4, p. 277-296.
- Arbatli, E., Escolano, J. (2015). Fiscal transparency, fiscal performance and credit ratings. *Fiscal Studies*, vol. 36, no. 2, pp. 237–270
- Haat, C., Rahman, A., Mahenthiran, S. (2008). Corporate governance, transparency and performance of Malaysian companies. *Managerial Auditing Journal*, Vol. 23 No. 8, p. 744-778
- Hadi, A., Handajani, L., Putra, I. (2018). Financial disclosure based on Web-ICT determinants. *International Research Journal Of Management, IT & Social Sciences*, 5(1), p. 72-85.
- Madhani, P. M. (2007). Role of voluntary disclosure and transparency in financial reporting. *The Accounting World*, vol. 7, no. 6, p. 63-66
- Patel, S., Dallas, G. (2002). Transparency and disclosure: overview of methodology and study results-United States. Working paper, Standard and Poor's and SSRN.
- OECD. (1998). Business Sector Advisory Group on Corporate Governance. *Corporate Governance: Improving Competitiveness and Access to Capital in Global Markets*.
- Qiu, Y., Shaukat, A., Tharyan, R. (2016). Environmental and social disclosures: link with corporate financial performance. *The British Accounting Review*, vol. 48, no. 1 p. 102-116.
- Sharif, S. P., Ming Lai, M. M. (2015). The effects of corporate disclosure practices on firm performance, risk and dividend policy. *International Journal of Disclosure and Governance*, vol. 12, no. 4 p. 311-326.
- Tabachnick, B. G., Fidell, L. S. (2007). *Using multivariate statistics*, 6.th ed. Pearson Education Limited, Essex.
- Torchia, M., Calabrò, A. (2016). Board of directors and financial transparency and disclosure. Evidence from Italy. *Corporate Governance: The International Journal of Business in Society*, Vol. 16 Iss 3 p. 593-608.
- Zulfikar, R., May, N., Suhardjanto, D., Agustiniingsih, S. W. (2017). Independent commissioner against mandatory disclosure of financial performance as a moderating variable. *Review of Integrative Business Economics Research*, vol. 6, no. 3, p.205-216.

THE IMPACTS OF PERCEIVED RISK AND RISK PROPENSITY ON FINANCIAL WELL-BEING: AN APPLICATION ON BANK EMPLOYEES

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ABSTRACT

Purpose- This study seeks to determine the impact of perceived risk on risk propensity and the impact of both variables on financial well-being.

Methodology- The questionnaire prepared by using the Perceived Risk and Risk Propensity scales obtained from the study of Hunjra et al. (2017) and the Financial Well Being adapted from the study of Norvilitis et al. (2003) was applied to 679 employees in banks operating in Balikesir province and the results were analyzed and interpreted using SPSS 22 and AMOS package programs.

Findings- It has been determined in the research that the effect on the risk propensity of perceived risk is negative and meaningful and the effect of perceived risk on the existing financial condition and future financial situation expectancy dimensions of financial well-being determined to be in significant. It has been determined that the effect of risk propensity on the existing financial condition and future financial situation expectancy dimensions of financial well-being is negative and meaningful. It has been also determined that the effect of the existing financial condition dimension of financial well-being on the future financial situation expectancy dimension of financial well-being positive and meaningful.

Conclusion- As a result of there search, it is determined that individuals with high risk perception have a low risk propensity and those with high risk propensity will not see themselves very well financially, the expectation of the future financial situation of those who feel good financially in the current situation is also positive.

Keywords: Perceived risk, risk propensity, financial well-being, banking sector employees.

JEL Codes: I31, D19, G40

ALGILANAN RİSK, RİSK EĞİLİMİ VE FİNANSAL İYİ OLMA HALİ ÜZERİNDEKİ ETKİLERİ: BANKA ÇALIŞANLARI ÜZERİNDE BİR UYGULAMA¹

ÖZET

Amaç- Bu çalışma, algılanan riskin risk eğilimi üzerindeki ve her iki değişkenin de finansal iyi olma üzerindeki etkisini tespit etme amacını taşımaktadır.

Yöntem- Araştırmada Norvilitis vd.(2003)'ün çalışmasından uyarlanan Finansal İyi Olma Hali ile Hunjra vd.(2017)'nin çalışmasından alınan Algılanan Risk ve Risk Eğilimi ölçekleri kullanılarak oluşturulan anket formu, Balikesir ilinde faaliyette bulunan bankalardaki 679 çalışan üzerinde uygulanmış, elde edilen sonuçlar SPSS 22 ve AMOS paket programları kullanılarak analiz edilip yorumlanmıştır.

Bulgular- Araştırmada algılanan riskin risk eğilimi üzerinde etkisinin negatif yönlü ve anlamlı olduğu tespit edilmiş, algılanan riskin finansal iyi olma halinin mevcut finansal durum ve gelecekteki finansal durum beklentisi boyutları üzerinde etkisinin ise anlamsız olduğu belirlenmiştir. Risk eğiliminin finansal iyi olma halinin mevcut finansal durum ve gelecekteki finansal durum beklentisi boyutları üzerinde etkisinin ise negatif yönlü ve

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anlamli olduđu belirlenmiřtir. Finansal iyi olma halinin mevcut finansal durum boyutunun finansal iyi olma halinin gelecekteki finansal durum beklentisi boyutu üzerinde etkisinin ise pozitif yönlü ve anlamli olduđu tespit edilmiřtir.

Sonuç- Arařtırma sonucunda risk algısı yüksek olan bireylerin risk eğiliminin düşük olduđu, risk eğilimi yüksek olan bireylerin ise finansal olarak kendilerini çok iyi görmedikleri, mevcut durumda kendisini finansal açıdan iyi hissedendenlerin geleceğe yönelik finansal durum beklentisinin de olumlu olduđu tespit edilmiřtir.

Anahtar Kelimeler: Algılanan risk, risk eğilimi, finansal iyi olma hali, bankacılık sektörü çalışanları.

JEL Kodları: I31, D19, G40

1. GİRİŞ

Latince kökenli bir kelime olan ve Fransızca “risque” kelimesinden türeyen risk kavramını Türk Dil Kurumu “zarara uğrama tehlikesi” olarak tanımlamıştır (TDK, 2018). Buna karşın iş hayatında risk kavramı içine fırsatların da dahil edildiği bir yaklaşım söz konusudur. Risk, arařtırmacılarca farklı şekillerde tanımlanmıştır. Short (1984) riski, bireylerin yaşamdaki herhangi bir olay ya da durum ile ilgili tehlike etkisini deneyimleme olasılığı olarak tanımlarken, Sjöberg (1991) bir olayın olma olasılığının bu olayın olumsuz sonucunu artırması ve kişilerin olası durumlar üzerinde düşünerek en az negatif sonuç doğuracak seçeneğe yönelim olarak tanımlamıştır. Fıkrkoca (2003) ise riski, belirli bir zaman aralığında, hedeflenen sonuca ulaşamama, kayba ya da zarara uğrama olasılığı ile istenmeyen bir olayın, zararın, kaybın oluşma olasılığı ve oluşması durumunda yaratacağı olumsuz etkinin şiddeti olarak ifade etmektedir.

Ekonomik anlamda risk, iktisadi karar birimlerinin verecekleri kararlar sonucunda ortaya çıkacak getiriyi olumsuz etkileyebilecek olayların gerçekleşme olasılığı anlamına gelmektedir. Koç 'a (2012) göre, riskin en önemli iki unsuru; belirsizlik derecesi ve satın alma kararından doğabilecek sonuçlardır. İktisat, psikoloji ve istatistik gibi farklı disiplinlerde risk kavramı kazanma ve kaybetme olasılıklarını içerirken, tüketici davranışlarında sadece olumsuz davranışlar üzerinde durulmaktadır (Stone ve Grønhaug, 1993;Dholakia, 2001). Roszkowski ve Davey (2010), belirsizlik durumunda bir harekete geçme isteğini tanımlayan "risk toleransı", "risk kabulü", "risk iřtahi", "risk tutumu", "risk profili" ve "risk eğilimi" gibi finansal terimleri ayırt etmeye ve belirlemeye güçlü bir ihtiyaç bulunduğunu ileri sürmektedir.

Algılama, kişilerin çevreden gelen uyarıcıları, kendileri için anlamli bir dünya yaratacak şekilde yorumlamaları olarak tanımlanmaktadır (Karafakioğlu,2005,s.92). Bir başka deyişle algılama, bireyin anlamli bir dünya görüntüsü yaratmak için bilgi girdilerini seçme, organize etme ve yorumlama sürecidir (Kotler, 2000: 152).Risk algısı ise, kişilerin riskin ciddiyeti ve özellikleri hakkındaki sübjektif yargısıdır (Gürsoy vd., 2008: 21).

Yatırımcıların finansal ürün satın almadan önce ve sonra hissettikleri belirsizliğin derecesi olarak tanımlanabilen finansal risk algılaması, yatırım kararları üzerinde etkili olmaktadır. Yatırımcıların davranışlarının odak noktasını, finansal ürünlerle ilgili değerlendirmeleri ve seçme kararları oluşturur (Deniz ve Erciş, 2008: 302).

Yatırımcılar açısından yatırım kararları verilirken, gelecekteki belirsizlik nedeniyle bir tahmin ve öngöründe bulunularak risk alma söz konusudur. Yatırım kararı, beklentiler ve risk arasındaki çatışma sonucunda oluşan alternatifler değerlendirilerek alınır. Bu nedenle bireylerin riske bakış açısı, yatırım kararları üzerinde etkilidir. Rana vd. (2011) yaptıkları çalışmada, yatırımcının risk algısındaki azalmanın risk eğilimini arttırdığını ve yatırım davranışını etkilediğini belirtmişlerdir.

Yatırımcıların risk karşısındaki tutumları; demografik, sosyal ve ekonomik koşullara bağlı olarak zaman içinde değişebilmektedir. Diğer bir ifadeyle, bir yatırımcının risk-getiri tercihi statik değil, dinamikdir (Anbar ve Eker, 2009).

Risk eğilimi, Stewart Jr ve Roth (2001) tarafından bireyin risk alma veya riskten kaçınma şeklindeki karar anındaki eğilimi olarak tanımlanmış, yazarlar risk eğiliminin riskli karar alma sürecinde tek başına risk alma davranışına yol açmadığını ancak önemli bir özellik olarak kabul edildiğini de eklemiřlerdir. Linnas'a (2012) göre risk eğilimi, bir kişinin kaybetme ihtimaline karşılık şansını değerlendirmek için ne kadar istekli olduğudur. Bireyin belirsiz sonuçlara sahip durumlarda nasıl devam edileceğine karar verirken risk alma veya riskten kaçınmaya yönelik genel eğilimi genellikle “risk eğilimi” olarak adlandırılan iki karşıt özelliktir. Sitkin ve Pablo (1992), karar alıcı bireyin düşük ya da yüksek risk içeren davranış seçerken bireyin özelliklerinin, sorunun yapısının ve deneyim durumunun etkili olduğunu belirtmişlerdir. Benzer şekilde Saraç ve Kahyaoğlu'na (2011) göre de yatırımcıların risk seviyesine kişilik özellikleri, sosyo-ekonomik faktörler ve psikolojik faktörler etki etmektedir. Erdem (2001) girişimcilerin risk alma eğilimi üzerine yaptığı çalışmasında, bireysel özelliklerin, bireyin deneyiminin ve çevresel faktörlerin risk alma eğilimi üzerinde etkili olduğunu savunmuştur.

Literatürde finansal iyi olma hali kavramı, kişinin maddi durumu ile ilgili memnuniyet algısı olarak tanımlanmaktadır (Falahati ve Paim, 2011). Prawitz vd. (2006) finansal iyi olma halini, kişinin kendi finansal durumundan kaynaklanan refah veya stres seviyesinin ifade edilmesi olarak tanımlanmaktadır. Bu kavram; bireyin maddi ve manevi açıdan finansal durumunu nasıl algıladığı, yaşam standartlarını nasıl yükselteceği, kendini finansal açıdan nasıl güvende hissedeceği ve ihtiyaçlarını nasıl karşılayabileceği gibi konuları ön plana çıkarmaktadır (Taft vd., 2013).Finansal iyi olma hali; bireyin ekonomik, çevresel, sosyal, duygusal, bedensel

yönlerinin olumlu yansımaları sonucunda oluşmaktadır. Bu bağlamda birey, tüm bu faktörlere dayanarak kendini finansal olarak iyi ya da kötü hissetmektedir (Kutbay vd., 2017). Bu kavram, her ne kadar bireyin bir özelliği gibi görünse de finansal davranışlarının bir sonucu olarak ortaya çıkmaktadır (Kim, 2000). Saraç ve Kahyaoğlu'na (2011) göre, herhangi bir menkul kıymete ilişkin verilecek yatırım kararında göz önünde bulundurulması gereken iki temel kriter; yatırımın riski ve yatırımın beklenen getirisidir. Yatırımcılar aynı risk seviyesine sahip iki yatırım alternatifi arasından yüksek beklenen getiriye sahip olanı ya da aynı beklenen getiriye sahip yatırım alternatiflerinden düşük risk seviyesine sahip olanı seçme eğilimindedir. Buradan hareketle, birey alternatifler arasında seçim yapması sonucunda kendini finansal yönden iyi ya da kötü hissetmektedir. Yaptığı yatırım beklentileri doğrultusunda gelişirse birey kendini rahat ve refah içinde hissederken, yapılan yatırım olumsuz neticelendiğinde bireyin kendini stresli hissetmesi beklenmektedir.

Sabri ve Falahati (2012) tarafından yapılan çalışmada bireylerin finansal davranış eğilimlerinin finansal iyi olma hali seviyesini etkileyeceğini ileri sürülmüştür. Bu çalışmaya göre; akılcı finansal davranışların bireyin finansal iyi olma hali seviyesini arttıracaklarını, buna karşın yanlış yönetilen finansal sürecin ise, bireyi kısa ve uzun vadede sorunlarla karşı karşıya bırakacağını bu durumda bireyin finansal iyi olma hali seviyesini düşüreceğini tespit etmişlerdir.

Finansal iyi olma hali doğası gereği özeldir. Çünkü maddi yönden bireyin kendini nasıl gösterdiğinden ziyade, onun maddi yönünü nasıl algıladığına dayanır. Bu nedenle, aynı gelir düzeyindeki bireyler, kişisel tercihleri ve değerlerine bağlı kalmaları sonucu finansal iyi olma hallerini farklı değerlendirebilirler. Bireyin finansal iyi olma halini nasıl algıladığı kapsamlı bir faktör listesinden etkilenir (Brüggen vd.,2017). Bunlar literatürde; cinsiyet, yaş, eğitim, medeni durum ve aile yapısı gibi kişisel demografik özellikler (Joo ve Grable, 2004;Malone vd., 2010); finansal bilgi ve etkinliği (Shim vd., 2009; Vosloo vd., 2014) ; para ya da borç gibi konulara yönelik finansal tutumlar (Norvilitis vd., 2003); materyalizm gibi finansal eğilimler, risk eğilimi ve risk alma isteği (Gutter ve Copur, 2011); bütçeleme, tasarruf ve zorlayıcı satın alma gibi alanlardaki finansal davranışlar (Joo ve Grable, 2004; Shim vd.,2009)olarak belirtilmektedir.

Gutter ve Fontes (2006), Grable ve Joo (2004), Grable, Lytton ve O'Neil (2004), Grable ve Lytton (1999a), gelir düzeyi ile finansal risk alma davranışı arasında pozitif ilişki tespit etmişlerdir. Mittal ve Vyas (2007), yatırım araçlarının tercihinde gelirin rolünü incelemişler ve düşük gelirli kişilerin vadeli mevduat gibi düşük riskli yatırım araçlarına yaptıklarını, hisse senedi, yatırım fonu gibi yatırım araçlarını tercih etmediklerini tespit etmişlerdir. Gelir düzeyi ile finansal iyi olma hali değişkenlerinin araştırıldığı çalışmalarda ise; gelir düzeyi yüksek olan bireylerin finansal iyi olma halleri gelir düzeyi düşük olan bireylerden anlamlı olarak yüksek çıkmıştır (Clarkv.d., 2008; Sunal, 2012).

Literatürde kadınların erkeklere göre daha az risk alma durumunda oldukları, kadınların erkeklere göre daha fazla riskten kaçındıkları, kadınların algılanan risk düzeylerinin erkeklerden daha yüksek olduğu belirlenmiştir (Hawley ve Fuji, 1993-1994; Grable ve Lytton, 1998; Jianakoplos ve Bernasek, 1998; Grable ve Joo, 2000; Olsen ve Cox, 2001; Dwyer vd., 2002; Grable vd., 2004; Watson ve McNaughton, 2007; Deo ve Sundar, 2015; Kannadhasan, 2015). Yaş ile risk alma davranışı arasındaki ilişkiyi belirlemeye yönelik çalışmalarda ise farklı sonuçlara ulaşılmış olup; yaş ile risk algısı arasında pozitif veya risk eğilimi arasında negatif ilişki tespit eden çalışmaların yanı sıra (Hawley ve Fuji,1993-1994; Bajtelsmith, 1999; Finke ve Huston, 2003; Hallahan vd., 2004; Bellante ve Gren, 2004; Hanna ve Lindamood, 2005; Dohmen vd., 2005; Jianakoplos ve Bernasek, 2006; Grable vd., 2006; Watson ve McNaughton, 2007), yaş ile risk algısı arasında negatif veya risk eğilimi arasında pozitif ilişki tespit eden çalışmalar (Wang ve Hanna, 1997; Grable ve Lytton, 1999b; Grable, 2000; Harrison vd., 2005)ve yaş ile risk alma davranışı arasındaki ilişkiyi önemsiz olarak tespit eden çalışmalar (Haliassos ve Bertaut, 1995; Sung ve Hanna, 1996; Grable ve Lytton, 1998; Yang, 2004) bulunmaktadır. Finansal yatırım kararları üzerinde etkili olan demografik faktörlerden bir diğeri olan medeni durum ile ilgili yapılan çalışmalarda ise, evli kişilerin bekarlara göre daha yüksek risk algısına ve daha düşük risk eğilimine sahip oldukları belirlenmiştir (Grable ve Lytton, 1998; Grable ve Joo, 2004; Yao ve Hanna, 2005).

Bu çalışma dört bölümden oluşmaktadır. Birinci bölümde algılanan risk, risk eğilimi ve finansal iyi olma hali kavramları kısaca açıklanmış ve literatür taramasına yer verilmiştir. Çalışmanın ikinci bölümünde çalışmanın amacı, kullanılan veri seti ve metodolojisi hakkında bilgi verilmiştir. Çalışmanın üçüncü kısmında araştırma bulguları ve veri analizlerine yer verilmiş olup, çalışmanın dördüncü ve son bölümünde sonuçlar değerlendirilmiştir.

2. ARAŞTIRMA

2.1. Araştırmanın Amacı

Bu araştırmanın amacı algılanan riskin risk eğilimi üzerindeki etkisini ve algılanan risk ile risk eğiliminin de finansal iyi olma hali üzerindeki etkisini tespit etmektir.

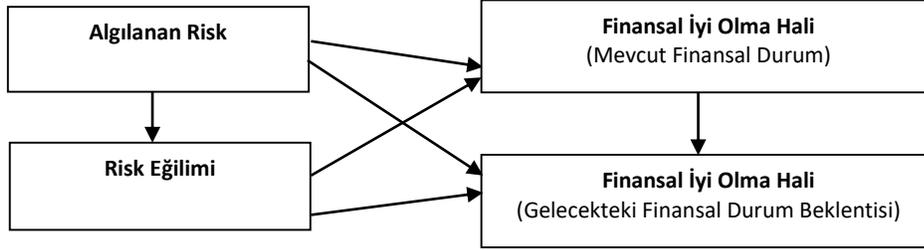
Banka çalışanları, hizmet verdikleri müşterilerine yatırım kararlarında yol göstermekte ve onların yatırım kararları üzerinde etkili olmaktadırlar. Banka gibi yatırım olanaklarının geniş olduğu bir sektörde çalışan ve finansal bilgi seviyeleri ortalama toplum bireylerine göre daha yüksek olan banka çalışanlarının, kendi portföylerini oluştururken yaptıkları tercihler sonucunda kendilerini

finansal yönden nasıl hissetmekte olduklarının ve algılanan risk ile risk eğilimlerinin tespit edilerek, bunların finansal iyi olma hali üzerindeki etkisini tespit etmek bu çalışmanın amacını oluşturmaktadır.

2.2. Araştırmanın Hipotezleri ve Modeli

Araştırmanın amacını ifade eden model Şekil-1’de sunulmuştur.

Şekil 1: Araştırmanın Modeli



Araştırmanın modeline uygun olarak aşağıdaki hipotezler geliştirilmiştir.

H1: Algılanan Riskin Risk Eğilimi üzerinde anlamlı bir etkisi vardır.

H2: Algılanan Riskin Finansal İyi Olma Halinin Mevcut Finansal Durum boyutu üzerinde anlamlı bir etkisi vardır.

H3: Algılanan Riskin Finansal İyi Olma Halinin Gelecekteki Finansal Durum Beklentisi boyutu üzerinde anlamlı bir etkisi vardır.

H4: Risk Eğiliminin Finansal İyi Olma Halinin Mevcut Finansal Durum boyutu üzerinde anlamlı bir etkisi vardır.

H5: Risk Eğiliminin Finansal İyi Olma Halinin Gelecekteki Finansal Durum Beklentisi boyutu üzerinde anlamlı bir etkisi vardır.

H6: Finansal İyi Olma Halinin Mevcut Finansal Durum boyutunun Finansal İyi Olma Halinin Gelecekteki Finansal Durum Beklentisi boyutu üzerinde anlamlı bir etkisi vardır.

2.3. Araştırmanın Sınırlılıkları

Bu araştırma Balıkesir ilinde faaliyet gösteren bankalarda çalışanlar üzerinde yapılmış olup, ülkemizin diğer bölgelerindeki banka çalışanlarının zaman ve imkanlar nedeniyle araştırmaya dahil edilememiş olması bu araştırmanın kısıtlarını oluşturur.

2.4. Araştırmanın Örnekleme

Balıkesir ilinde faaliyet gösteren bankalarda çalışanlar bu araştırmanın ana kütlesini oluşturmaktadır. Anket uygulaması için kolayda örnekleme metodu seçilmiş ve uygulama yüz yüze yapılarak gerçekleştirilmiştir. Araştırma kapsamında araştırmaya katılmayı kabul eden 716 banka çalışanı ile görüşülmüştür. Eksik bilgi verilen 37 anket araştırmaya dahil edilmeyerek, 679 anket veri analizinde kullanılmıştır.

2.5. Araştırmada Kullanılan Veri Toplama Araçları ve Verilerin Analizi

Araştırmanın değişkenlerinden Finansal İyi Olma Hali Ölçeği (FİHÖ) Norvilitis, Szablicki ve Wilso'nun (2003) yılındaki çalışmasından uyarlanmış olup 8 sorudan oluşmaktadır. Araştırmada, Hunjira, Qureshi ve Riaz (2017) tarafından literatürden uyarlanarak kullanılmış olan 4 sorudan oluşan Algılanan Risk Ölçeği (AR) ve 6 sorudan oluşan Risk Eğilimi Ölçeği (RE) kullanılmıştır.

Ölçeklerdeki ifadelerden her biri; (1) Kesinlikle Katılmıyorum, (2) Kısmen Katılmıyorum, (3) Kararsızım, (4) Kısmen Katılıyorum, (5) Tamamen Katılıyorum olmak üzere 5 basamaklı likert tipi puanlanmıştır. Ölçeklerdeki ters (reverse) ifadelerine verilen cevaplar 5→1, 4→2, 3→3, 2→4, 1→5 olacak şekilde kodlanmıştır.

Verilerin analizinde SPSS 22 ve AMOS paket programları kullanılmıştır.

3. ARAŞTIRMA BULGULARI VE VERİLERİN ANALİZİ

3.1. Demografik Faktörlere İlişkin Bulgular

Aşağıdaki Tablo 1’de ankete katılan banka çalışanlarının demografik özelliklerini gösteren frekans dağılımları görülmektedir.

Tablo 1: Demografik Özellikler

| Cinsiyet | Frekans | Yüzde | Medeni Durum | Frekans | Yüzde | Çalışılan Birim | Frekans | Yüzde |
|------------|---------|-------|---------------|---------|-------|--------------------|---------|-------|
| Kadın | 329 | 48,5 | Evli | 495 | 72,9 | Bireysel | 185 | 27,2 |
| Erkek | 350 | 51,5 | Bekar | 184 | 27,1 | Kobi | 113 | 16,6 |
| Toplam | 679 | 100,0 | Toplam | 679 | 100,0 | Müdür | 46 | 6,8 |
| Yaş | Frekans | Yüzde | Öğrenim | Frekans | Yüzde | Operasyon | Frekans | Yüzde |
| 25 ve Altı | 39 | 5,7 | Lise | 48 | 7,1 | Toplam | 679 | 100,0 |
| 26-30 | 198 | 29,2 | Ön Lisans | 99 | 14,6 | Çalışılan Pozisyon | Frekans | Yüzde |
| 31-35 | 212 | 31,2 | Lisans | 493 | 72,6 | Müdür | 46 | 6,8 |
| 36-40 | 134 | 19,7 | Yüksek Lisans | 38 | 5,6 | Yetkili | 452 | 66,6 |
| 41-45 | 63 | 9,3 | Doktora | 1 | ,1 | Yönetmen | 181 | 26,7 |
| 46 ve Üstü | 33 | 4,9 | Toplam | 679 | 100,0 | Toplam | 679 | 100,0 |
| Toplam | 679 | 100,0 | | | | | | |

3.2. Geçerlilik ve Güvenirlilik

Araştırmada kullanılan ölçeklerin geçerlilikleri için açıklayıcı ve doğrulayıcı faktör analizleri yapılmıştır. Bunun yanı sıra, her ölçeğin AVE (AverageVarianceExtract) değerleri sunularak yakınsak (convergent) geçerliliğin var olup olmadığı araştırılmıştır. Güvenirlilik için, ölçeklerin Cronbach's Alpha ve CR (CompositeReliability) değerleri sunulmuştur.

3.3. Araştırmada Kullanılan Ölçklere İlişkin Açıklayıcı ve Doğrulayıcı Faktör Analizleri

Algılanan Risk Ölçeği, Risk Eğilimi Ölçeği ve Finansal İyi Olma Hali Ölçeği literatürde ele alınıp incelenmiştir. Birçok farklı ülkede ve farklı örneklem üzerinde ölçeğin geçerlilik ve güvenilirliği test edilmiştir. Bu noktada, ölçeğin bu çalışma için kullanılıp kullanılmayacağını belirlemek için önce Açıklayıcı Faktör Analizi (AFA), sonra da doğrulayıcı faktör analizi (DFA) yapılmıştır. Analiz sonuçları aşağıdaki Tablo-2'de sunulmuştur.

Yapılan Açıklayıcı Faktör Analizi (AFA) sonucunda, Finansal İyi Olma Hali ölçeğinin orijinal çalışma ile uyumlu olarak iki boyuttan oluştuğu, Risk Eğilimi ölçeğinin ve Algılanan Risk ölçeğinin ise yine orijinal çalışma ile uyumlu tek boyuttan oluştuğu görülmektedir. Faktörleri oluşturan her bir ifadenin faktör yükü 0,50'nin üzerindedir. Bu durum açıklayıcı faktör analizi için yeterli kabul edilmektedir (Hair vd. 2010). KMO ve Barlett değerleri incelendiğinde, KMO değerinin 0,811 ve Barlett testinin 0,001 düzeyinde anlamlı olduğu tespit edilmiştir. Ölçeğin boyutlarının güvenilirliğini belirlemek için her boyut için alfa katsayısı hesaplanmıştır. Boyutların alfa katsayılarının 0,70'in üstünde olması yeterli derecede güvenilirlik koşulunun karşılandığını göstermektedir (İslamoğlu ve Alınacak, 2016). Özdeğeri 1'den büyük olan faktörler dikkate alınmıştır. Ölçeğin açıklanan toplam varyans değeri 59,630 olarak belirlenmiştir.

Ancak, bu sonucun doğrulanmasına ihtiyaç vardır. Bu nedenle, araştırmanın bu aşamasında Doğrulayıcı Faktör Analizi (DFA) yapılmıştır. Doğrulayıcı faktör analizi iki aşamada yapılmıştır. İlk aşamada, açıklayıcı faktör analizi sonucu elde edilen faktör yapısı, doğrulayıcı faktör analizi ile test edilmiştir. Bu analiz sonucunda elde edilen model uyum değerleri şu şekilde gerçekleşmiştir: CMIN/DF= 5,467; GFI= 0,893; CFI=0,877; NFI= 0,855; RMR= 0,074; RMSEA= 0,081. Bu değerler incelendiğinde, bazı değerlerin kabul edilebilir sınırın dışında olduğu görülmektedir. Bu nedenle bazı düzeltmeler yapılmıştır. Mevcut Finansal Durum (FİHÖ_Mev) ölçeğinden S8, Algılanan Risk (AR) ölçeğinden S10 ve Risk Eğilimi (RE) ölçeğinden S16 kodlu sorular düşük faktör yüküne sahip olduğu için ölçeklerden çıkarılmıştır. Mevcut Finansal Durum (FİHÖ_Mev) ölçeğinde, S1 ve S7 kodlu sorular arasında kovaryans çizilerek birleştirme yapılmıştır. Risk Eğilimi (RE) ölçeğinden S14 kodlu soru diğer faktörlerle yüksek varyans paylaşımı nedeniyle ölçekten çıkarılmıştır. Bunun sonucunda ortaya çıkan model uyum değerleri şu şekilde gerçekleşmiştir: CMIN/DF= 4,950; GFI= 0,930; CFI=0,925; NFI= 0,909; RMR= 0,070; RMSEA= 0,076. Bu sonuçlara göre model uyum değerleri iyi uyum ve kabul edilebilir uyum düzeyindedir (Munro, 2005; Screiber vd. 2006; Şimşek, 2007; Hoopervd., 2008; Schumaker ve Lomax, 2010; Waltz vd., 2010). Ayrıca ölçeklerin güvenilirlik (CR değerleri 0,70'in üzerinde olmalı) ve geçerlilik (AVE değerleri 0,50'nin üzerinde olmalı) düzeyleri istenilen seviyelerdedir (Hair vd., 2010; Gaskin, 2018).

Tablo 2: Açıklayıcı ve Doğrulayıcı Faktör Analizi Sonuçları

| Ölçekler | AFA Faktör Yükleri | Özdeğer (Eigen value) | Açıklanan Varyans | Cronbach's Alpha | DFA Faktör Yükleri | CR (Composite Reliability) | AVE (AverageVarianceExtract) |
|--|--------------------|-----------------------|-------------------|------------------|--|----------------------------|------------------------------|
| Risk Eğilimi (RE) | | | | | | | |
| S17.Tasarrufumu artırmaktan çok yatırım ile paramı artırmayı yeğlerim. | ,790 | 4,690 | 18,331 | ,832 | ,656 | ,794 | ,493 |
| S14.Düşük getirili olsa dahi genellikle güvenli yatırımları tercih ederim. (R) | ,772 | | | | ** | | |
| S15.İyi gelir elde etmek için önemli yatırım riskleri alırım. | ,757 | | | | ,736 | | |
| S13.Hisse senedi alarak yatırım yapma riskinden kaçınıyorum. (R) | ,700 | | | | ,775 | | |
| S18.Kazançlarımı artırmak için yeri geldiğinde kaybetmeyi göze alırım. | ,604 | | | | ,631 | | |
| S16.Düşük riskle yüksek getiri için istikrarlı hisse senetlerinden alırım. (R) | ,597 | | | | * | | |
| Mevcut Finansal Durum (FİHÖ_Mev) | | | | | | | |
| S3.Kredi kartı borçlarımı geri ödemek konusunda endişeliyim. (R) | ,823 | 3,252 | 18,049 | ,815 | ,902 | ,836 | ,516 |
| S2.Borçlarımı geri ödemek konusunda endişeliyim.(R) | ,818 | | | | ,859 | | |
| S7.İçinde bulunduğum borçlu durumu çok düşünüyorum. (R) | ,787 | | | | ,585 | | |
| S1.Sahip olduğum borç nedeniyle rahatsızım. (R) | ,726 | | | | ,566 | | |
| S4.Finansal açıdan iyi bir durumda olduğumu düşünüyorum. | ,650 | | | | ,600 | | |
| S8.Harcama miktarım konusunda yakınlarımla tartışırım. (R) | ,506 | | | | * | | |
| Algılanan Risk (AR) | | | | | | | |
| S12.Kazanç için sınırlı olan riskleri yeğlerim. | ,816 | 1,478 | 13,755 | ,779 | ,722 | ,785 | ,549 |
| S9.Risk ve fırsat kelimeleri birbiriyle ilişkilidir. (R) | ,776 | | | | ,720 | | |
| S11.Finansal kararlarda risk alma konusunda istekliyimdir. (R) | ,710 | | | | ,779 | | |
| S10.Riskli yatırımdan kaçınılması gerektiğini düşünüyorum. | ,622 | | | | * | | |
| Gelecekteki Finansal Durum Beklentisi (FİHÖ_Gel) | | | | | | | |
| S5.Bundan 5 yıl sonra borcumun kalmayacağını düşünüyorum. | ,903 | 1,314 | 9,495 | ,762 | ,795 | ,823 | ,714 |
| S6.Bundan 1 yıl sonra borcumun kalmayacağını düşünüyorum. | ,832 | | | | ,774 | | |
| Çıkarım Metodu: Principal Component Analysis. Döndürme Metodu: VarimaxwithKaiserNormalization Keiser-Meyer-OlkinMeasure of SamplingAdequacy : ,811 Açıklanan toplam varyans: 59,630 | | | | | *Düşük faktör yüküne sahip olduğu için ölçekten çıkarılmıştır. ** Diğer faktörlerle yüksek varyans paylaşımı nedeniyle ölçekten çıkarılmıştır. Model Uyum Değerleri CMIN/DF= 4,950; GFI= 0,930; CFI=0,925; NFI= 0,909; RMR= 0,070;RMSEA= 0,076 | | |

Diskriminant geçerlilik farklı yapılarıdaki her bir ilişkinin aralarındaki ilişkiyi ifade etmektedir (Fornell ve Larcker, 1981). Diskriminant geçerliliği ölçmek için Fornell ve Larcker (1981) kriteri kullanılmış olup, diskriminant geçerlilik değerleri Tablo 3’de verilmiştir. Bu tablo, değişkenler arasındaki ilişkileri ifade eden korelasyon katsayılarını ve değişkenlerin AVE değerlerinin kök dışına çıkmış hallerini (diyagonal bölümde koyu yazılmış sayılar) göstermektedir. Ayrışım geçerliliğinin sağlanması için, diyagonal bölümdeki sayıların tablo içerisindeki korelasyon katsayılarından büyük olması istenir. Tablodaki değerler incelendiğinde bu durumun gerçekleştiği görülmektedir.

Tablo 3: Fornell-Larcker Diskriminant Geçerliliği Tablosu

| | RE | FİHÖ_Mev | AR | FİHÖ_Gel |
|---|--------------|--------------|--------------|--------------|
| Risk Eğilimi (RE) | 0,702 | | | |
| Mevcut Finansal Durum (FİHÖ_Mev) | -0,150 | 0,718 | | |
| Algılanan Risk (AR) | -0,677 | 0,065 | 0,741 | |
| Gelecekteki Finansal Durum Beklentisi (FİHÖ_Gel) | -0,182 | 0,302 | 0,095 | 0,845 |

3.4. Hipotezlerin Testi

Araştırmanın modeline uygun olarak kurulan hipotezlerin test edilmesi için Yapısal Eşitlik Modellemesi yöntemi AMOS programı kullanılmıştır. Test sonuçları aşağıdaki Tablo 4’de sunulmuştur.

Tablo 4: Hipotezlerin Testi

| Değişkenler | Beta | Std. Hata | t değeri | p | |
|-----------------------------|---------------|--------------|----------------|--------------|-------|
| RE <--- AR | -0,677 | 0,059 | -11,565 | 0,001 | |
| FİHÖ_Mev <--- AR | -0,066 | 0,071 | -0,937 | 0,349 | |
| FİHÖ_Mev <--- RE | -0,193 | 0,071 | -2,695 | 0,007 | |
| FİHÖ_Gel <--- AR | -0,068 | 0,125 | -0,546 | 0,585 | |
| FİHÖ_Gel <--- ME | 0,566 | 0,083 | 6,852 | 0,001 | |
| FİHÖ_Gel <--- RE | -0,326 | 0,126 | -2,586 | 0,010 | |
| Model Uyum Değerleri | | | | | |
| CMIN/DF | GFI | CFI | NFI | RMR | RMSEA |
| 4,950 | 0,930 | 0,925 | 0,909 | 0,070 | 0,076 |

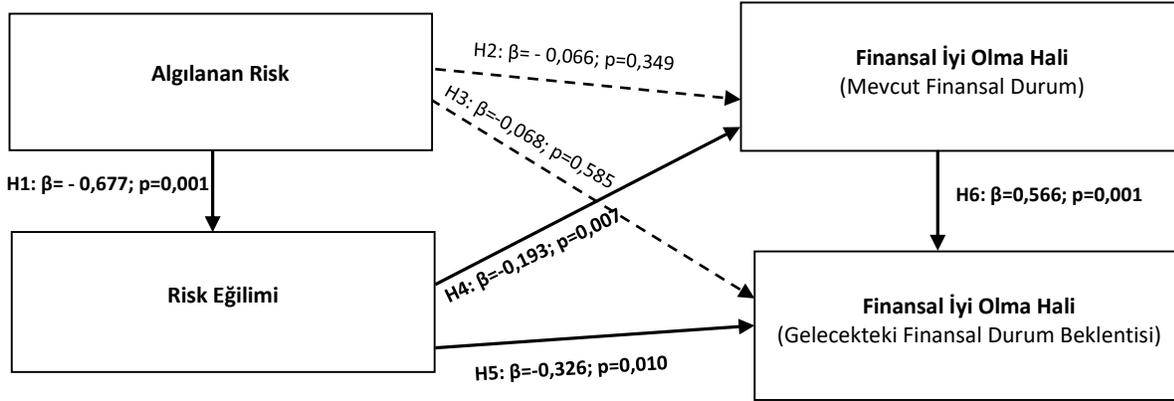
Tablo 4’de yer alan sonuçlar incelendiğinde, algılanan riskin risk eğilimi üzerinde etkisinin negatif yönlü ve anlamlı olduğu tespit edilmiştir (H1: $\beta=-0,677$; $p<0,05$). Dolayısıyla H1 hipotezi kabul edilmiştir. Bu bulgu, algılanan risk düzeyi yüksek olan bireylerin daha az risk alma eğiliminde olduklarını göstermekte olup, literatürdeki bulgularla (Rana vd., 2011) uyumludur. Algılanan riskin finansal iyi olma halinin mevcut finansal durum boyutu üzerinde (H2: $\beta=-0,066$; $p>0,05$) ve finansal iyi olma halinin gelecekteki finansal durum beklentisi boyutu üzerinde (H3: $\beta=-0,068$; $p>0,05$) etkisinin ise anlamsız olduğu belirlenmiştir. Bu durumda H2 ve H3 hipotezleri reddedilmektedir.

Risk eğiliminin finansal iyi olma halinin mevcut finansal durum boyutu üzerinde (H4: $\beta=-0,193$; $p<0,05$) ve finansal iyi olma halinin gelecekteki finansal durum beklentisi boyutu üzerinde (H5: $\beta=-0,326$; $p<0,05$) etkisinin negatif yönlü ve anlamlı olduğu belirlenmiştir. Bu durumda H4 ve H5 hipotezleri kabul edilmiştir. Bu bulgu risk eğilimi yüksek olanların finansal olarak kendilerini çok iyi görmediklerini göstermektedir. Bu durum; risk eğilimi yükseldikçe finansal açıdan beklentilerin de artması ve göreceli olarak bu bireylerin yüksek beklentilerine kıyasla kendilerini finansal açıdan yetersiz görmesi, tersine risk eğilimi düşük bireylerin finansal açıdan da yüksek bir beklentide olmayarak kendilerini finansal açıdan yeterli görmesi şeklinde açıklanabilir.

Finansal iyi olma halinin mevcut finansal durum boyutunun finansal iyi olma halinin gelecekteki finansal durum beklentisi boyutu üzerinde etkisinin pozitif yönlü ve anlamlı olduğu tespit edilmiştir (H6: $\beta=0,566$; $p<0,05$). Bu durumda H6 hipotezi kabul edilmiştir. Bu durum mevcut durumda kendisini finansal açıdan iyi hissedenlerin geleceğe yönelik finansal durum beklentisinin de olumlu olduğunu göstermektedir.

Çalışmada kullanılan değişkenler ile oluşturulan modele ilişkin sonuçların genel görünümü Şekil 2'de sunulmuştur.

Şekil 2: Araştırmanın Modeline İlişkin Sonuçlar



4. SONUÇ

Bu çalışma algılanan riskin risk eğilimi üzerindeki etkisini ve algılanan risk ile risk eğiliminin de finansal iyi olma hali üzerindeki etkisini tespit etme amacıyla yapılmıştır. Bu amaca ulaşmak için hazırlanan anket formu banka çalışanları üzerinde uygulanmıştır. Çalışmanın uygulama kısmının hizmet verdikleri müşterilerine yol göstererek yatırım kararları üzerinde etkili olan ve finansal bilgi seviyeleri ortalama toplum bireylerine göre daha yüksek olan banka çalışanları üzerinde yapılması çalışmaya ayrı bir önem katmakta ve literatüre katkı sağlayacağı düşünülmektedir.

Araştırma kapsamında oluşturulan hipotezler yapısal eşitlik modellemesi ile test edilmiştir. Araştırma sonuçlarına göre, algılanan riskin risk eğilimi üzerinde negatif yönlü ve anlamlı bir etkisinin olduğu belirlenmiştir. Algılanan risk düzeyi yüksek olan bireyler daha az risk eğilimi göstermektedir. Yani bireylerin risk algısı yükseldikçe daha az risk alma eğilimi göstermekte, tersine risk algısı düştükçe de daha fazla risk alma eğilimi göstermektedirler.

Araştırmada algılanan riskin finansal iyi olma halinin mevcut finansal durum boyutu ve finansal iyi olma halinin gelecekteki finansal durum beklentisi boyutu üzerinde anlamlı bir etkisinin olmadığı belirlenmiştir. Risk eğiliminin ise finansal iyi olma halinin mevcut finansal durum boyutu ve finansal iyi olma halinin gelecekteki finansal durum beklentisi boyutu üzerinde negatif yönlü ve anlamlı bir etkisinin olduğu belirlenmiştir. Bu bulgu risk eğilimi yüksek olan bireylerin finansal olarak kendilerini çok iyi görmediklerini göstermektedir. Bu durum; risk eğilimi yükseldikçe finansal açıdan beklentilerin de artması ve göreceli olarak bu bireylerin yüksek beklentilerine kıyasla kendilerini finansal açıdan yetersiz görmesi, tersine risk eğilimi düşük bireylerin finansal açıdan da yüksek bir beklentide olmayarak kendilerini finansal açıdan yeterli görmesi şeklinde açıklanabilir.

Araştırmada finansal iyi olma halinin mevcut finansal durum boyutunun finansal iyi olma halinin gelecekteki finansal durum beklentisi boyutu üzerinde etkisinin pozitif yönlü ve anlamlı olduğu tespit edilmiştir. Bu durumda H6 hipotezi kabul edilmiştir. Bu durum mevcut durumda kendisini finansal açıdan iyi hissedenlerin geleceğe yönelik finansal durum beklentisinin de olumlu olduğunu göstermektedir.

Çalışmanın bazı kısıtları bulunmaktadır. Çalışmada verilerin bankacılık çalışanlarından elde edilmiş olması çalışmaya ayrı bir önem katmakla birlikte, aynı zamanda çalışmanın kısıtını da oluşturmaktadır. Ayrıca, verilerin sadece Balıkesir ilinde faaliyet gösteren bankalardaki çalışanlardan elde edilmiş olması da çalışmanın kısıtlarındandır. Gelecekte yapılacak çalışmalarda farklı sektör çalışanları üzerinde veya ülkemizin diğer bölgelerinde faaliyet gösteren banka çalışanları üzerinde de benzer araştırmaların yapılması araştırmacılara önerilmektedir.

KAYNAKÇA

- Anbar, A., Eker, M. (2012). Bireysel yatırımcıların finansal risk algılamalarını etkileyen demografik ve sosyoekonomik faktörler. ZKÜ Sosyal Bilimler Dergisi, 5(9), 129-150.
- Bajtelsmit, V. L. (1999). Evidence of risk aversion in the health and retirement study. March 1, 1-18, http://www.aria.org/rts/proceedings/1999/risk_aversion.htm, (Erişim Tarihi: 13.05.2018).
- Bellante, D., Green, C. A. (2004). Relative risk aversion among the elderly. Review of Financial Economics, 13(3), 269–281.
- Brüggen, E., Hogreve, J., Holmlu, M., Kabadayi, S., Löfgren, M. (2017). Financial well-being: a conceptualization and research agenda. Journal of Business Research, 79, 228-237.
- Clark, A., Frijters, P., Shields, M. (2008). Relative income, happiness, and utility: an explanation for the Easterlin paradox and other puzzles. Journal of Economic Literature American Economic Association, 46(1), 95-144.
- Deniz, A., Erciş, A. (2008). Kişilik özellikleri ile algılanan risk arasındaki ilişkilerin incelenmesi üzerine bir araştırma. Atatürk Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 22(2), 301-329.
- Deo, M., Sundar, V. (2015). Gender difference: investment behavior and risk taking. SCMS Journal of Indian Management, 12(3), 74-81.
- Dholakia, U. (2001). A motivational process model of product involvement and consumer risk perception. European Journal of marketing, 35 (11/12), 1340-1362.
- Dohmen, T. J., Falk, A., Huffman, D., Sunde, U., Schupp, J., Wagner, G. G. (2005). Individual risk attitudes: new evidence from a large, representative, experimentally-validated survey. IZA Discussion Paper, No.1730, September.
- Dwyer, P. D., Gilkeson, J. H., List, J. A. (2002). Gender differences in revealed risk taking: evidence from mutual fund investors. Economics Letters, 76(2), 151-158.
- Erdem, F. (2001). Girişimcilerde risk alma eğilimi ve belirsizliğe tolerans ilişkisine kültürel yaklaşım. Akdeniz University Faculty of Economics & Administrative Sciences Faculty Journal/Akdeniz Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 1(2), 43-61.
- Falahati, L., Paim, L. (2011). Gender differences in financial well-being among college students. Australian Journal of Basic and Applied Sciences, 5(9), 1765-1776.
- Fıkrıkoca, M. (2003). Bütünsel risk yönetimi. Ankara: Pozitif Matbaacılık.
- Finke, M. S., Huston, S. J. (2003). The brighter side of financial risk: financial risk tolerance and wealth. Journal of Family and Economic Issues, 24(3), 233-256.
- Fornell, C., Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: algebra and statistics. Journal of Marketing Research, 382-388.
- Gaskin, J. (2018). Confirmatory factor analysis. Gaskination's StatWiki, <http://statwiki.kolobkreations.com>, (Erişim Tarihi: 15.05.2018)
- Grable, J. E., Lytton, R. H. (1998). Investor risk tolerance: testing the efficacy of demographics as differentiating and classifying factors. Financial Counseling and Planning, 9(1), 61-73.
- Grable, J. E., Lytton, R. (1999a). Financial risk tolerance revisited: the development of a risk assessment instrument. Financial Services Review, 8(3), 163-181.
- Grable, J. E., Lytton, R. H. (1999b). Assessing financial risk tolerance: do demographic, socioeconomic and attitudinal factors work?. Family Relations and Human Development/Family Economics and Resource Management Biennial, 3, 1-9.
- Grable, J. E. (2000). Financial risk tolerance and additional factors that affect risk taking in everyday money matters. Journal of Business and Psychology, 14(4), 625-630.
- Grable, J. E., Joo, S. H. (2000). A cross-disciplinary examination of financial risk tolerance. Consumer Interests Annual, 46, 151-157.
- Grable, J. E., Joo, S. (2004). Environmental and biophysical factors associated with financial risk tolerance. Journal of Financial Counseling and Planning, 15(1), 73-82.
- Grable, J. E., Lytton, R., O'Neill, B. (2004). Projection bias and financial risk tolerance. The Journal of Behavioral Finance, 5(3), 142-147.
- Grable, J. E., Lytton, R. H., O'Neill, B., Joo, S. H., Klock, D. (2006). Risk tolerance, projection bias, vividness and equity prices. The Journal of Investing, 15(2), 68-74.
- Gutter, M., Fontes, A. (2006). Racial differences in risky asset ownership: a two-stage model of the investment decision-making process. Journal of Financial Counseling and Planning, 17(2), 64-78.
- Gutter, M., Copur, Z. (2011). Financial behaviors and financial well-being of college students: evidence from a national survey. Journal of Family and Economic Issues, 32(4), 699–714.

- Gürsoy, Ş. T., Çiçekçiöğlü, M., Börekçi, N., Soyer, M. T., Öcek, Z. (2008). İzmir Karşıyaka Belediye çalışanlarında çevresel risk algılama düzeyi. Cumhuriyet Üniversitesi Tıp Fakültesi Dergisi, 30 (1), 20-27.
- Hair, J., Black, W., Babin, B., Anderson, R. (2010). Multivariate data analysis (7. baskı b.). Pearson.
- Hallahan, T. A., Faff, R. W., McKenzie, M. D. (2004). An empirical investigation of personal financial risk tolerance. Financial Services Review - Greenwich-, 13(1), 57-78.
- Haliassos, M., Bertaut, C. C. (1995). Why do so few hold stocks?. The Economic Journal, 105(432), 1110-1129.
- Hanna, S. D., Lindamood, S. (2005). Risk tolerance of married couples. Proceeding of the Academy of Financial Services, October, 1-28.
- Harrison, G. W., Lau, M. I., Rutström, E. E. (2007). Estimating risk attitudes in Denmark: a field experiment. The Scandinavian Journal of Economics, 109(2), 341-368.
- Hawley, C. B. Fuji, E. T. (1993-1994). An empirical analysis of preferences for financial risk: further evidence on the Friedman-Savage model. Journal of Post Keynesian Economics, 16(2), 197-204.
- Hunjra, A., Qureshi, Riaz, L. (2017). Psychological factors and investment decision making: a confirmatory factor analysis. Journal of Contemporary Management Sciences, 2(1), 65-82.
- Hooper, D., Coughlan, J., Mullen, M. (2008). Structural equation modelling: guidelines for determining model fit. Articles, 2.
- İslamoğlu, A. H., Alnaçık, Ü. (2016). Sosyal bilimlerde araştırma yöntemleri. Genişletilmiş 5. Baskı, Beta Yayınevi.
- Jianakoplos, N. A., Bernasek, A. (1998). Are women more risk averse?. Economic Inquiry, 36(4), 620-630.
- Jianakoplos, N. A., Bernasek, A. (2006). Financial risk taking by age and birth cohort. Southern Economic Journal, 72(4), 981-1001.
- Joo, S., Grable, J. (2004). An exploratory framework of the determinants of financial satisfaction. Journal of Family and Economic Issues, 25(1), 25–50.
- Kannadhasan, M. (2015). Retail investors' financial risk tolerance and their risk-taking behaviour: the role of demographics as differentiating and classifying factors. IIMB Management Review, 27(3), 175-184.
- Karafakioğlu, M. (2005). Pazarlama ilkeleri. Birinci Basım, Literatür Yayıncılık, İstanbul.
- Kim, J. (2000). The effects of workplace financial education on personal finances and work. Unpublished doctoral dissertation. Virginia Polytechnic Institute and State: Blacksburg.
- Koç, E. (2012). Tüketici davranışı ve pazarlama stratejileri: global ve yerel yaklaşım: pazarlama ve tüketici davranışı kavramlarının İngilizceyle. Seçkin Yayıncılık.
- Kotler, P. (2000). Marketing management. New Jersey: Prentice Hall.
- Kutbay, A., Özbek, V., Koç, F. (2017). Kişisel faktörler ve postmodern tüketim şekillerinin finansal iyi olma hali üzerindeki etkisi. In Proceedings of 2 nd International Conference on Scientific Cooperation for the Future in the Economics and Administrative Sciences , 262-273.
- Linnas, A. (2012). Risk propensity of corporate financial executives: cross-country comparison. (Doctoral dissertation, Tartu Ülikool).
- Malone, K., Stewart, S., Wilson, J., Korschi, P. (2010). Perceptions of financial well-being among American women in diverse families. Journal of Family and Economic Issues, 31(1), 63–81.
- Mittal, M., Vyas, R. (2007). Demographics and investment choice among Indian investors. ICFAI Journal of Behavioural Finance, 4(2), 12-20.
- Munro, B. H. (2005). Statistical methods for health care research (Vol. 1). Lippincott Williams & Wilkins.
- Norvilitis, J., Szablicki, B., Wilson, S. D. (2003). Factors influencing levels of credit-card debt in college students. Journal of Applied Social Psychology, 33(5), 935-94.
- Olsen, R. A., Cox, C. M. (2001). The influence of gender on the perception and response to investment risk: the case of professional investors. The Journal of Psychology and Financial Markets, 2(1), 29-36.
- Prawitz, A., Garman, E., Sorhaindo, B., O'Neill, B., Kim, J., Drentea, P. (2006). Incharge financial distress/ financial well-being scale: development, administration, and score interpretation. Financial Counseling and Planning, 17(1), 34-50.
- Rana, M. H., Murtaza, S., Noor, F., Rehman, K. (2011). Effects of demographic factors on risky decision-making behaviour. European Journal of Social Sciences, 25(3), 69-76.
- Roszkowski, M., Davey, G. (2010). Risk perception and risk tolerance changes attributable to the 2008 economic crisis: a subtle but critical difference. Journal of Financial Service Professionals, 64(4), 42-53.
- Sabri, M., Falahati, L. (2012). Estimating a model of subjective financial well-being among college students. International Journal of Humanities and Social Science, 2(18), 191-199.

- Saraç, M., Kahyaoglu, M. (2011). Bireysel yatırımcıların risk alma eğilimine etki eden sosyo-ekonomik ve demografik faktörlerin analizi. *Journal of BRSA Banking & Financial Markets*, 5(2), 135- 157.
- Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., King, J. (2006). Reporting structural equation modeling and confirmatory factor analysis results: a review. *The Journal of educational research*, 99(6), 323-338.
- Schumacker, R. E., Lomax, R. G. (2010). *A beginners guide to structural equation modeling*. New York: Routledge.
- Shim, S., Xiao, J., Barber, B., Lyons, A. (2009). Pathways to life success: a conceptual model of financial well-being for young adults. *Journal of Applied Developmental Psychology*, 30(6), 708–723.
- Short, J. (1984). The social fabric at risk: toward the social transformation of risk analysis. *American Sociological Review*, 49(6), 711-725.
- Sitkin, S., Pablo, A. (1992). Reconceptualizing the determinants of risk behavior. *Academy of Management Review*, 17(1), 9-38.
- Sjöberg, L. (1991). Risk perception by experts and the public. Center for Risk Research Stockholm School of Economics.
- Stewart Jr, W., Roth, P. (2001). Risk propensity differences between entrepreneurs and managers: a meta-analytic review. *Journal of Applied Psychology*, 86(1), 145-153.
- Stone, R., Grønhaug, K. (1993). Perceived risk: further considerations for the marketing discipline. *European Journal of marketing*, 27(3), 39-50.
- Sunal, O. (2012). Finansal iyilik hali ölçeği (FIHÖ): gecerlik ve güvenilirlik çalışması/financial well-being scale (FWBS): a study of validity and reliability. *Ege Akademik Bakis*, 12(2), 209-214.
- Sung, J., Hanna, S. (1996). Factors related to risk tolerance. *Financial Counseling and Planning*, 7, 11-19.
- Şimşek, Ö. F. (2007). Yapısal eşitlik modellemesine giriş: temel ilkeler ve LISREL uygulamaları. Ekinoks.
- Taft, M., Hosein, Z., Mehrizi, S., Rosha, A. (2013). The relation between financial literacy, financial wellbeing and financial concerns. *International Journal of Business and Management*, 8(11), 63-75.
- TDK (2018). Genel Türkçe Sözlük. Türk Dil Kurumu, http://www.tdk.gov.tr/index.php?option=com_gts, (Erişim Tarihi: 17.05.2018).
- Vosloo, W., Fouche, J., Barnard, J. (2014). The relationship between financial efficacy, satisfaction with remuneration and personal financial well-being. *International Business and Economics Research Journal*, 13(6), 1455–1470.
- Waltz C. F., Strickland O. L., Lenz E. R. (Eds.). (2010). *Measurement in nursing and health research*. Springer Publishing Company.
- Wang, H., Hanna, S. D. (1997). Does risk tolerance decrease with age?. *Financial Counseling and Planning*, 8(2), 27-31.
- Watson, J., McNaughton, M. (2007). Gender differences in risk aversion and expected retirement benefits. *Financial Analysts Journal*, 63(4), 52-62.
- Yang, Y. (2004). Measuring risk preferences: re-examination of Grable & Lytton's 13-item questionnaire. *Consumer Interests Annual*, 50(2), 119-122.
- Yao, R., Hanna, S. D. (2005). The effect of gender and marital status on financial risk tolerance. *Journal of Personal Finance*, 4(1), 66-85.