# RECENT ECONOMIC APPROACHES & FINANCIAL CORPORATE POLICY

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Serap Coban
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# Recent Economic Approaches and Financial Corporate Policy

*(Edited by: Serap Coban, S.Waleck Dalpour, Cumali Marangoz, Emre Bulut)*

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# INTRODUCTION

The rapid development of economics science requires an adaptation of the changing World and development of the interaction with other disciplines and new approaches. This book, which is designed from this point of view, is composed of 5 sections and 24 chapters entitled "Recent Economic Approaches and Financial Corporate Policy".

The book would be a valuable contribution to the literature with its innovative theoretical and empirical approaches. In addition, the interaction of economics with other disciplines would enrich the social science literature. The most important feature that distinguishes this book from its peers is that it is composed of various studies that allow macroeconomic inferences by examining the behavior of microeconomic units. Another feature of the book is that it includes studies on recent issues. In this framework, practical and theoretical studies on economics, finance, and financial development and innovation strategies are included. Analyzes made with new econometric approaches add a richness to the book. Academics, managers, policymakers, and anyone interested in economics would benefit from this book, which mainly focuses on economics.

In the first part of the book, "Economy, Political Economy, Environmental Policy, and Empirical Macroeconomics" is discussed. The seven chapters in this section cover macroeconomic approaches and environmental issues. This section investigates the causal relationship between poverty and income distribution and intends to demonstrate the impact of technology and income distribution inequity on poverty. Another topic in this section is tax-related. In Turkey, taxes are among the most widely spoken and complained economic issues. Tax rates are usually referred as bad because of the heavy tax burden felt. Chapter two,  examines selected taxes in Turkey and compares them and analyzes with similar taxes in OECD countries. In addition, there is a chapter (chapter four)  about the convergence of the female labor force participation rate (FLFPR) for the case of 36 OECD countries using the methodology of Phillips and Sul (2007). Moreover, the section contributes to the growing literature by examining the causal effect of terrorist attacks on tourism income in Turkey which is one of the countries that have been most affected by terrorism.

The second part is titled "Financial Crisis, Corporate Policy, and Cryptocurrency". There are 5 chapters in this section. In this section, the macroeconomic and microeconomic effects of recent financial crises as well as theoretical approaches are discussed. The aim of chapter eight is to evaluate the financial scandals from ancient times to the present, particularly the 21st-century scandals. In this context, the chapter examines the causes and brief histories of financial scandals from a theoretical perspective. Chapter ten determines whether the neoliberal approach which has been applied in many parts of the world for almost the last forty years has reached its limits by evaluating the shifts in the important production, finance and trade centers of the world in the 10 years following the 2008 crisis. This section also covers the contribution of bitcoin to the economy and examines the transaction volume using the literature search method.

The third section is titled "Financial Development, International Trade, and Corporate Finance". This section, which has 3 chapters, consists of studies on the relationship between financial development and production and trade. To illustrate, the section investigates the relationship between earnings management, which is defined as interventions in the external financial reporting process to mislead users of financial information about the financial performance of the company and the firm characteristics that include many variables which are tried to be associated with the earnings management in the literature. Besides, the relationship between agricultural growth and financial development and the importance of the subject are explained, studies on the relationship between agricultural growth and financial development are presented in this section.

The fourth section is presented under the title "Behavioral Finance, Consumption, and Structural Modeling". In 5 chapters of this section, researches on behavioral finance and sustainable consumption are discussed. For instance, the section covers milestones of behavioral finance and detailed explanation of biases such as overconfidence, hindsight, overoptimism, confirmation, cognitive dissonance, the illusion of control, the illusion of knowledge, conservatism, and self-attribution, etc. Additionally, it emphasizes the role of environmental characteristics of consumers on their sustainable consumption behavior by analyzing this relationship this study tries to propose a model for sustainable consumption behavior in order to understand consumer behavior toward environmental aspects, hence, points out the importance of consumption on environmental sustainability. Furthermore, whether stock's illiquidity is priced differently in different sentiment periods, which are determined using the investor sentiment index is examined in this section.

In the fifth and final part of the book, "Occupational Ethical Sensitivity, Market Efficiency, and Innovation Strategies" is discussed. In this section, which consists of 4 chapters, studies have been carried out on topics such as professional ethics of accountants and academics, market power and market interactions. This section analyzes and compares the ethical sensitivity levels of professional accountants and accounting academicians regarding earnings management and determines the particular type of business in Turkey more unreviewed a factoring company as innovation and competitiveness strategy and has seen preliminary examination. As a result, it determines and interprets general innovation strategies and competition strategies of factoring firms.

It is a very demanding and tedious work to combine different topics of social studies and publish them into a book. The transform of efforts and time into a scientific contribution would increase the satisfaction of authors and editors. I hope that the book wins scientific and social appreciation since it is a combination of physical and mental effort. In this context, the book is prepared and published very meticulously. It is also necessary to state that all thoughts and expressions in the chapters bind their authors. I am thankful to Cumali Marangoz, Emre Bulut, S.Waleck Dalpour and, all authors and contributors who made great efforts in the preparation of the book. Finally, I appreciate the efforts of IJOPEC Publication and its employees.

**November 2019**
**Doç. Dr. Serap ÇOBAN**

# SECTION I

# POLITICAL ECONOMY, ENVIRONMENTAL POLICY, AND EMPRICAL MACROECONOMICS

# 1

# CAUSALITY RELATIONSHIP BETWEEN TECHNOLOGICAL DEVELOPMENT INCOME DISTRIBUTION AND POVERTY: EVIDENCE FROM LEVEL-1 REGIONS OF TURKEY

*Serap Çoban*[1]*, Cumali Marangoz*[2]

## 1. Introduction

Despite the developments in the world, poverty is emerging as one of the most important problems, especially in developing countries, both in urban and rural areas. The most important causes of poverty include unemployment, the need to work at low wages, and individual preferences (Feldstein, 1998). Unemployment is one of the important indicators of poverty, since it represents a situation without income. On the other hand, enduring with low wages is one of the important causes of poverty. The reason for low wages is related to the level of education of the individual. Individuals with low levels of education or no education are unskilled in the labor market and are willing to pay low wages. From another point of view, poverty arises from the fact that conscious or unconscious individuals are not volunteering to work for income (Feldstein, 1998).

One of the factors that can illuminate the relationship between poverty and unemployment is technological development. In the process of

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adapting to technological development, existing employees may lose their jobs because they do not have the qualifications required by the job. It should be noted that the technological progress in each sector will not create unemployment in the same level. At this point, especially in sectors such as agriculture, unemployment can reach important dimensions due to technological development. Other sectors that need tech-skilled labor may also be the reason for unemployment. (Marchant et al., 2014; Levy, 2010). Unemployed individuals, at least for a certain period of time will be involved in the poor cut.

On the other hand, technological development plays an important role in the realization of sustainable growth since households are an important means of combating poverty through improving living standards. The process of technological development, although not yet certain, is divided into three categories in its entirety. (Bussolo and O'Connor, 2002: 14). Process technologies provide improvements in productivity gains and/or product quality. Product technologies represent new products (medicines, enriched foods, etc.) that increase the direct welfare of consumers. Information processing technologies, on the other hand, provide the coordination of information exchange and exchange between economic units such as the buyer, and reduce transaction costs. Lipton (2001) states that through technological development in agriculture, human health and productivity increase, the decrease in mortality rates leads to the increase in educational investments and the development of human abilities by the use of new techniques. Therefore, improvements in human health and education are closely related to the reduction of poverty. Strauss and Thomas (1998) argue that the relationship between poverty and technological development is indirect and empirically difficult to establish such a relationship, while a large part of the literature is related to a causality relationship between health and nutrition to labor productivity (Craig et al, 1997). The direct relevance of causality between technological development and poverty in the sense that technological development may adversely affect labor demand in some areas, can help new entities to make new inferences.

Another factor associated with poverty is income distribution. Income distribution is defined as sharing out of national income generated in a given country in a certain period between individuals, households, social groups, regions or production factors (Çalışkan, 2010: 92). In reducing poverty, economic growth alone is not enough, and at the same time, it is important and effective to distribute the growing prosperity welfare fairly (Ravallion and Datt, 2002). In addition, it is quite normal to expect that in a country where income distribution is more equitable, the poor will receive a greater share of the rising income than the ones in a country of higher income inequity. Many studies on this subject (World Bank, 2000; Ravallion, 1997; Timmer, 1997) support this view. There are also studies suggesting that inequality in income distribution is a cause of poverty (Ravallion, 2003 Birdsall, 2005, Vandemoortele 2009).

Factors such as geographical location of the countries, political events, rate of population growth, external and internal debt load cause differences in the technological development, income distribution and poverty among countries. As in the case of the countries, there are also differences between the regions of different countries. The purpose of this study, the 2006-2013 period with Turkey NUTS 1 regions with poverty for the technology, is to investigate the causal relationship between poverty and income distribution. We, also, intend to demonstrate the impact of technology and income distribution inequity on poverty. We conduct panel causality analysis developed by Dumitrescu and Hurlin (2012). The causality test determines the relationship between the variables but does not tabulate the sign of correlation of the relation. Therefore, after determining the direction of the relationship, in the second step, we use the CCEMG heterogeneous panel estimator developed by Pesaran (2006) to investigate the relationship between variables and the existence of a long-term relationship.

In the literature, usually, there are two strands of studies on this subject. One deals with the relationship between income distribution inequality and poverty, i.e. (Heshmati, 2004). Another one examines the impact of technological development on poverty, i.e. (Tezcan, 2012). In this study, unlike the literature, we analyze the relationship between income inequality and poverty as well as the relationship between technological development and poverty. To the best of our knowledge, this is study the is the first one to analyze the interaction of aforementioned variables in terms of its nascent sample, NUTS Level-1 regions.

The study continues as follows: The first part of the study provides information on the data and the models. Third part introduces the empirical methods used in the study. Fourth part tabulates the findings and results. Finally, fifth part concludes.

## 2. Data Set and Model

The variables used in this study are the poverty rate, the number of patent registrations and the gini coefficient which is frequently used to measure income inequality. We compile Poverty rate and Gini coefficient from the data published by TURKSTAT on regional basis. We gather the number of patent registrations from the Turkish Patent Institute based on illiterate data. Since there is no patent registration number data on the basis of region. we hand- collect the patent numbers of each region, and obtain the patent number on the basis of region. The number of patent registrations (tec) (Erdem and Köseoğlu, 2014) as a demonstration of technological development uses the gini coefficient values (gini) as an indicator of income distribution inequality and poverty rate (yo) values as a representation of poverty. The data covers the period of 2006-2013 annually. The period is only 8 years, due to the limited accessibility of the data. The models established to examine the relationship between poverty and technological development and poverty and income distribution injustice are as follows:

$$yo = f(tec) \tag{1}$$

$$yo = f(gini) \tag{2}$$

In the light of this model, we first determine the direction of the relationship applying causality analysis, and then estimate long term parameters in order to determine the sign of the relationship and the power of influence.

## 3. Empirical Methodology

Unit root tests and horizontal section dependency tests are introduced to demonstrate the properties of the data before proceeding to the analysis of the panel data models for the NUTS Level 1 regions. Then, methods used for causality and parameter estimation are given.

### 3.1. Panel Unit Root Test

In order to investigate causality, the first step to be taken is to examine whether the unit is root. Traditional unit root tests developed by Levin, Lin, Chu (2002, LLC) and Im, Pesaran and Shin (2003, IPS), Breitung (2002), Maddala and Wu (1999) Hadri (2000) are common methods used in panel data literature. LLC (2002) and IPS (2003) tests are used based on the following equation:

$$\Delta y_{it} = \alpha_i + \eta_i y_{it-1} + \delta_i t + \sum_{k=1}^{Ki} \theta_i^{(k)} \Delta y_{it-k} + \varepsilon_{it} \tag{3}$$

and

$$\varepsilon_{it} \overset{iid}{\approx} N(0, \sigma_\varepsilon^2) \; ; \; i = 1,\ldots,N \; ; \; t = 1,\ldots,T \tag{4}$$

Here, the variable tested for the $y$ unit root is the $\Delta$ difference operator and the $K_i$ delay order. For all i's, LLC (2002) includes the $\eta_i = 0$ hypothesis for all i's versus the $\eta_i = \eta < 0$ alternative hypothesis. One of the weak points of LLC (2003) is the assumption that for all i, $\eta$ is considered homogeneous. This weakness is addressed by IPS (2003), assuming that i is completely heterogeneous. This weakness is addressed by IPS (2003) and it is assumed that $\eta_i$ is entirely heterogeneous in *i*. Although the alternative hypothesis of the IPS (2003) test provides stability for some units, the null hypothesis is the same.

### 3.2. Cross -Sectional Dependency Test

One of the important problems encountered when parameter estimation is performed in panel data studies is dependency between separate units. Estimates under horizontal section dependency may give inconsistent results and may lead to bias. Various tests have been proposed for horizontal cross-sectional dependence of applied econometrics (Breusch and Pagan, 1980; Pesaran, 2004, 2006; Ng, 2006). Pesaran (2004) $CD_{LM}$ test is widely used because of its wide usage area. The Pesaran (2004) $CD_{LM}$ test is calculated as follows under the null hypothesis that there is no horizontal section dependency:

$$CD = \sqrt{\frac{2T}{N(N-1)}}\left(\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}\hat{\rho}_{ij}\right) \tag{5}$$

Pesaran (2004) $CD_{LM}$ test, Breusch-Pagan (1980) $CD_{LM1}$ test and Pesaran (2004) $CD_{LM2}$ tests are commonly used to test the horizontal section dependency of panel data sets. The $CD_{LM1}$ and $CD_{LM2}$ tests are used to test for horizontal section dependency in the case of $T>N$ , while the $CD_{LM}$ test is a predictor for horizontal section dependency in case of $N>T$ . In this study, Pesaran (2004) $CD_{LM}$ test was preferred in terms of suitability of data set structure.

### 3.3. Panel Causality Analysis

In the case of horizontal cross-section dependency, the panel needs to consider the heterogeneity between units in the Granger causality analysis. In traditional causality analysis, causality is assumed to be homogeneous for all subunits. Therefore, while there is a causality relation in only one subgroup of the sample, the hypothesis that Granger causality is not valid for all units is rejected and the hypothesis that this relationship is in all units is accepted. In other words, the heterogeneous causality that can occur in the sub-units that can occur due to the horizontal section dependency between the units is ignored. The panel Granger causality test developed by Dumitrescu and Hurlin (2012) overcomes this problem. Dumitrescu and Hurlin (2012, DH) suggest the Granger (1969) test, where there is no homogeneous causality in heterogeneous panel data models with constant coefficients. The DH approach can be formulated as follows:

$$y_{it} = \alpha_i + \sum_{k=1}^{K} \gamma_i^{(k)} y_{i,t-k} + \sum_{k=1}^{K} \beta_i^{(k)} x_{i,t-k} + \varepsilon_{i,t} \tag{6}$$

The standard is based on the mean Wald statistic with normal asymptotic distribution and the null hypothesis shows the presence of a non-homogeneous non-causal situation from x to y, the alternative hypothesis shows that at least one of the panel units has x to y causality for horizontal section dependency. In addition to considering horizontal section dependency, the test has many advantages. First, the tests have very good properties with the smallest values of T and N in the examples. Dumitrescu and Hurlin (2012) even if the length of delay is incorrectly determined, they have proven with simulations that the test statistic is very strong by simulation that they have good dimensional and power characteristics even on very small units and time-dimensioned panellars. Second, test statistics can be used by taking the horizontal cross section average of individual Wald statistics without any panel regression estimates. Third, this method can be applied to unbalanced and/or balanced panel data models with a different number of delays for each unit. In this study, the DH (2012) approach is preferred because the data set is not wide and the data belonging to units with horizontal section dependency are used.

### 3.4. Common Correlated Effects-Mean Group (CCE-MG) Method

The dependence between regions is increasing because change in one region within a country affects other regions which necessitates the consideration of regional interaction. Initially, Pesaran and Smith (1995) develop the Mean Group (MG) estimator as an estimator that ignores horizontal section dependency. Later, Pesaran (2006) develop the Common Correlated Effects-Mean Group (CCE-MG) estimator, which takes account of the dependence between the horizontal sections forming the panel. This method is used to control possible common shocks that can affect each region differently. It is also more flexible to take into account the effects of unobserved common factors that vary over time and vary from region to region and even exhibit linear or non-stationary behavior.

Pesaran (2006) describes the CCE-MG estimator with the following panel data regression equations (7) - (9). The following models are given for $i = 1, \dots, N$ and $t = 1, \dots, T$ (Eberhardt, 2012):

$$y_{it} = \beta_i x_{it} + u_{it} \tag{7}$$

$$u_{it} = \alpha_{1i} + \lambda_i f_t + \varepsilon_{it} \tag{8}$$

$$x_{it} = \alpha_{2i} + \lambda_i f_t + \gamma_i g_t + \varepsilon_{it} \tag{9}$$

Where $y_{it}$ and $x_{it}$ are the observable factors, $\beta_i$ is the observed specific slopes and $u_{it}$ is the unobservable factors and error terms. In equation (7), $\alpha_{1i}$ is the stationary effects with time-invariant heterogeneity, $f_t$ is the common factor not observed by heterogeneous factor loads $\lambda_i$ with horizontal section dependency and time-varying heterogeneity. In these notations, the horizontal section dependency contains the heterogeneity effect between the panel units, the time-varying non-observable effects and identification problems (in the case of $f_t$, $\beta_i$ can not be defined). The CCE-MG estimator removes these problems with a simple yet powerful extension of the group-specific regression equation, in other words by adding the horizontal cross section averages ($\overline{y}_t \; and \; \overline{x}_t$) of these equations dependent and independent variables apart from the $x_{it}$ parameter and constant coefficients as additional parameters. Therefore, practically, in this model, ($\overline{y}_t \; and \; \overline{x}_t$) horizontal section averages are calculated for the observable variables and then added to each of the regression equations as explanatory variables.

This method is similar to the MG estimator, but the CCE-MG differs by including the horizontal section dependence of the independent variables. The CCE-MG model is a predictor that can be used for N>T and N<T. The slope is allowed to change the horizontal section from the horizontal section (Pesaran, 2006: 967).

## 4. Analysis Results

In order to investigate the nature of the data before analyzing the panel data model, we first tabulate the unit root and horizontal section dependency test results. Then, we discuss causality analysis and coefficient estimation results are discussed.

### 4.1. Panel Unit Root Test Results

According to the LLC unit root test results in Table 1, each variable in the analysis is stable. According to the result of the IPS test, the serial number of the patent registration number variable (tec), which is a technological development indicator, is not stable.

**Table 1:** *Unit Root Test Results*

| **Variables** | **LLC** | **IPS** |
|---|---|---|
| | ***t-statistic*** | ***t-statistic*** |
| *yo* | -11.0365*** | -2.71873** |
| *tec* | -5.35279*** | -0.30171 |
| *gini* | -36.0294*** | -8.05210*** |

*: Significance at the level of 10%., **: Significance at the level of 5%.
***: Significance at the level of 1%.

Because the data time interval is short, we do not take the first difference variables and considered them stationary as it is in the LLC test. Therefore, in the analyzes, we consider the whole of the series stable at the level I (0).

## 4.2. Horizontal Cross Section Dependency Test Results

Before going to panel analysis, it is necessary to test whether there is a horizontal section dependency in the panel data set. As shown in Table 2, the null hypothesis for the tec and gini independent variables in the regional panel data set is statistically rejected and the existence of horizontal section dependency is proved.

**Table 2:** *Results of the Horizontal Cross Section Dependency Test*

| | **Pesaran (2004) $CD_{LM}$ Test** | |
|---|---|---|
| **Variables** | *t-statistic* | *p-value* |
| *yo* | -0.53 | 0.597 |
| *tec* | 16.90 | 0.000 |
| *gını* | 3.13 | 0.002 |

In the presence of horizontal section dependency, the use of causality, which takes this situation into consideration, will be more consistent.

## 4.3. Panel Causality Analysis Results

DH (2012) provides panel causality analysis, horizontal section dependency and consistent results in the case of small samples. Table 3 shows the results of the causality analysis according to the models established.

**Table 3:** *DH (2012) Panel Causality Analysis Results*

| Hypotheses | W-bar statistic | Z-bar statistic | The significance of causality is in regions |
|---|---|---|---|
| $H_0$: Technological development is not the cause of poverty. | 3.1826 | 5.3462*** | TR1, TR2, TR3 |
| $H_0$: Poverty is not the cause of technological progress. | 5.8913 | 11.9812*** | TR1, TR3 |
| $H_0$: Inequality of income distribution is not the cause of poverty. | 0.4722 | -1.2927 | - |
| $H_0$: Poverty is not the reason for the unfairness of income distribution. | 3.3116 | 5.6622*** | TR2,TR7, TR8 |

*: Significance at the level of 10%., **: Significance at the level of 5%. ***: Significance at the level of 1%. Since the time dimension of the data set is short, the number of delays is taken as 1. In all analyzes, the number of delays is used in the same way.

First, looking at the causality relationship between technological development and poverty, there is a relationship from both technological development to poverty and from poverty to technological development. The sub-regions where poverty has emerged as a result of technological development are TR1 Istanbul, TR2 West Marmara and TR3 Aegean. These regions are areas where migration from the eastern regions is significant, and where the industry and services sector is predominant. Hence, poverty can arise as a result of technological unemployment arising from unskilled labor migration in these regions. On the other hand, regions where poverty causes technological development are TR1 Istanbul and TR3 Aegean.

When we examine the relationship between income distribution inequity and poverty, there is a one-way causality relation. Results point out that income distribution of poverty is a reason for injustice in TR2 West Marmara, TR7 Central Anatolia and TR8 West Black Sea regions.

## 4.4. Pesaran (2006) CCE-MG Method Results

In this stage, we perform parameter estimation after the causality analysis for the level 1 regions. The common results for all regions are given in Table 4.

**Table 4:** *CCE-MG Model Overall Forecast Results*

| *Models* | *constant* | *coefficient* |
|---|---|---|
| $yo = f(tec))$ | 0.905 | 0.021 |
| $yo = f(gini)$ | 0.467 | 1.262** |

*: Significance at the level of 10%., **: Significance at the level of 5%.
***: Significance at the level of 1%.

The relationship between technological development and poverty is not statistically significant. On the other hand, the sign of the relationship between income distribution injustice and poverty is positive and statistically significant. If the income distribution inequality increases, the poverty rate will also increase. In the analysis of causality, poverty is identified as a reason for the inequality of income distribution. Efforts to reduce income distribution injustice will therefore help to reduce poverty.

In addition, the estimation results for each region are shown in Table 5. According to the results based on the region, our findings are mixed. According to the region, the signs of the parameters in the model, which show the relation between technological development and poverty, differ.

*Table 5: CCE-MG Model Region-Based Forecast Results*

| **Level 1 Regions** | $yo = f(tec)$ | | $yo = f(gini)$ | |
|---|---|---|---|---|
| | *Coefficient* | *p-value* | *Coefficient* | *p-value* |
| TR1 Istanbul | -0.383 | 0.449 | **6.355** | **0.000** |
| TR2 West Marmara | -0.003 | 0.962 | 0.063 | 0.963 |
| TR3 Aegean | **-0.297** | **0.001** | 0.933 | 0.548 |
| TR4 East Marmara | 0.358 | 0.115 | **2.717** | **0.044** |
| TR5 West Anatolia | **0.109** | **0.020** | -0.110 | 0.820 |
| TR6 Mediterranean | -0.006 | 0.973 | 0.088 | 0.959 |
| TR7 Central Anatolia | 0.249 | 0.347 | **1.677** | **0.093** |
| TR8 West Blacksea | **-0.104** | **0.004** | **2.511** | **0.089** |
| TR9 East Blacksea | **0.158** | **0.076** | 0.139 | 0.889 |
| TRA Northeast Anatolia | 0.080 | - | -0.242 | 0.688 |
| TRB Middle East Anatolia | 0.056 | 0.115 | 0.671 | 0.394 |
| TRC Southeast Anatolia | **0.031** | **0.025** | 0.338 | 0.698 |

According to region-based results, there are differences in the sign of technological development between poverty and technological development. In TR3 Aegean and TR8 West Black Sea regions, as technological development increases, poverty decreases. On the other hand, in TR5 Western Anatolia, TR9 Eastern Black Sea and TRC Southeast Anatolia regions, technological development seems to increase poverty.

When we analyze the relationship between poverty and income distribution on a regional basis, only three regions have significant relationships. TR1 Istanbul, TR4 East Marmara, TR7 Central Anatolia and TR8 Western Black Sea regions, income distribution inequality increases as poverty increases.

## 5. Conclusion

With globalization, international technology transfer has accelerated and more capital-intensive production has been passed. Those who can not keep up with this process and are inadequate in the face of technological developments can lose their jobs and cause the poverty to deepen. At this point, many argue that technological development leads to unemployment and indirectly increases the rate of poverty. However, an important problem of emerging economies is the inequity of income distribution. Whether or not this injustice has a role in increasing poverty also brings an important debate. In this study, we put forward the effect of technological development and income distribution injustice on the axis of poverty in order to keep a light on the controversial issue. The results in this study, for Turkey NUTS-1 regions in the 2006-2013 period, show that there is a causal relationship between technological development and poverty and income distribution injustice and poverty. When we look at regional results, there is a bi-directional causality relationship between technological development and poverty in Istanbul and Aegean regions. The technological development in these regions is confronted as both a cause and a consequence of poverty. In the predicted parameters, the effect of technological development on poverty seems positive, but the relationship statistic is not significant. The parameter estimates for the sub-regions reveals that, technological improvement in some regions decreases poverty but increases in some regions.

The relationship between income distribution inequity and poverty stipulates that there is a close relation between income distribution injustice and poverty. In terms of causality relation, we find a one-way relation from poverty to income distribution inequity. Income distribution is a consequence of injustice poverty. Parameters estimation shoes that income distribution inequality increases poverty.

Since this study is one of the earliest studies evaluating the injustice of poverty, technological development and income distribution, we it would make a huge contribution to the literature. However, there are important limitations of working together and it is necessary to take these constraints into consideration when making evaluations. First of all, the time interval is rather short because of the difficulty of accessing the database. Therefore, there was only one delay in the analysis of causality. On the other hand, since only the number of patent registrations is reached from the indicators of technological development, the variables that can better reflect technological development have not been reached. Future work will be able to shed light on the literature by using different technological development indicators to cover a longer period.

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# 2

# TAXES IN TURKEY AND OECD: A COMPERATIVE ANALYSIS

*Aysun ÖZEN*[1]

## 1.Introduction

Economic policy means intervening in economy by using various tools to achieve economic goals and to solve economic problems. There are various sub-branches of economic policy such as monetary policy, fiscal policy, income policy and foreign trade policy. Each of them is very important while intervening in economy and should be carried out synchronously with each other.

The government uses the fiscal policy instruments together with the monetary and the other instruments to shape the economy. The main instruments of fiscal policy are taxes, public expenditures, borrowing and the state budget.

Taxes are the most important source of government finance that forms the financial system of the modern state. (Şen and Sağbaş, 2016). In addition to taxes, the government has a wide range of sources of income like duties, charges, loans etc. But the most basic and usual source of income is tax. Taxes are important because they constitute the basic public revenue and are one of the most important economic policy tools.

Although there are many definitions of tax, the definition used in public finance is accepted generally and it is as follow. Tax is the final monetary amount that levied by the government on income and profits, or added to the cost of some goods, services and transactions in order to finance public expenditures and/or to achieve socio-economic purposes.

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In Turkey, taxes are among the most widely spoken and complained economic issues. Tax rates are usually referred as bad because of the heavy tax burden felt. In this study, selected taxes in Turkey will be compared and analysed with the similar taxes in OECD countries. These countries selected to compare because Turkey is a member of OECD. Statistical data used in comparison was received from OECD statistics. Because OECD has the largest and most reliable statistical data sources related to economy. To compare Turkey and OECD in terms of taxes, analyses were performed by using tables and graphics derived from statistical data.

After a brief literature review and general information on Turkey and OECD, comparison made by using selected tax indicators

## 2. Literature Review

Tax and taxation views of main economic flows have some differences and can be summarized as follows. (Şen and Sağbaş, 2016). *Mercantilists* accept foreign trade as the source of surplus and the wealth of a country and used the tax in a way to provide it. Through taxes while the goods subject to export were encouraged, imports were tried to be cut down. *Physiocrats* linked the misery and poverty of farmers to the heavy tax burden and tax system. They proposed a “single tax system” and argued that the single tax should be received fairly from the agricultural sector, the only sector that generates net income. By accepting fiscal neutrality view, *Classics* recognize that tax should be “neutral” because taxes are misleading in the economy. Accordingly, taxes should be indirect with low and flat-rate. They emphasize the fiscal function of tax and argue that it should be used only in financing of public expenditures.

In addition to the fiscal purpose of the tax, the *Keynesians* also emphasized the economic purpose of taxes. They acknowledge that taxes affect many economic variables, particularly national income. Accordingly, taxes are an important economic policy tool for intervention in the economy.

There are also many studies that compare various aspects of economy in Turkey and OECD countries. Taxes, tax systems and practices, tax rates and amounts, tax revenues etc. have been the subject of many studies. Some of them are as follows.

Gürdal and Yavuz (2009) examined corporate tax and its importance in tax revenues in Turkey in a comparative perspective with the OECD countries. It has been observed that the trajectory of the corporate tax in Turkey has been similar to a certain extent to that of the OECD countries. Kılıçaslan and Yavan (2017) found that the tax burden in Turkey remained below average amongst that of OECD countries. However, an adverse outlook also has appeared in terms of justice of taxation regarding tax burden distribution. Aydoğan (2017) explained a comparative approach to justice practices on taxation in selected OECD countries and Turkey. Tosun (2018) which provides a comparison in terms distribution of tax burden, allows the assessment of applied tax policies. It is observed that the tax burden in Turkey remained below the OECD average and the indirect taxes share in total tax revenue is higher than the direct tax share due to Turkey's tax structure.

Giray (2018) analyzed the combination of individual income tax and social security contributions levied on labor income as the labor burden in Turkey with cooperation OECD countries.

## 3. OECD and Turkey

With thirty-six-member countries including Turkey, and with key partners including Brazil, China, India, South Africa and Indonesia OECD provides cooperation on key global subjects at local, regional and national levels. Members and key partners represent approximately 80% of world trade and investment. (oecd.org, 2019)

OECD is an international organization that works to build better policies for better lives in member and other countries. In this framework, it works together with citizens, with policy makers and with governments of members and partners while establishing international norms and while finding solutions social, economic and environmental problems. By doing this it establishes international norms. By doing so it helps improvement of economic performance, improvement of strong education, fighting tax evasion. The organization provide knowledge center for data and analysis, experiences exchanging, best-practice sharing, and advice on public policies and setting global standards.

Turkey is a member of this organization since the foundation of it and have important economic relations with its members and partners.

Turkey and OECD may be compared under a few titles related to taxes. These are tax revenues, taxes on personal income, profits, goods and services, property, social security contributions, tax wedge and tax competitiveness. Table 1 shows Turkey and OECD data on indicators mentioned above.

### 3.1. Tax Revenue

Tax revenue can be defined as the revenues collected from taxes on income and profits, social security contributions, taxes levied on goods and services, payroll taxes, taxes on the ownership and transfer of property, and other taxes. As a percentage of GDP, total tax revenue shows the share of a country's output that is collected by the government through taxes. The degree of the government control on resources can be seen by looking this percentage. This also shows the tax burden, which is measured by taking the total tax revenues received as a percentage of GDP.

*TABLE 1:DATA RELATED TO TAX: TURKEY AND OECD*

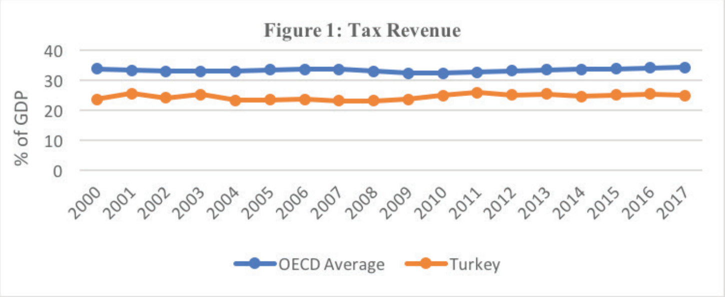
| | Tax Revenue | | Tax on Personal Income | | Tax on Corporate Profits | | Tax on Goods and Services | | Tax on Property | | Social Security Contributions | | Tax Wedge | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | OECD Average | Turkey | OECD Average | Turkey | OECD Average | Turkey | OECD Average | Turkey | OECD Average | Turkey | OECD Average | Turkey | OECD Average | Turkey |
| 2000 | 33,77 | 23,59 | 8,7 | 5,25 | 3,17 | 1,72 | 10,902 | 9,903 | 1,753 | 0,745 | 8.583 | 4.419 | 8583 | 4419 |
| 2001 | 33,25 | 25,55 | 8,69 | 5,63 | 2,9 | 1,74 | 10,673 | 10,247 | 1,707 | 0,621 | 8.653 | 5.502 | 8653 | 5502 |
| 2002 | 33,01 | 24,01 | 8,21 | 4,24 | 2,83 | 1,72 | 10,781 | 11,262 | 1,697 | 0,688 | 8.686 | 4.749 | 8686 | 4749 |
| 2003 | 32,93 | 25,2 | 8,07 | 3,96 | 2,84 | 2,01 | 10,825 | 12,457 | 1,722 | 0,818 | 8.692 | 5.243 | 8692 | 5243 |
| 2004 | 32,88 | 23,32 | 7,96 | 3,46 | 3,02 | 1,69 | 10,771 | 11,131 | 1,724 | 0,713 | 8.560 | 5.571 | 8560 | 5571 |
| 2005 | 33,35 | 23,37 | 8,01 | 3,44 | 3,3 | 1,66 | 10,815 | 11,519 | 1,774 | 0,78 | 8.507 | 5.243 | 8507 | 5243 |
| 2006 | 33,5 | 23,57 | 8,04 | 3,67 | 3,55 | 1,41 | 10,694 | 11,477 | 1,804 | 0,841 | 8.439 | 5.273 | 8439 | 5273 |
| 2007 | 33,56 | 23,06 | 8,16 | 3,91 | 3,59 | 1,56 | 10,616 | 10,99 | 1,791 | 0,866 | 8.438 | 5.003 | 8438 | 5003 |
| 2008 | 32,93 | 23,14 | 8,11 | 3,82 | 2,28 | 1,7 | 10,311 | 10,523 | 1,681 | 0,841 | 8.582 | 5.794 | 8582 | 5794 |
| 2009 | 32,21 | 23,49 | 7,83 | 3,85 | 2,65 | 1,8 | 10,281 | 10,721 | 1,689 | 0,852 | 8.913 | 5.764 | 8913 | 5764 |
| 2010 | 32,31 | 24,82 | 7,6 | 3,48 | 2,67 | 1,8 | 10,558 | 11,832 | 1,7 | 1,007 | 8.851 | 6.181 | 8851 | 6181 |
| 2011 | 32,61 | 25,9 | 7,68 | 3,5 | 2,79 | 1,94 | 10,618 | 11,714 | 1,723 | 1,051 | 8.867 | 7.220 | 8867 | 7220 |
| 2012 | 33,07 | 24,95 | 7,91 | 3,6 | 2,8 | 1,85 | 10,708 | 11,232 | 1,756 | 1,052 | 8.962 | 6.779 | 8962 | 6779 |
| 2013 | 33,36 | 25,35 | 8,06 | 3,52 | 2,79 | 1,6 | 10,742 | 11,674 | 1,821 | 1,176 | 9.030 | 6.955 | 9030 | 6955 |
| 2014 | 33,59 | 24,58 | 8,19 | 3,62 | 2,75 | 1,58 | 10,793 | 10,841 | 1,857 | 1,197 | 9.016 | 7.014 | 9016 | 7014 |
| 2015 | 33,72 | 25,09 | 8,28 | 3,67 | 2,76 | 1,43 | 10,832 | 11,116 | 1,876 | 1,222 | 9.041 | 7.281 | 9041 | 7281 |
| 2016 | 34,03 | 25,3 | 8,24 | 3,7 | 2,87 | 1,65 | 10,974 | 11,039 | 1,892 | 1,222 | 9.161 | 7.293 | 9161 | 7293 |
| 2017 | 34,19 | 24,89 | | 3,62 | | 1,7 | | 10,812 | | 1,122 | | 7.302 | | 7302 |

*Source: https://www.oecd-ilibrary.org/statistics*

In Table 1 only tax wedge is stated as the percentage of labour cost, but others can be stated as the percentage of GDP.

In table and in figures only the data belong to Turkey and OECD average was showed. Because if we add all OECD countries, table and figures will be very complicate to understand.

As can be seen at Figure 1 tax revenues of Turkey is always below the OECD average. Main causes of low tax revenues in Turkey are tax losses and fugitives. Savaşan and Odabaş (2004) argues that causes of tax losses and fugitives can be grouped in two group. First group named objective factors includes tax burden, exceptions and exemptions, inefficiency in control and insufficient legal punishment. Second group named subjective factors includes injustice in tax system, perception of taxpayer's about government spending, tax awareness, tax ethics. Some other factor can be added to this list.



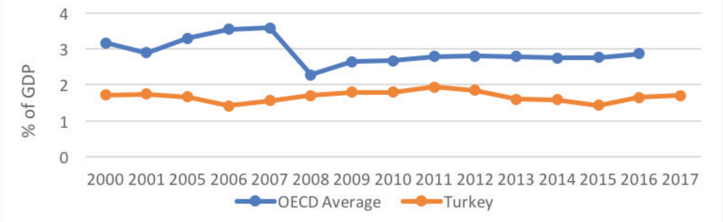
## 3.2. Tax on Personal Income

These are the taxes levied on the net income and capital gains of individuals and showed in Figure 2. It is calculated by "gross income minus tax reliefs allowed by law" formula and can be stated as in percentage both of GDP and of total taxation. Tax on personal income in Turkey is lower than OECD average during the whole period.

## 3.3. Taxes on Corporate Profits

It can be described as taxes levied on the net profits which calculated by the "gross income minus allowable tax reliefs" of enterprises formula. It also includes taxes levied on profit obtained from the capital gains of enterprises. It is measured in percentage both of GDP and of total taxation. This measure is also below the OECD average during the whole period examined. Figure 3 shows that tax received from corporate profits in Turkey is always below the OECD average. And this can be understood as, Turkey is a tax paradise for entrepreneurs. If an entrepreneur invests in Turkey and obtains profit, the profit is taxed less than the countries in OECD.

Figure 3: Tax on Corporate Profits



## 3.4. Taxes on Goods and Services

All taxes levied on the production, sale, transferring, leasing or delivery of goods, and service supply, using permission to use goods can be described under this title. These group of taxes mainly consist of value added and sales taxes.

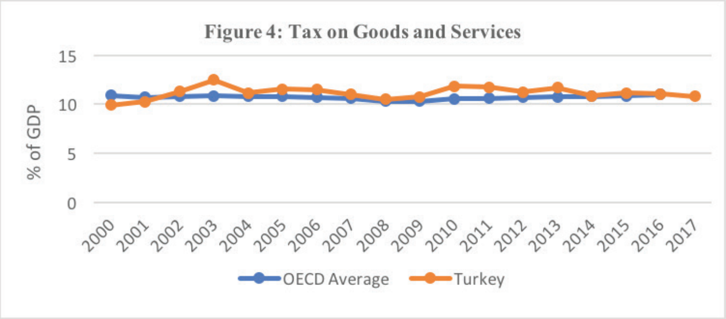


Figure 4: Tax on Goods and Services

These are multi-stage cumulative taxes that contain general sales taxes (levied at production, wholesale or retail level); value-added taxes; excises; taxes levied on the import and export of goods; taxes levied in respect of the use of goods and taxes on permission to use goods, or perform certain activities; taxes on the extraction, processing or production of minerals and other products. In Turkey taxes on goods and services has nearly the same GDP share with OECD average.

## 3.5. Tax on Property

This tax is defined as taxes on the use, ownership or transfer of property. Taxes on immovable property or net wealth, taxes on the change of ownership of property through inheritance or gift and taxes on financial and capital transactions are included in this tax type.

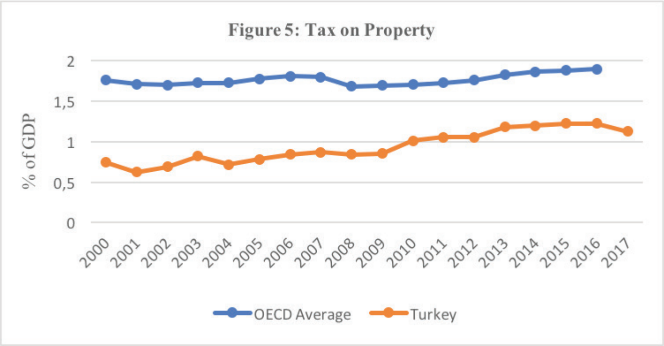


Figure 5: Tax on Property

Figure 5 shows that property is much more expensive in terms of tax in other OECD countries than in Turkey. Having property requires paying more tax in other countries. And this tax creates less contribution to the GDP in Turkey.

## 3.6. Social Security Contributions

To obtain social benefits like unemployment insurance benefits and supplements, old-age, disability and survivors' pensions, accident, injury and sickness benefits, family allowances, reimbursements for medical and hospital expenses or provision of hospital or medical services, in the future, these compulsory payments to government must be done. Contributions may be levied on both employees and employers.

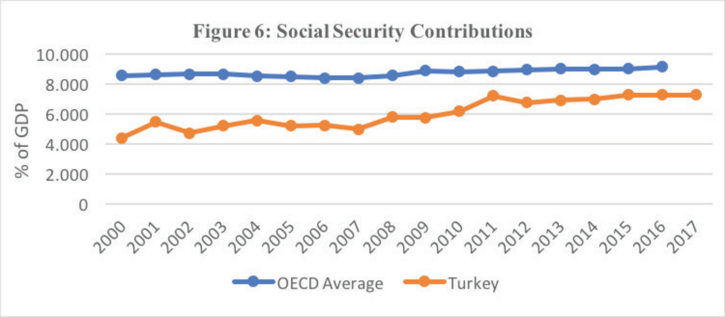


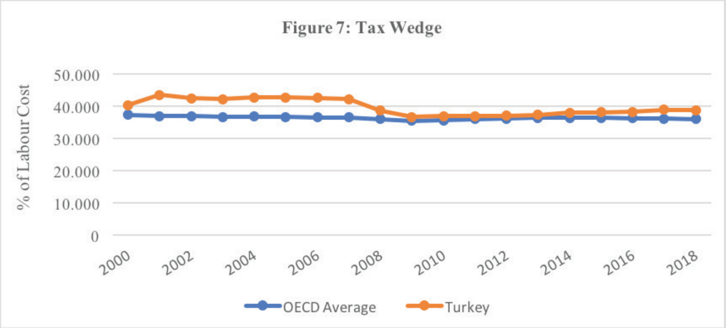
Figure 6: Social Security Contributions

In Figure 6, it can be seen that GDP share of social security contributions in Turkey is generally below the OECD average. But since 2011 the scissors narrowed. Compulsory private individual pension payments may be caused this result.

## 3.7. Tax Wedge

The ratio between the taxes amount paid by an average single worker without children and its total labour cost for the employer is named as tax wedge. The average tax wedge measures the extent to which tax on labour income discourages creating employment by employers. This indicator is measured as a percentage of labour cost.

Tax wedge in Turkey was higher than the tax wedge average of OECD until 2009. But after this year it is nearly same as indicator of tax wedge of OECD average. So, it's discouraging effect on employment was decreased.



### 3.8. Tax Burden

Tax burden shows and affects welfare in a country. Excluding the impairment of tax revenues, Turkey is in a better condition than OECD average. But when tax burden is taken into account, it seems that Turkey is not in a good condition. Tax burden in Turkey is higher than the OECD average of tax burden.

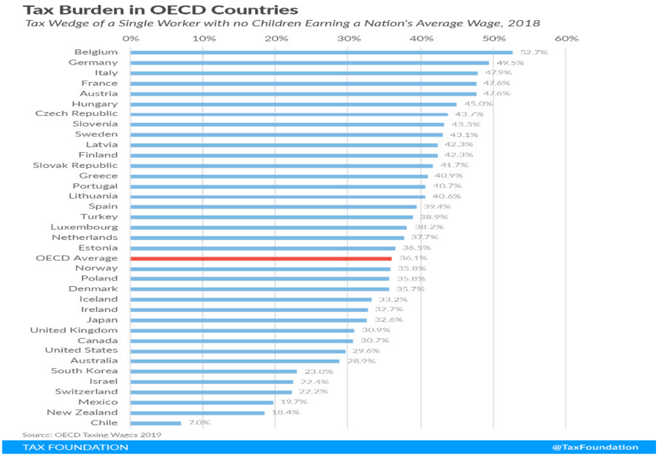
## 9. Tax Competitiveness

Tax Foundation explains the International Tax Competitiveness Index (ITCI) as a measure the extent to which a country's tax system adheres to two important aspects of tax policy: competitiveness and neutrality.

This is the situation that countries use tax cuts, tax breaks, gaps in the tax laws or tax subsidies given to attract investment or hot money. Which country provides tax advantages, it attracts investors of productive investments or investors of hot money.

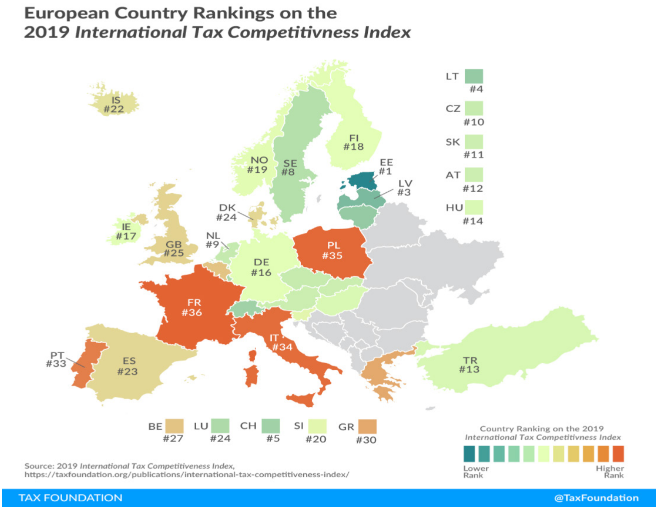
In figure 9, it can be seen that Turkey's degree of tax competitiveness is higher than the degree of many other countries. This is good for Turkey's competition power in international and other sectors. Turkey is neither best nor worst country in tax competitiveness.

*Figure 8: Tax Burden in OECD Countries*



*Source: https://taxfoundation.org/publications/tax-burden-on-labor-in-the-oecd/*

*Figure 9: Country Rankings on the International Tax Competitiveness Index*


European Country Rankings on the
2019 International Tax Competitivness Index
IS #22
NO #19
SE #8
FI #18
EE #1
LV #3
DK #24
IE #17
GB #25
NL #9
DE #16
PL #35
FR #36
IT #34
PT #33
ES #23
TR #13
LT #4
CZ #10
SK #11
AT #12
HU #14
BE #27
LU #24
CH #5
SI #20
GR #30
Country Ranking on the 2019
International Tax Competitivness Index
Lower Rank
Higher Rank
Source: 2019 International Tax Competitiveness Index,
https://taxfoundation.org/publications/international-tax-competitiveness-index/
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**Source:** *Tax Foundation, (2019). https://taxfoundation.org/2019-international-index/*

## 4. Conclusion

In this study Turkey and OECD countries were analyzed by comparing taxes in terms of some basic tax indicators. In this respect a brief literature summary was given first. Then comparison was realized by tables and graphics.

As a developing country Turkey has some economic and structural problems that cause lower tax revenues and heavy tax burden. But the comparison with other OECD countries shows that the situation is not worst for Turkey. Tax burden may be bad than many of OECD countries but it is not forgotten that Turkey has to make more public expenditure because of its economic, geographic, structural and other problems. And because of the taxes are the main and legal public revenue, developing countries like Turkey must finance their public expenditures with taxes in a large scale. So, it is understandable why tax burden is heavier in Turkey.

If informal economy problem decreases, if production and other public revenues increases, if other problems like migration, boundary defence that increase government expenses are solved, than tax burden may decrease in Turkey.

Finally, a last suggestion for new studies is tax indicators chosen to analyse may be diversified in its sub branches and so more detailed analysis may be performed.

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# 3

# DO MACROECONOMIC VARIABLES SUPPORT BUSINESS CYCLE? EVIDENCE FROM TURKEY

*Bekir Köroğlu*[1]

## 1. Introduction

Properties of macroeconomic time series are debatable issues in the economic literature. Economists diverge on whether time series are random walk (unit root) or trend-stationary. Traditional views of the business cycles claim that the fluctuations of outputs deviate temporarily from their long-run stable path. As a result, the shocks would not influence the trend or the impact of the shocks gradually disappears and the output would continue its original move. This view suggests that series like GNP are trend stationary. On the other hand, empirical findings contradict with the traditional view. Empirical studies claim that the fluctuations of outputs of macroeconomic time series are permanent in the trend as opposed to traditional views.

The traditional approach suggests that if real GDP temporarily goes up or falls below the trend, it will return to the trend in the following period. Thus, fluctuations in GDP will be temporary. However, real conjuncture theorists see the shocks of supply and technology that are taking place in the economy as a fundamental cause of economic fluctuations. Accordingly, there is no reason for cyclical fluctuations to be temporary as technology shocks and supply shocks are permanent. This means that if the output is high in a quarter, there is no tendency to fall again in the next quarters, and GDP shows a random walk (Rush 1987).

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(Nelson ve Plosser 1982) discussed trends and random walk in macroeconomic time series. Considering the US economy's data, it is stated that the hypothesis that non-stationary stochastic processes have no tendency to return to the trend line of these series should be accepted. It was emphasized that macroeconomic models focusing on monetary disruptions will fail to explain much of the change in output and macroeconomic fluctuation model of real factors is the basis of statistical change (Nelson and Plosser 1982).

This study aims to estimate strcutual changes in major macroeconomics variables for Turkey with Real Gross Domestic Product (RGDP), Constant Gross Domestic Product (CGDP), Total Employment (Temp), Real Consumption (Rcons), Exchange Rate (Exrate), Real İnvestment (Rinvest) and money supply (M1,M2,M3) by applying structural break test. This study contributes to the literature in 2 aspects: 1- It uses a relatively different macroeconomic variable. 2- We apply three structural unit root test with different specification. The paper is organized as follows. The next section explains data and the econometric methodology and presents the results. The final section concludes.

## 2. Literature Review

A very few of previous studies estimate structural changes macroeconomics variables. However, we analyze all possible macroeconomic variable together and try to find out which one is supporting business cycle moves.

(Agbeliu, 2016), he conducted various broken unit root tests using 10 macroeconomic data from Nigeria between 1981 and 2015. Only 4 of the 10 data were statistically significant. As a result, the result of a bilateral broken test was not strong enough.

Another important study has been the study of structural break and step-wise-cusum test to test whether macro variables built by (Hayashi, 2003) support business cycle theory. Quarterly data for the years 1952-1998 were used in the study and one and two structural break unit root tests were applied. The study concluded that macroeconomic data support the business cycle.

(Narayan 2005) the Australian macroeconomic data was tested by unit root tests. In the study, single and multiple unit root tests were applied to the monthly macroeconomic data for 1960-2004 and the results were compared. As a result, the ADF test yielded better results and only 5 of the 10 macro variables were statistically significant.

(SOSA-ESCUDERO 1997), for the first time, analyzed the presence of unit roots in the Argentine GDP series. In his study he used annual real GDP data for 1900-1993 and quarterly real GDP data for 1970: 1 up to 1994: 2. Sosa-Escudero applied the ADF and Perron unit root test to allow structural breaks. As a result, he has shown that he cannot reject null hypothesis at the level of significance of 10% per annum.

(Bautista ve Diaz 2002) conducted a stochastic behavioral analysis using annual GDP data for the Mexican period of 1900-2001. In their work, Fuller and Perron have used different methods including unit root tests and autocorrelation studies of Zivot Andrew and Perron structural unit root tests. According to the majority of literature on unit roots, Castillo Ponce and Diaz Bautista (2002) found that GNP was not static when continuous tests were carried out.

In line with Castillo and Bautista, (Libanio 2005) tested the presence of unit roots in GDP series for Latin American countries. He found no powerful and in conclusive in Latin American countries. In addition, he emphasized on possible future research on detailed analysis of implications for macroeconomic policies in the presence of unit roots, investigation of the possible relation between unit roots literature and non-mainstream perspectives in macroeconomics.

## 3. Data Methodology

The data used in the estimation process are yearly and quarterly time series data on Turkey macroeconomic variable for the period 1970-2015, a total of 56 observations for yearly data and a total of 224 observation for quarterly data. Table 1 shows the macroeconomics variables and their codes as used in the analysis.

*Table 1: Variables and Their Codes*

| **Variables** | **Code** |
|---|---|
| Real Gross Domestic Product | RGDP |
| Constant Gross Domestic Product | CGDP |
| Total Employment | Temp |
| Real Consumption | Rcons |
| Exchange Rate | Exrate |
| M1 | M1 |
| M2 | M2 |
| M3 | M3 |
| Real İnvestment | Rinvest |
| | |

## *3.1. ZIVOT ANDREWS ONE BREAK UNIT ROOT TEST*

(Perron, 1989), the assumption that structural fracturing occurs in a single point in the time series and that the break time is known as $T_b$, was developed in the Zivot Andrews 1992 study, as the assumption that the time $(T_b)$ of refraction is unknown. That is, the break time in 1989 was exogenous whereas the break time in the Zivot-Andrews model was endogenously determined.

For all three models[2] of the Zivot-Andrews approach, the null hypothesis is a sliding random walk model that does not involve any structural breaks and is first-degree integrated (I (1)).

$$Y_t = \mu + Y_{t-1} + \varepsilon_t \qquad (1)$$

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[2]

Since the series $Y_t$ in the zero hypotheses is thought to be integrated without structural failure, it is assumed that the alternative hypothesis $Y_t$ is represented by a trend-free process with an unknown break time. Alternative hypotheses leave Perron in two places. There is no need for the DVT$B_t$ dummy variable to be included in Model A and Model C since there is no structural break under the given zero hypothesis. The second is preferred to use Model C rather than Model B. For this reason, if Perron's Incremental Dickey Fuller Approach with Addition Deviation is followed, the regression equations to be used for the unit root test can be given as follows:

Model A: $Y_t = \mu + \beta_t + \theta_1 Y_{t-1} + \varphi_2 DVU_t(\widehat{\lambda}) + \sum_{j=1}^{p} \delta_j \, \Delta Y_{t\text{-}j} + \varepsilon_t$

Or if it is defined as $\delta = \emptyset_1 - 1$, the model can be expressed in an alternative form as follows.

$$Y_t = \mu + \beta_t + \delta Y_{t-1} + \delta_2 DVU_t(\widehat{\lambda}) + \sum_{j=1}^{p} \delta_j \, \Delta Y_{t\text{-}j} + \varepsilon_t$$

Model B: $Y_t = \mu + \beta_t + \theta_1 Y_{t-1} + \delta_3 DVU_t(\widehat{\lambda}) + \sum_{j=1}^{p} \delta_j \, \Delta Y_{t\text{-}j} + \varepsilon_t$

Or if it is defined as $\delta = \emptyset_1 - 1$, the model can be expressed in an alternative form as follows.

$$\Delta Y_t = \mu + \beta_t + \delta Y_{t-1} + \delta_3 DVU_t(\widehat{\lambda}) + \sum_{j=1}^{p} \delta_j \, \Delta Y_{t\text{-}j} + \varepsilon_t$$

Model C: $Y_t = \mu + \beta_t + \theta_1 Y_{t-1} + \delta_2 DVU_t(\widehat{\lambda}) + \delta_3 DVU_t(\widehat{\lambda}) + \sum_{j=1}^{p} \delta_j \, \Delta Y_{t\text{-}j} + \varepsilon_t$

Or if it is defined as $\delta = \emptyset_1 - 1$, the model can be expressed in an alternative form as follows.

$$\Delta Y_t = \mu + \beta_t + \delta Y_{t-1} + \delta_2 DVU_t(\widehat{\lambda}) + \delta_3 DVU_t(\widehat{\lambda}) + \sum_{j=1}^{p} \delta_j \, \Delta Y_{t\text{-}j} + \varepsilon_t$$

Here $DVU_t(\widehat{\lambda}) = 0$ for t≤Tλ when $DVU_t(\widehat{\lambda}) = 1$ is taken when the dummy variable t>Tλ. Therefore, in the Zivot-Andrews approach, the refraction time is determined as $T_b = T\hat{\lambda}$ by the minimum values of $\widehat{\lambda^{t}_{inf}}$ and $t_\delta$.

Table 2 below gives Zivot Andrews results. Only 3 macro variables were statistically significant. The consumption data was broken in 1999 and was significant at the 5% level. The date of the break is coinciding with the 1999 earthquake and is an economically understandable date. The second meaningful data is the investment variable. Investment variance was broken in 2008 and statistically significant at the 5% level. The breakdown date of the investment data is also economically meaningful. Break in the history of the US in many countries affected by the crisis due to the Mortgage and Turkey have been in one of these countries. Another statistically significant data was M3 money supply data. The break date is 1993. At this time, the government has introduced inflation into historical levels by applying populist policies and printing money. As a result, the break dates of all data can be explained economically.

*Table 2: Zivot-Andews Unit Root Test*

| **Variables** | **α [k]** | **LM Stat** | **Break Date** |
|---|---|---|---|
| **RGDP** | 0.615[0] | -3.385 | 1989 |
| **CGDP** | 0.723[0] | -3.472 | 1995 |
| **TEmploy** | 0.785[0] | -3.585 | 2000 |
| **RConsu** | 0.769[3] | -5.502** | 1999 |
| **XR** | 0.169 [1] | -3.085 | 1960 |
| **M1** | 0.631 [4] | -2.803 | 1981-01-01 |
| **Rİnvest** | 0.866 [4] | -5.046** | 1/1/2008 |
| **M3** | 0.158[4] | -6.415*** | 1993-07-01 |

*Note: *** is significant at 1% level, * is significant at 10% level. The numbers in parentheses [] indicate the delay length.*

### 3.2 Lee-Strazicich (2013) One Break Minimum LM Unit Root Test

In the one brake C Model, the vector of external variables is $Z_{t=[1,t,D_t,Dt]}$, to represent the shadow variable $DT_t = t\text{-}T_B$ for $t \geq T_B + 1$ and $DT_t = 0$ for the other cases.

$H_o\colon Y_{i,t} = \mu_0 + d_1 B_t + d_2 D_t + Y_{i,t-1} + \vartheta_{1t}$

$H_1\colon Y_{i,t} = \mu_1 + \gamma t + d_1 D_t + DT_t + \vartheta_{2t}$

*Table: 3 LM One Break and Kpss One Break Test*

| Variables | α [k] | LM Stat | Break Date | α [k] | LM Stat | Break Date |
|---|---|---|---|---|---|---|
| **RGDP** | 0.446[1] | -3.252 | 1978 | 0.431 | 0.035 | 1976 |
| **CGDP** | 0.646[1] | -3.005 | 1991 | 0.431 | 0.036 | 1977 |
| **Templo** | 0.667[0] | -2.364 | 1993 | 0.154 | 0.006 | 1959 |
| **Rcons** | 0.108[3] | -3.312 | 1956 | 0.228 | 0.785 | 2000 |
| **XR** | 0.631[1] | -2.221 | 1990 | 0.462 | 0.077 | 1979 |
| **M1** | 0.479 [2] | -3.353 | 1985-07-01 | 0.309 | 0.141 | 1976-04-01 |
| **Rinvest** | 0.855[4] | -4.319* | 2007-04-01 | 0.873 | 0.066* | 2008-07-01 |
| **M2** | 0.627[3] | -1.364 | 1994-01-01 | 0.288 | 0.408 | 1976-01-01 |
| **M3** | 0.456[4] | -5.311*** | 2001-10-01 | 0.439 | 0.084* | 2001-07-01 |

*Note: *** is significant at 1% level, * is significant at 10% level. The numbers in parentheses [] indicate the delay length.*

Table 3 shows the results of LM and Kpss one break unit root test. Only 2 of the 9 macros were changed, meaning that LM was significant compared to Kpss test statistics. The first variable is meaningful investment variable. As for the binary break test, the break date for investment data is 2008, which is the date of mortgage crisis in USA.

## 3.3 Lee-Strazicich (2003, 2004) Two-Break Minimum LM Unit Root Test

Structural breaks (LM) in the multi-structural broken unit root tests (Lee, 2003) are double-determined internally. The reason for choosing one and two broken unit root tests in multiple unit root tests is Augment Dickey avoids the false rejection problem caused by unit root tests (ZA and Perron tests) that allow Fuller type structural breaks.

While the null hypothesis of the Lm test implies structural break, the alternative hypothesis implies that structural break exists. Lee-Strazicich (2003, 2004) emphasizes the importance of model selection in structural break unit root test. In many studies, Lee-Strazicich (2003, 2004) test indicated that the structural break is fixed and the structural break is fixed and trendy than the C model (Sen 2003). The LM unit root test is obtained from the following equation:

$$\Delta Y_{i,t} = \delta^{'} \Delta Z_t + \theta \acute{S}_{t-1} + \mu_t$$

$Z_t$ in the equation refers to the vector of external variables, while $u_t$ refers to the residuals.

When the broken LM unit root test is applied, the k latency is determined according to the time intervals of the data. When the annual data are used, the maximum delay length is 3. In the case of quadruplicate data, the maximum delay time k is 4.

Lee-Strazicich (2003) stated that the strength of the unit root test, which considers one break in the presence of multiple breaks, can be reduced. For this reason, two broken LM unit root tests were applied to the macro series. Table 1 show the minimum LM unit root test results that allow two breaks at both level and slope.

As can be seen from the table on which the Model C results are given, the real gross national product was broken in 1979 and 2000 and is significant compared to the 10% critical level according to the test result. Real consumption was broken between 1974 and 2001 and statistically significant at 5% level. Real investments were broken between 1977-04-01 and 2008-04-01 and statistically significant at the level of 10%. Finally, the m3 money supply data is statistically significant at the 5% level broken between 2003-10-01 and 2006-01-01.

1970-1980 years between 1974 Cyprus Peace Operation in Turkey's economy as a result of the embargo and the oil crisis and the Arab - Israeli war is largely influenced. This is why the breakdown took place between 1970-1979. Second breaks occurred in 2000-2008. The reason for this is that after the 1999 earthquake, the economic series deteriorated more in 2000, and as a result, the 2001 crisis came to fruition. The second breakdown of real investments shows the history of the mortgage crisis that emerged in the US in 2008.

*Table 4: LM Two Break Test Result*

| LM Two Break Test | | | | |
|---|---|---|---|---|
| **Variables** | **α [k]** | **LM Stat** | **Break Date 1** | **Break Date 2** |
| **RGDP** | 0.462 [1] | -5.297* | 1979 | 2000 |
| **CGDP** | 0.462 [1] | -5.12 | 1979 | 2001 |
| **TEmploy** | 0.462 [1] | -3.77 | 1970 | 2000 |
| **Rconsum** | 0.385 [3] | -6.279** | 1974 | 2001 |
| **EX** | 0.354 [1] | -4.382 | 1972 | 1996 |
| **M1** | 0.336 [4] | -4.741 | 1977-10-01 | 1999-07-01 |
| **Rİnvest** | 0.223 [4] | -5.516* | 1975-04-01 | 2008-04-01 |
| **M3** | 0.518 [4] | -5.957** | 2003-10-01 | 2006-01-01 |

*Note: The trim value is 0.1. [] The values in parentheses indicate the number of delays selected by the Schwarz Criteria.*

## 4. Conclusion

Turkey's economy in the second half of the 1970s recession affecting the world economy has also influenced. The concept of populist policies, which provided welfare gains in the short term but ignored structural problems, continued to grow with short-term borrowing, but the economy could not be saved from coming to the point of clogging. In the study year of 1960-2014 to Turkey's macroeconomic variables one and two structural break unit root tests were applied. As a result of the application, it was found that one-break LM tests two variables, for two-break LM test four variables, and for ZZ test only three variables out of nine are significant. These results indicate that although two break tests seem to give better results, minority of the variables are significant for entire tests which bring inconclusive inference about the presence of structural break tests.

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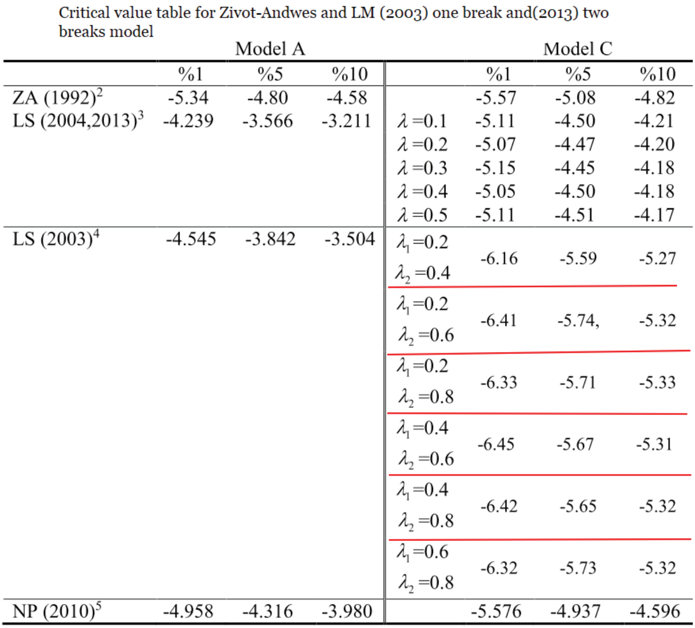

Critical value table for Zivot-Andwes and LM (2003) one break and(2013) two breaks model

| | Model A | | | Model C | | | |
|---|---|---|---|---|---|---|---|
| | %1 | %5 | %10 | | %1 | %5 | %10 |
| ZA (1992)[2] | -5.34 | -4.80 | -4.58 | | -5.57 | -5.08 | -4.82 |
| LS (2004,2013)[3] | -4.239 | -3.566 | -3.211 | $\lambda$ =0.1 | -5.11 | -4.50 | -4.21 |
| | | | | $\lambda$ =0.2 | -5.07 | -4.47 | -4.20 |
| | | | | $\lambda$ =0.3 | -5.15 | -4.45 | -4.18 |
| | | | | $\lambda$ =0.4 | -5.05 | -4.50 | -4.18 |
| | | | | $\lambda$ =0.5 | -5.11 | -4.51 | -4.17 |
| LS (2003)[4] | -4.545 | -3.842 | -3.504 | $\lambda_1$ =0.2<br>$\lambda_2$ =0.4 | -6.16 | -5.59 | -5.27 |
| | | | | $\lambda_1$ =0.2<br>$\lambda_2$ =0.6 | -6.41 | -5.74, | -5.32 |
| | | | | $\lambda_1$ =0.2<br>$\lambda_2$ =0.8 | -6.33 | -5.71 | -5.33 |
| | | | | $\lambda_1$ =0.4<br>$\lambda_2$ =0.6 | -6.45 | -5.67 | -5.31 |
| | | | | $\lambda_1$ =0.4<br>$\lambda_2$ =0.8 | -6.42 | -5.65 | -5.32 |
| | | | | $\lambda_1$ =0.6<br>$\lambda_2$ =0.8 | -6.32 | -5.73 | -5.32 |
| NP (2010)[5] | -4.958 | -4.316 | -3.980 | | -5.576 | -4.937 | -4.596 |

# 4

# INVESTIGATION THE CONVERGENCE OF FEMALE LABOR FORCE PARTICIPATION: AN APPLICATION FOR OECD COUNTRIES

*Melike Dedeoğlu*[1]

## INTRODUCTION

Until the 1970s, development only covered developments in the economic structure, but in time it also covered developments in the social structure. One of the most important representatives of the development in social structure is the increase in FLFPR.

Increasing female labor force participation can accelerate growth by increasing labor supply (Erdem et al., 2016). Policies that increase women's labor force participation have become key policies, especially in developed economies where the population is rapidly shrinking and aging (IMF, 2013). Women's workforce can be the key to revealing the potential for growth in economies where there is a sufficiently skilled female workforce. This is particularly important for countries experiencing labor shortages due to the rapidly aging population (Kinoshita&Guo, 2015).

Following the pioneering study of Barro and Sala-i Martin (1992), convergence studies continued to attract attention in all areas. The basis of these studies is the convergence regression developed by Solow (1956) in the context of neoclassical growth theory. The convergence methodology developed by Phillips and Sul (2007) is a new approach to investigate panel

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convergence and is applied in many areas. Studies using this new method have been carried out in many areas, from tourism to environment, foreign trade to energy consumption. By this methodology; Panopoulou and Pantelidis (2009) examined the convergence in carbon dioxide emissions among 128 countries; Antzoulatos et al. (2011) examined financial system convergence across a large set of industrial and developing countries; Apergis et al. (2011) investigated convergence or divergence patterns across international equity markets; Kim and Rous (2012) examined house price convergence in panels of US states and metropolitan areas; Apergis and Payne (2012) examined the convergence of US house prices by state; Apergis et al. (2013) examined public expenditures across EU countries; Apergis and Georgellis (2013) examined the happiness convergence dynamics across Europe; Wang et al. (2014) investigated the convergence of $CO_2$ emissions of China; Apergis (2015) examined the convergence in public expenditure across a sample of emerging countries; Apergis and Payne (2017) investigated per capita carbon dioxide emissions across U.S. states by sector and fossil fuel; Ulucak and Apergis (2018) investigated the convergence of the per capita ecological footprint for EU countries; Ivanovski et al. (2018) examined the per capita energy consumption across Australian regions; Kourtzidis et al. (2018) examined the convergence patterns of international tourism arrivals in Australia.

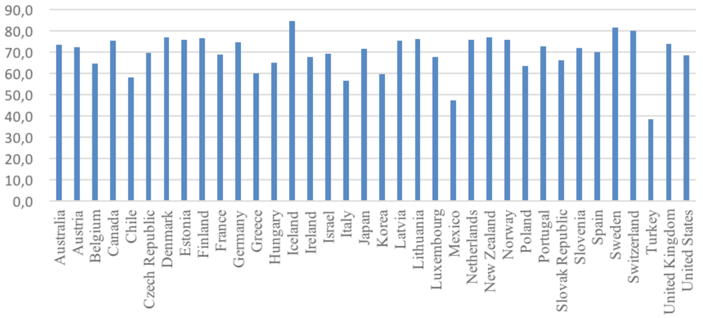
This study will be the first investigating the convergence of FLFPR for the case of 36 OECD countries using the methodology of Phillips and Sul (2007). The second section of this study examines the female labor force participation. Section three presents the data, model and methodology used in the analyses. The fourth section investigates the empirical results and the last section concludes.

## FEMALE LABOR FORCE PARTICIPATION

FLFPR is a measure of the proportion of a country's working-age or job-seeking population that actively enters the labor market. FLFPR has increased in most of the Organization for Economic Co-operation and

Development (OECD) countries over the past years. The increase of the FLFPR in the United States starts earlier but the increase in Spain, Greece, Ireland, Portugal, and Germany is observed in the last two decades (Jaumotte, 2003). But according to ILO's evaluations, the FLFPR decreased from 51.3% to 48.5% in 2018 despite the strong growth in developing and developing countries on a global scale (ILO, 2018)

Figure 1: Female Labor Force Participation Rate (15-64 Age Group), 2018.



*Source: Own elaboration based on OECD employment data, https://stats.oecd.org/*

Figure 1 shows the labor force participation rates of women in the 15-64 age range for 36 OECD countries according to 2018 data. Turkey has the lowest FLFPR while Iceland has the highest among OECD countries.

The World Economic Forum published the index for the first time in 2006, known as the Global Gender Gap Index. The purpose of this index is to capture the magnitude of gender-based inequalities and monitor their progress over time. According to the 2018 report, the most gender-equal country is Iceland. Iceland has closed over 85% of its overall gender gap. Iceland is followed by Norway (83.5%), Sweden and Finland (82.2%). The Global Gender Gap score for 2018 is 68%. This is an average of 149 countries. Not surprisingly Iceland, which has the highest FLFPR score, is above average and even has the highest score. According to the same index, Turkey ranks 130th among 149 countries (World Economic Forum, 2018).

There are several theoretical arguments and empirical studies investigating the impact of gender-specific inequalities in employment on the macroeconomic growth of a country relative to GDP per capita. Today, economists acknowledge that women's active participation in the workforce contributes positively to growth (Luci, 2009). Most empirical studies show that FLFPR declines in the early stages of economic growth but increases after reaching a certain level of positive relationship per capita. Studies testing this hypothesis have concluded that there is a U-shaped relationship between long-term development and women's share in the labor force. (Goldin, 1994; Cagatay and Ozler, 1995; Luci, 2009; Tam, 2011 etc.).

Women's labor force participation should be increased in order to achieve economic development. However, women's participation in the labor market differs in every country where social norms, fertility rates, support services such as childcare are different (Verick, 2014).

Many different studies are investigating the determinants of FLFPR in the literature (Linacre, 2007; Mishra and Smyth, 2010; Thevenon, 2013; Jaumotte, 2003; Blau and Kahn, 2013; Ozerkek, 2013; Kinoshita and Guo, 2015, etc.).

## DATA AND THE METHODOLOGY

The annual FLFPR (age group: 15-64) data used in this study of 36 OECD countries is obtained from OECD Stat and covers 2000-2018. Investigated countries are; Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States.

The methodology of Phillips and Sul (2007) is used to identify potential groups of countries where the FLFPR cluster. This method was used to determine whether FLFPR converges among OECD countries and whether there are convergence clubs between countries even though there is no convergence throughout the panel. It helps us to group the individuals in the panel that share similar convergence patterns. While the process detects the clusters it also reveals some individuals that diverge.

Phillips and Sul (2007)'s methodology, named as "log t-test", helps us to classify countries into convergence clubs or groups. The test enables the detection of convergence where the other stationary tests fail. According to this framework, rejecting the null convergence hypothesis does not mean that there will be no convergence at the level of subgroups within the panel. In other words, it can be said that the sub-groups within the whole panel can converge, there may be clusters known as "convergence clubs" in the panel.

Let the panel data variable $y_{it}$ represent FLFPR, where N is the number of countries and T is the sample size. Using $y_{it}$ for the log of the FLFPR, it is decomposed into two components; $\delta_{it}$is a time-varying idiosyncratic and $\mu_t$ is a single common trend component.

$$y_{it=}\delta_{it}\mu_t \tag{1}$$

It is assumed that all countries will converge to the steady-state if $\lim_{k\to\infty} = \delta_{it+k} = \delta_i = \delta$ , for all i=1…N. The average difference between $\delta_{it}$ and $\delta_i$ decreases over-time at a rate proportional to $1/(t^{\alpha}\log(t+1))$for $\alpha \geq 0$ and $\delta_i = \delta$ for each country according to the convergence hypothesis. This method helps us to determine convergence by testing whether factor loadings $\delta_{it}$ convergence. The transition path $h_{it}$ is calculated as Eq. (2):

$$h_{it} = log y_{it}/\overline{log_t} \tag{2}$$

The cross-sectional variation ratio $H_1/H_t$ made as in Eq. (3) below:

$$H_t = \frac{1}{N}\sum_{i=1}^{N}(h_{it}\text{-}1)^2 \tag{3}$$

Eq. (3), where each horizontal cross-section variance is calculated, shows the distance of the panel from the common limit. Then, it is tested whether each section in the panel converges to the common limit by the following hypotheses:

$H_t: \delta_i = \delta_t \ and \ \alpha \geq 0$

$H_t: \delta_i \neq \delta_t \ and \ \alpha < 0$

These hypotheses are then statistically tested with the help of Log t regression shown by Eq. (4):

$$\log (H_1/H_t)\text{-}2logL(t) = c + blogt + u_t \quad \text{for } t = [\tau T], [\tau T] + 1 \ldots., T\tau > 0 \qquad (4)$$

In Eq. (4), L(t)=log(t) and **τ** refer to the ratio extracted from the sample and it is recommended to be 0.3 by Phillips and Sul (2007). In obtaining the long-run variance of the residuals, heteroscedasticity, and autocorrelation are taken into consideration. The t-test is used to determine convergence. If the t-test value is less than -1.65 the null hypothesis, defining relative / conditional convergence, must be rejected at 5 percent significance level. The rejection of the null hypothesis for the entire panel does not mean that there are no convergence clubs. The number of clubs is determined by Phillips and Sul (2007) clustering procedure. Finally, the specific four-stage group clustering algorithm, as described by Phillips and Sul (2009), helps to investigate whether the original clubs merge further and form new clubs.

## EMPIRICAL RESULTS

Table 1 presents the results of the "log-t test" for FLFPR. The null hypothesis of full panel convergence is rejected since t-statistic=-5.3801<-1.65. According to this result, with the club clustering procedure, it is possible to determine whether a potential club cluster exists.

*Table 1: Empirical Results*

| | | **Phillips and Sul (2007)** | | | | **Phillips and Sul (2009)** | |
|---|---|---|---|---|---|---|---|
| **Category** | **Countries** | **t-statistic** | **b coefficient** | **New Club** | **Final Club Classifications** | **t-statistic** | **b coefficient** |
| Full Sample | 36 OECD Countries | -5.3801 | -0.2597 | | | | |
| Club 1 | Austria, Chile, Estonia, Germany, Iceland, Japan, Latvia, Lithuania, Luxembourg, Netherlands, New Zealand, Spain, Sweden, Switzerland | 2.3245 | 0.1124 | 1+2 | Club 1 | 1.0606 | 0.0528 |
| Club 2 | Australia, Canada, Czech Republic, Denmark, Finland, France, Greece, Hungary, Israel, Norway, Portugal, Slovenia, United Kingdom | 2.1880 | 0.1769 | 2+3 | | -2.9576 | -0.1773 |
| Club 3 | Belgium, Ireland, Italy, Korea, Mexico, Poland, Slovak Republic, Turkey, United States | -0.7872 | -0.0552 | | Club 2 | -0.7872 | -0.0552 |

Since the t-statistic values of the 1st, 2nd, and 3rd sub-clubs are greater than -1.65, the null hypothesis cannot be rejected. So, the results identified three convergence clubs. Club 1 consists of; Austria, Chile, Estonia, Germany, Iceland, Japan, Latvia, Lithuania, Luxembourg, Netherlands, New Zealand, Spain, Sweden, Switzerland. Club 2 consists of; Australia, Canada, Czech Republic, Denmark, Finland, France, Greece, Hungary, Israel, Norway, Portugal, Slovenia, United Kingdom and Club 3 consists of; Belgium, Ireland, Italy, Korea, Mexico, Poland, Slovak Republic, Turkey, United States.

Phillips and Sul (2009) suggest rerunning the log test in sub-clubs to observe evidence that clubs are supported to be merged with larger clubs. According to the club merging statistics shown in Table 1, the convergence hypothesis cannot be rejected for the new club consisting of the sum of Club 1 and Club 2, and therefore these two groups merge to form a larger subgroup under the heading of Club 1. However, this does not apply to the new group consisting of Club 2 and Club 3. According to the merging statistics, these two clubs cannot expand because the null hypothesis is rejected.

Finally, Club 1 consists of; Austria, Chile, Estonia, Germany, Iceland, Japan, Latvia, Lithuania, Luxembourg, Netherlands, New Zealand, Spain, Sweden, Switzerland, Australia, Canada, Czech Republic, Denmark, Finland, France, Greece, Hungary, Israel, Norway, Portugal, Slovenia, United Kingdom and Club 2 consists of; Belgium, Ireland, Italy, Korea, Mexico, Poland, Slovak Republic, Turkey, United States.

## CONCLUSION

One of the most important representatives of the development in social structure is the increase in FLFPR.

Although the female labor force entering the labor market increases day by day, women still constitute less than half of the global labor force. Although an upward trend was observed in FLFPR in the early 2000s, recent research shows that this trend is in the direction of decreasing. The FLFPR decreased from 51.3% to 48.5% in 2018 despite the strong growth in developing and developing countries on a global scale (ILO, 2018). Although the female labor force participation rate in the United States has increased significantly in the second half of the 20th century, this growth has stalled and reversed since 2000, and FLFPR decreased by 3.5 percentage points (Schanzenbach et al. 2017).

This study aims to investigate the convergence behavior of FLFPR in 36 OECD countries for the period 2000-2018. For this purpose, the new methodology of Phillips and Sul (2007) is used to identify potential groups of countries where the FLFPR cluster. This method was used to determine whether FLFPR converges among OECD countries and whether there are convergence clubs between countries even though there is no convergence throughout the panel.

As a result of the analysis, convergence could not be determined for all samples of 36 OECD countries. Although there was no convergence for the whole sample, three convergence clubs were determined by the clustering algorithm. When the analysis was continued, the previously identified club 1 and club 2 merged to form club 1. These results show that there are two convergence clubs among 36 OECD countries in terms of FLFPR. There are 27 countries in Club 1 and 9 in Club 2.

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# 5

# AN EMPIRICAL ANALYSIS OF FRAGILE FIVE IN THE CONTEXT OF THE POLLUTION HAVEN HYPOTHESIS

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## 1. INTRODUCTION

In the world economy, trade and financial integration accelerated with the globalization process and international capital flow barriers started to down. Increased interactions between the countries facilitate movements of goods, services, information and capital by the free-market economy. With the liberalization and expansion of trade, the conclusion of bilateral or multiple trade agreements and international institutions have also contributed to the free movements of investments worldwide.

FDI allows more capital accumulations and improves investing efficiencies and thus, contribute to economic developments. However, there is also a big concern about that rapidly increasing economic development might lead to explorations of natural sources and environmental damages (Kim & Adilov, 2012, p.2597). Liberalization of international trade and capital flows might create good and bad effects on the environment. Breaking down the borders in a global world, polluting industries might move from the countries applying strict environmental policies to the other countries applying loose ones (Bayraktutan & Inmez, 2017, p.307). Multi-national firms having environmental consciousness must obey the environmentally sensitive production procedure in their homeland. But obeying the rules brings extra costs and causes them to turn to the emerging countries

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having fewer or loose environmental obligations to invest (Ay, Kızılkaya & Akar, 2016, p.74). Countries become 'a haven' for dirty industries by ignoring natural sources and environmental regulations to attract foreign investors. This situation is called 'pollution haven hypotheses' in the literature (Ashgari, 2013, p. 92). Pollution haven (or heaven) hypothesis (PHH) is a popular phenomenon and it mentions that developed countries want to transfer their investments to the developing countries having fewer or loose environmental regulations in the form of dirty industries or products (Zheng &Sheng, 2017, p.2).

Beyond the PHH motive for developed countries, developing/emerging countries have also internal motives for FDI. Insufficient domestic savings are a huge problem for rapid growth enthusiasm. Emerging economies do have this problem because of internal saving dynamics. Thus, they do not reach a satisfactory investment level to catch up with higher-income status. At this point, FDI paves the way for this enthusiasm. However, FDI might have side effects and causes financial markets of the host country to open volatility. These volatilities cause some emerging countries to become fragile and be named as 'Fragile Five'. This term coined by financial analyst Stanley (2013) means excess dependency on FDI (Kuepper, 2018, thebalance.com). Being able to attract FDI, legal requirements, institutional necessities and environmental regulations are mitigated for foreign countries. Thus, host countries become financially fragile and also a haven for polluting industries.

The PHH implies a positive relationship between FDI level and carbon emission and also implies that the more FDI inflows result in the more interactions and the more emissions. This is due to the waiving of environmental standards and taxes in order to realize more production at lower cost and attract more foreign investors (Kirkulak et al., 2011, p.82; Blanco, Gonzalez & Ruiz, 2013, pp.104-105). Side effects of foreign investment inflows are not only restricted environmental degradation but also related to fragility mentioned above. The motivation for this paper is to investigate the relationship between FDI level of fragile five countries and environmental distortion in the long-run. Detecting the correct direction of the relationship is critical to both domestic and global economies and environmental quality (Zeren, 2015, p.6443).

This paper focuses on PHH under the fragile five country context. These countries are Brazil, Indonesia, India, Turkey, and South Africa in the first definition. But fragile five countries are imposed to change; Stanley suggested new fragile five as Indonesia, Turkey, South Africa, Colombia and Mexican in 2016 and later, Standard & Poor's gave a new country context for it: Argentina, Turkey, Qatar, Egypt, and Pakistan in 2017 (Eğilmez, 2017, mahfiegilmez.com). But in this paper, the original fragile five is evaluated in the empirical analysis concept. The paper precedes as follows, chapter two shows related literature for PHH. The third chapter and fourth chapters are methodologies and econometric analysis.

## 2. LITERATURE

There are many studies in the literature testing the Pollution Haven Hypothesis. A summary of empirical studies that have accepted the validity of the Pollution Haven Hypothesis or which differ in terms of the regions and unions in which they are applied are shown in the table.

*Table 1: PHH Literature Review*

| Author(s) | Countries | Methodology | Result |
|---|---|---|---|
| Shao et al.(2019) | BRICS and MINT | Panel | NO |
| Akçay and Karasoy (2018) | Turkey | Vector Error Correction Model (VECM) | NO |
| Behera and Dash (2017) | 17 countries in the South and Southeast Asian (SSEA) region | Ordinary Least Squares (OLS) | YES |
| Bakırtaş and Çetin (2017) | MIKTA | Panel | YES |
| Balsolobre-Lorente et al.(2017) | MINT | Panel | YES |
| Zheng and Sheng (2017) | China | Generalized Methods of Moments (GMM) | YES |

| Author(s) | Countries | Methodology | Result |
|---|---|---|---|
| Solarin et al. (2017) | Ghana | ARDL | YES |
| Kılıçarslan and Dumrul (2017) | Turkey | Johansen Co-integration Test | YES |
| Sun et al. (2017) | China | ARDL | YES |
| Yıldırım et al. (2017) | Turkey | ARDL-VECM<br>Granger Causality Test | YES |
| Keho (2016) | ECOWAS Countries | ARDL Bounds Test | MIXED |
| Zhu et al. (2016) | ASEAN-5 | Panel Regression Model | NO |
| Riti et al. (2016) | Nigeria | ARDL Granger Causality | YES |
| Shahbaz et al. (2015) | 99 Countries (High-middle-low income) | Full-Modified OLS (FMOLS) | YES |
| Zeren (2015) | ABD, France, England, Canada | Granger Causality Test | MIXED |
| Atay Polat (2015) | Turkey | Gregory-Hansen Co-integration Test | NO |
| Kivyiro and Arminen (2014) | 6 Sub-Saharan African Countries | ARDL Granger Causality Test | MIXED |
| Ridzuan et al. (2014) | ASEAN 5 | ARDL | MIXED |
| Danladi and Akomolafe (2013) | Nigeria | Granger Causality Test | YES |
| Kim and Adilov (2012) | 164 Countries (Developed and Developing) | OLS Regression | MIXED |
| Honglei et al. (2011) | China | TSLS | NO |
| Yanchun (2010) | China | OLS | YES |
| Pao and Tsai (2010) | BRICS | Panel | YES |
| Acharyya (2009) | India | OLS | YES |
| Merican et al.(2007) | ASEAN 5 | ARDL | MIXED |
| Haisheng et al. (2005) | China | OLS | NO |
| Hoffmann et al. (2005) | 112 countries | Vector Autoregressive (VAR),<br>Panel Data | YES |

As can be seen from Table 1, there are different studies dealing with the relationship between the FDI and the environment within the framework of the pollution haven hypothesis. Some studies indicate that the FDI has an enhancing impact on the environment or that the pollution haven hypothesis is valid. These are as follows; Bakırtaş and Çetin (2017), Zheng and Sheng (2017), Kılıçarslan and Dumrul (2017), Yıldırım, Destek and Özsoy (2017), Balsolobre-Lorente et al.(2017), Solarin et al. (2017), Riti et al. (2016), Shahbaz et al. (2015), Kivyiro and Arminen (2014), Ridzuan et al. (2014), Danladi and Akomolafe (2013), Yanchun (2010), Pao and Tsai (2010), and Acharyya (2009).

On the other hand, the studies which concluded that the FDI has a diminishing effect on the environment or that the pollution haven hypothesis is not valid is expressed as follows; Shao et al.(2019), Akçay and Karasoy (2018), Atay Polat (2015), Honglei et al.(2011 and Haisheng et al. (2005), In some studies, mixed results are observed. These are studies that examine countries under a region or union. These studies are as follows; Keho (2016), Zeren (2015), Ridzuan et al.(2014), Kivyiro and Arminen (2014), Kim and Adilov (2012), Merican et al.(2007).

Some studies investigate fragile five individually or with other countries as time series or panel data. The validity of PHH is searched for Brazil, Indonesia, India, Turkey, and South Africa in the paper of Shao et al. (2019) and it is not supported by those countries. Indonesia and Turkey are included in Bakırtaş and Çetin (2017) and Balsolobre-Lorente et al. (2017); Brazil and India are included in Pao and Tsai (2010), results conclude that PHH is valid for them.

## 3. METHODOLOGY

In this part, the Autoregressive Distributed Lag (ARDL) model bound testing methodology and error correction mechanism (ECM) is explained.

## 3.1 ARDL Bound Testing

Connections among variables are important to make estimation, interpretation and policy suggestions in economic analysis. Especially, the equilibrium notion requires close relations in the long-term (Granger, 1986, p. 213). The presence of long-run relations is closely connected to the integrated series (Johansen, 2009, p.8).

If variables do not diverge from each other in the long-term, short-term related separations like as seasonal factors are not so important for econometric analysis. The co-integration concept means this long-run unbiasedness (Granger, 1986, p. 213). In other words, if variables have a long-term relationship or equilibrium, these are co-integrated. There are various techniques to search co-integrated relations. Some techniques need both dependent and independent variables must be integrated to the same degree. But if stationary levels are not the same, different estimation methods must be used to detect co-integrated relations. Autoregressive distributed lag (ARDL) models bound testing approach could be utilized for this aim.

In an econometric analysis, when the dependent variable can be affected lagged values of explanatory variables, regression analysis is named as distributed-lag models. Furthermore, this dependent variable also might be influenced by its lagged values. At this step, the dependent variable' lagged values are located at the right side of the equation and it is called autoregressive models. Both two models are combined as the ARDL model. And analysis turns from static one to a dynamic model with the lagged values of dependent and explanatory variables (Gujarati & Porter, 2009, p.617).

General ARDL (p,q) model (Pesaran & Shin, 1998);

$$y_t = \alpha_0 + \alpha_1 t + \sum_{i=1}^{p} \varphi_i y_{t\text{-}i} + \beta^{'} x_t + \sum_{i=0}^{q\text{-}1} \beta_i^{*'} \Delta x_{t\text{-}i} + u_t \qquad (1)$$

According to Equation (1), symbols are the respectively dependent variable, constant, trend variable, accumulated lagged values of the dependent variable, actual and accumulated lagged values of explanatory variables and the error term (p.1). Bounds procedure depends on the error correction representation of the ARDL model and tests the existence of a long-run relationship (Kripfganz & Schneider, 2016, p.7). For this aim, co-integration analysis is used and the lag length is substantial to determine integrated connections of variables. The sufficient lag length is identified as $T^{1/3}$ (Enders, 2010, pp. 436-437) and for this analysis is equal approximately 4.

ARDL bound testing for the long-run relationship has three steps. The first step is detecting the existence of co-integration between the variables. The second step is getting OLS equations. And the last step is to check the ability to reach long-run equilibrium (Öztürk & Gülen, 2019, p.223).

The first step requires the determination of suitable lag length for each variable. Pesaran and Shin (1998) suggest the Schwarz Bayesian Criterion (SC) for selecting among the lags (p.3). Two critical values are computed for the assumptions that all variables are I(0) and I(1). The larger value is called the upper bound and the other is the lower bound. After that, F statistics are compared to the lower and upper bound values. The calculated F value must be higher than the upper bound. If the critical value takes place between the bonds, the result is inconclusive. There is no need for a further step to continue analysis (Pesaran, Shin & Smith, 2001, p. 290). Then, the second step is to get long-run OLS equations for each variable with determined lag values.

## 3.2 Adjustment Coefficient (ECM)

After fixing co-integration status and long-run equations, error correction mechanism (ECM) measures the ability to turn to the long-run balance and it is called the adjustment coefficient. Alam and Quazi (2003) suggest $-1 < \text{ECM} < -2$ for this coefficient. In this situation, oscillations might dampen to the equilibrium path and reach the equilibrium finally. But if this coefficient is below -2 or positive sign, the inverse movement is valid for the variables. ECM equation is illustrated Equation (2);

$$\Delta y_t = -\rho y_{t-1} + lagged(\Delta x_t, \Delta y_t) + d(B)u_t \tag{2}$$

According to the (2), $\rho$ is the ECM coefficient related to distance from equilibrium and $y_{t-1}$ is the previous equilibrium. $d(B)$ is a finite polynomial in lag operator B and $u_t$ is a white noise error term. Magnitude and amount of change in $y$ is calculated by taking into account the sign and size of $y_{t-1}$. For stationary series, y series diminishes from one to another period and moves to its mean (Granger, 1986, p.217). Equation 2 is illustrated in detail (Kripfganz & Schneider, 2016, p.9);

$$\Delta y_t = \alpha_0 - \rho(y_{t-1} - \beta' x_{t-1}) + \sum_{i=1}^{\rho-1} \theta_{yi} \Delta y_{t-i} + \sum_{i=1}^{q-1} \beta_i^{*'} \Delta x_{t-i} + u_t \tag{3}$$

Equation (3) demonstrates variables with lags and $\rho$ is the speed of adjustment coefficient; $\rho = 1 - \sum_{j\_=1}^{p} \varphi_i$ and the long-run coefficients are calculated with this formula; $\beta' = \frac{\sum_{j=0}^{q} \beta_j}{\rho}$ .

After the estimation, the stability of coefficients are tested. The stable relationship of time series is a crucial assumption in the regression analysis. For this aim, the cumulated sum of recursive residuals (CUSUM) is used by Brown, Durbin, and Evans (1975). CUSUM quantity is calculated with this formula;

$$W_t = \frac{1}{\hat{\sigma}} \sum_{k+1}^{r} w_j \qquad r = k + 1, \dots, T \tag{3}$$

$\hat{\sigma}$ is for the standard deviation and $w_j$ is the j$^{th}$ error term in the estimation. The significance of the departures from zero-mean $[E(W_t) = 0]$ is tested through values above and below the line $W_r = 0$ (Brown, Durbin, & Evans, p.153). There is one straight line denoting $W_r = 0$, probability lines are symmetrically around that line for negative and positive deviations. And CUSUM line is between the probability lines if coefficients are constant over time. If squares of recursive residuals are taken, it is called CUSUMQ. While the plot presentation of CUSUM reflects instability due to a shift in residuals, but CUSUMQ is related to the instability or volatility of residual variance. These tests also show structural breakpoints without determining specific points (Brown, Durbin, & Evans, 1975, p.159).

## 4. ECONOMETRIC ANALYSIS

FDI net inflows are measured current USD and percentage of GDP; CO2 is metric tons per capita emissions; GDP is per capita income measured as constant USD (2010 base year) and URB is a percentage of urban population to the total. All data are taken from the World Bank data set. Countries are Brazil, India, Indonesia, Turkey and South Africa. The time range is spanning from 1981 to 2016 yearly. At the first stage, descriptive statistics and unit-root tests are run to analyze general outlook. The second stage, bounds testing and long-run coefficients are getting. In the last step, diagnostic tests are run. The main equation that will be estimated;

$$CO2_t = \beta_o + \beta_1 FDI_t + \beta_2 GDP_t + \beta_3 URB_t + u_t \qquad (4)$$

### 4.1 Descriptive Statistics

According to Table 2, CO2, GDP and URB variables are normally distributed and only FDI is not except for Brazil and India. This feature might be sourced from nominal values of FDI.

*Table 2: FDI, CO2, GDP and URB Descriptive Statistics*

**CO2**

| | Brazil | Indonesia | India | Turkey | S. Africa |
|---|---|---|---|---|---|
| Mean | 1.702700 | 1.192614 | 0.944750 | 3.056774 | 8.021646 |
| Median | 1.712845 | 1.151941 | 0.880875 | 3.023934 | 8.036616 |
| Maximum | 2.506556 | 2.079737 | 1.699907 | 4.597650 | 8.876860 |
| Minimum | 1.259476 | 0.495380 | 0.470813 | 1.654382 | 7.179131 |
| Std. dev. | 0.349903 | 0.515402 | 0.359044 | 0.825081 | 0.409151 |
| Jarque-Bera | 3.510836 | 2.606385 | 2.819289 | 1.647091 | 0.895034 |
| (Probability) | 0.172835 | 0.271663 | 0.244230 | 0.438873 | 0.639213 |

| | | | | | |
|---|---|---|---|---|---|
| | | | **FDI** | | |
| Mean | 2.095118 | 0.960228 | 0.897488 | 0.944491 | 0.940084 |
| Median | 1.781307 | 0.966842 | 0.629783 | 0.527398 | 0.478044 |
| Maximum | 5.034129 | 2.916115 | 3.656951 | 3.653480 | 5.978862 |
| Minimum | 0.128665 | -2.757440 | 0.002619 | 0.074581 | -0.654029 |
| Std. dev. | 1.572605 | 1.289639 | 0.917962 | 0.915516 | 1.282391 |
| Jarque-Bera | 3.359882 | 4.096792 | 7.029441 | 12.96559 | 59.81416 |
| (Probability) | 0.186385 | 0.128942 | 0.029756 | 0.001530 | 0.000000 |
| | | | **GDP** | | |
| Mean | 9179.706 | 2313.487 | 859.0692 | 8521.300 | 6382.401 |
| Median | 8698.447 | 2205.289 | 723.1604 | 7923.293 | 6114.445 |
| Maximum | 11915.42 | 3974.732 | 1862.430 | 14117.44 | 7582.553 |
| Minimum | 7226.452 | 1296.577 | 403.8780 | 5111.200 | 5423.588 |
| Std. dev. | 1398.503 | 771.9455 | 426.1579 | 2576.550 | 724.9444 |
| Jarque-Bera | 3.992657 | 2.401347 | 5.008448 | 3.250390 | 3.613718 |
| (Probability) | 0.135833 | 0.300991 | 0.081739 | 0.196873 | 0.164169 |
| | | | **URB** | | |
| Mean | 78.43625 | 39.17517 | 27.75714 | 63.01808 | 56.36453 |
| Median | 80.13850 | 40.19250 | 27.34650 | 63.96300 | 56.17050 |
| Maximum | 86.04200 | 53.98900 | 33.18200 | 74.13400 | 65.34100 |
| Minimum | 66.37000 | 22.81500 | 23.41700 | 45.18900 | 48.59100 |
| Std. dev. | 6.043422 | 9.888109 | 2.853740 | 7.860388 | 5.266818 |
| Jarque-Bera | 3.234795 | 2.746073 | 2.145020 | 2.453251 | 2.337224 |
| (Probability) | 0.198414 | 0.253337 | 0.342149 | 0.293281 | 0.310798 |
| Observations | 36 | 36 | 36 | 36 | 36 |

## 4.2 Unit Root Tests

In econometric models, stationary series can convergence long-term averages. And thus they can obtain an ensemble means, variance, and autocorrelations (Enders, 2010, p.53). We apply the Augmented Dickey-Fuller (1979, 81) unit-root test procedure. ARDL models make it possible to analyze with the hetero stationary levels of the variables. ARDL only necessitates that variables are not integrated at I(2) (Lebe, 2016, p.183). Unit root test results are seen in Table 3 and Table 4 below. When we look at the integration level of variables; they are not I(2). This is the most important criterion for ARDL testing.

**Table 3:** *FDI and CO2 Unit Root Tests*

| Variable | Model | Country | Z(t)-I(0) | Z(t)-I(1) | Variable | Z(t)-I(0) | Z(t)-I(1) |
|---|---|---|---|---|---|---|---|
| **CO2 emission** | A | Brazil | -0.181 | -4.143 *** | **FDI/GDP** | -1.203 | -5.667 *** |
| | B | | -2.413 | -3.963 ** | | -2.372 | -5.610 *** |
| | C | | 1.752 | -3.883 *** | | -0.128 | -5.666 *** |
| | A | Indonesia | -0.484 | -4.813 *** | | -2.239 ** | -4.631*** |
| | B | | -2.530 | -4.736 *** | | -2.225 | -4.556 *** |
| | C | | 2.797 | -3.868 *** | | -1.723 * | -4.715 *** |
| | A | India | 4.268 | -4.228 *** | | -1.437 * | -6.768 *** |
| | B | | 0.330 | -5.685 *** | | -2.984 | -6.663 *** |
| | C | | 11.167 | -1.736 * | | -0.540 | -6.753 *** |
| | A | Turkey | -0.212 | -7.364 *** | | -1.975 ** | -5.320 *** |
| | B | | -3.179 | -7.274 *** | | -2.815 | -5.230*** |
| | C | | 3.235 | -5.419 *** | | -1.051 | -5.377 *** |
| | A | S. Africa | -2.323** | -7.157 *** | | -4.419 *** | -9.218 *** |
| | B | | -2.233 | -7.072 *** | | -5.337 *** | -9.089 *** |
| | C | | -0.173 | -7.253 *** | | -3.218 *** | -9.360 *** |

**Note: A:** *Intercept,* **B:** *Trend +intercept and* **C:** *None. Stars respectively, *; % 10, **; % 5, ***; % 1 significance*

**Table 4:** *GDP per capita and Urbanization Unit Root Tests*

| Variable | Model | Country | Z(t)-I(0) | Z(t)-I(1) | Variable | Z(t)-I(0) | Z(t)-I(1) |
|---|---|---|---|---|---|---|---|
| **GDP per capita** | A | Brazil | -0.388 | -3.678 *** | **Urbanization** | -13.599 *** | -0.829 |
| | B | | -1.797 | -3.526 * | | -0.345 | -1.840 |
| | C | | 1.742 | -3.487 *** | | 11.264 | -2.050 ** |
| | A | Indonesia | 2.185 | -3.905 *** | | -2.787*** | -1.088 |
| | B | | -0.407 | -4.267 ** | | 1.505 | -1.827 |
| | C | | 5.988 | -2.499 ** | | 15.123 | -0.447 |
| | A | India | 10.337 | -1.694 ** | | 10.283 | 0.560 |
| | B | | 2.580 | -4.304 *** | | 3.568 | -1.354 |
| | C | | 16.172 | -0.412 | | 38.084 | 2.061 |
| | A | Turkey | 1.459 | -5.233 *** | | -9.879 *** | -2.351 ** |
| | B | | -0.869 | -5.585 *** | | -9.011 *** | -1.329 |
| | C | | 4.391 | -3.840 *** | | 8.446 | -2.923 *** |
| | A | S. Africa | 0.367 | -3.522 *** | | 3.735 | -3.357 *** |
| | B | | -2.352 | -3.738 ** | | -8.196 *** | -2.636 |
| | C | | 1.026 | -3.450 *** | | 31.248 | 0.554 |

**Note: A:** *Intercept,* **B:** *Trend + intercept and* **C:** *None. Stars respectively, *; % 10, **; % 5, ***; % 1 significance*

## 4.3 Bound Tests and Long-run Coefficients

After unit root tests, the next step is to check whether the long-run relationships exist among the variables. For this analysis, the period has 36 observations and Pesaran et al. (2001)' critical values are not suitable for small sample size. So, the critical values of Narayan (2005) is used to compare (Alper & Alper, 2017, pp.149-50). Table 5 shows the result of long-run relations testing among the variables for the countries.

**Table 5:** *ARDL Equations (CO2, FDI, GDP and URB)*

| Country | Lags | F stat. | Lower Bound | Upper Bound |
|---|---|---|---|---|
| Brazil | 1,4,1,3 | **9.246** | 3.223 | 3.757 |
| Indonesia | 3,3,3,1 | **12.069** | | |
| India | 1,0,0,0 | **7.002** | 3.957 | 4.530 |
| Turkey | 1,1,0,0 | **11.567** | | |
| South Africa | 1,0,0,0 | 2.535 | 5.763 | 6.480 |

** Narayan (2005) critical values for lower and upper bounds; % 10, 5, 1 respectively*

In respect to Table 5, all countries have a long-run relationship except South Africa. Thus this country is excluded from the rest of the analysis. In the next step, long-run equations are constructed and adjustment coefficients are found to investigate the ability to turn to the long-run equilibrium. Long-run equations and adjustment coefficients are represented in Table 6.

**Table 6:** *ARDL Long-run Equations and Adjustment Coefficients*

| Country | FDI | GDP | URB | ECM (-1) | PHH |
|---|---|---|---|---|---|
| Brazil | .0374336<br>(.0307557) | .0003681 ***<br>(.0000618) | .0958016 ***<br>(.0253026) | -.3874581 ***<br>(.1183869) | Invalid |
| Indonesia | .0158301 *<br>(.0090908) | .0001887 ***<br>(.0000412) | .0380328 ***<br>(.0026111) | -1.677427 ***<br>(.2512528) | Valid |
| India | .0236805<br>(.0295947) | .0005961 ***<br>(.0001806) | .0423023<br>(.0295507) | -.266947 **<br>(.1110851) | Invalid |
| Turkey | .0771977 **<br>(.0348796) | .0001737 ***<br>(.0000251) | .0439717 ***<br>(.0104442) | -.864393 ***<br>(.1393536) | Valid |
| South Africa | .0618997<br>(.0759631) | .0007648 ***<br>(.0002194) | -.1055852 ***<br>(.0374389) | -.5798362 ***<br>(.1861094) | Invalid |

*Standard errors are in parentheses*
*Probability values are represented as stars respectively, *; % 10, **; % 5, ***; % 1*

Table 6 shows that under the PHH, Indonesia and Turkey meet the assumptions and FDI inflows have positive effects on CO2 levels. And also this effect is bigger for Turkey than Indonesia. The other two countries do not support the hypothesis and also they do not have any long-run relationship between CO2 and FDI. Furthermore, GDP positively affects CO2 emissions. From the most affected to the least affected countries are India, Brazil, Indonesia, and Turkey in the long run. The URB variable is not statistically important for India. The other three countries' urbanization levels cause to rise CO2 level. The last parameter for the analysis is the ECM coefficient and it is found negative and statistically meaningful. Analyses results confirm that all countries can turn to the long term equilibrium. According to the speed of adjustment coefficients, the fastest country is Indonesia. Brazil, India, and Turkey also reach equilibrium but within a long duration.

## 4.4 Post Estimation Tests and Stability Graphs

After getting long-run coefficients, there are additional analyses to test the validity of the model. In this context, Table 6 illustrates diagnostic tests related heteroscedasticity, autocorrelation and multicollinearity test results;

*Table 7: Diagnostic Test Results*

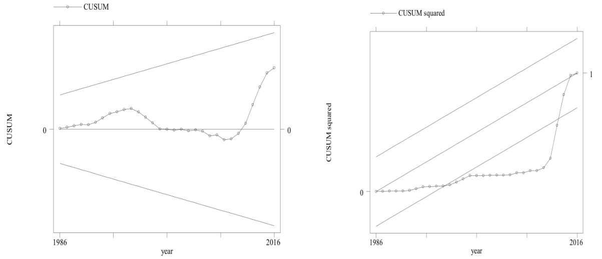
| Country | **Heteroscedasticity**<br>Breusch-Pagan ($\chi^2$) | **Auto-correlation**<br>Durbin-Watson (n/k) | **Multicollinearity**<br>Breusch-Godfrey LM ($\chi^2$) |
|---|---|---|---|
| Brazil | 0.55 (0.4584) | 2.254 (32/13) | 1.295 (0.2552) |
| Indonesia | 0.94 (0.3319) | 1.868 (33/14) | 0.011 (0.9167) |
| India | 4.24 (0.0396) | 2.127 (35/5) | 0.471 (0.4924) |
| Turkey | 3.11 (0.0776) | 2.005 (35/6) | 0.002 (0.9604) |

In Table 7, Breusch-Pagan (also Cook-Weisberg) tests the heteroscedasticity problem for the models. The null hypothesis is constructed as "constant variance." The presence of autocorrelation in error terms is searched with Durbin-Watson statistics. And the last Breusch-Godfrey LM test measures multicollinearity (high order serial correlations) in the explanatory variables. With one degree of freedom (d.f.), Breusch-Pagan test results confirm variance constancy for four countries (3.84146) at 0, 05 significance level but for India, it is statistically valid at 0, 10. Furthermore, LM tests reject the possibility of multicollinearity for all countries with the same d.f.

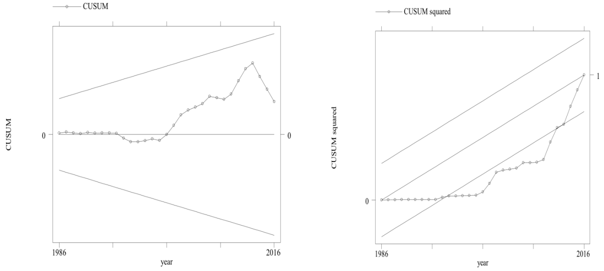
In the last procedure for the post-estimation stage, we look at Durbin-Watson autocorrelation testing. There are lower and upper bounds for autocorrelation. Because of lags in the ARDL model, test statistics might differentiate depending on the related country. For Brazil, test statistics are lower than upper bonds (< 2.625) and it points to an inconclusive result for Brazil. Remaining countries' residuals do not have autocorrelation problems with upper bound limits (Indonesia: 2.692, India: 1.803, Turkey: 1.884 and South Africa: 1.803).

CUSUM and CUSUMQ are recursive residuals and their squares from the model variables. Table 7 shows each graph including a 5 percent confidence band. Graphs also give information about the structural breaks. Fragile five countries stay between the bounds in CUSUM graphs and this is evidence for the stability of the residuals. In the CUSUMQ graphs, countries demonstrate instability for the duration but again turn to a stable position. India and Turkey have shorter instable times than Indonesia. South Africa' data is stable in residuals and square of the residuals but long-run relationship is not confirmed for it before.

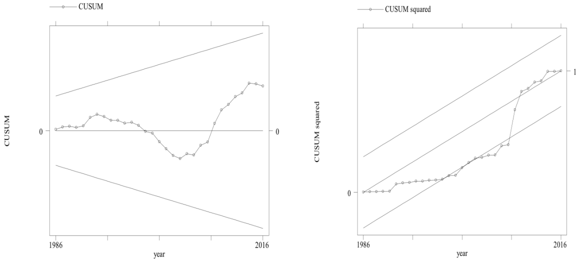
**Table 7:** *Stability Graphs: CUSUM and CUSUMQ*



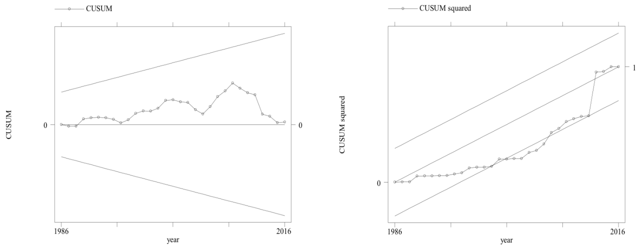
Brazil



Indonesia



India



Turkey

## 5. CONCLUSION

Our study contributes to the PHH literature in several aspects. Although there are many studies on the PHH, the case of Fragile Five has generally been neglected. Our study aims to fill this gap and to test the validity of PHH for these countries. FDI is the polluting factor in the PHH concept and also is the main cause of being financially fragile. Analyzing emerging countries under the different sides of FDI is one contribution to the literature. Furthermore, countries are mostly investigated from the formal unions' perspective around the world. Another contribution brings different country content for the analysis. Empirical findings show that fragile five do not have a common feature about the PHH. Only Indonesia's and Turkey's FDI levels have a positive effect on environmental quality. Brazil and India have a long-run relationship as a whole. But FDI is not statistically important for CO2. South Africa does not have any long-term relations. Indonesia is faster than other countries to turn long-run balance value. For stability tests, there are structural breakpoints for four countries if squares of residuals are taken into consideration. Recursive residuals are stabile all of them. To sum up, emerging countries are classified by different criteria, especially development levels, per capita income, financial indicators and such. Having the same features about the classifying parameters does not mean that all other excluded features also look alike each other. In this paper, the "fragile five" term is tested in this context with the help of the Pollution Haven Hypothesis. If global measurement or evaluating is wanted to make, more detailed analyses might be taken into consideration for more correct results.

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# 6

# THE NEXUS BETWEEN TERRORISM AND TOURISM: GRANGER CAUSALITY TEST APPROACH FOR TURKEY

*Mustafa Emre ERTUĞRUL*[1]

## 1. Introduction

Terrorism is a framework concept including the concept of terrorism as a strategy that adopts the systematic and continuous use of terrorism methods for a political purpose (Gencturk, 2012, pp. 3). It is necessary for a phenomenon to have an ideological purpose so as to be accepted as terrorism. Later, events are carried out within the framework of the identified objectives. The ideologies of the terrorist groups in recent times are geopolitical especially in the Central Asian countries. In other words, it is done terror activities because of geopolitical reasons. In addition, religious, political and sociological reasons can be shown.

In the literature on these topics, Abadie and Gardeazabal (2008) argue that terror attacks within the borders of the country have affected a small part of the capital stock of the country. For this reason, it is argued that terror activities are not damage economy very much. It is considered that the effect of attacks on economy is low, but military and defense expenditures made in background are not considered. Because more military spending than necessary hinders investing of country in other sectors. Similarly, Afonso-Rodríguez (2017) analyzed effect of terrorism on tourism and real GDP and presented the results supporting these findings. In fact, it is analyzed how reacted to real GDP after negative effects to tourism of terror activities in this article. Naturally, terror affects around 10% of real GDP because tourism in Turkey's economy is important.

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Given the above studies, there seems to be a link between terrorism and tourism. For this reason, it is aimed to find out whether or not there is a relationship between terrorism and tourism in the study. The hypothesis has been established in direction inasmuch as decrease tourism of terrorism in Turkey. Defended hypothesis is supported with the increase in terrorism activity occurring in Turkey especially after 1980s.

The contribution of this empirical study is twofold. Firstly, results of this study helps channeling tourism expenditure and investment due to important of share of tourism income within GDP. Second, this study targets at making a contribution to the growing literature by examining the causal effect of terrorist attacks on tourism income in Turkey which is one of the countries that have been most affected by terrorism. Moreover, the study makes a contribution on the methodological aspect because of using Var-Granger Causality Test.

The rest of the article is organized as follows. Section 2 reviews the related literature. Section 3 describes the data and methodology and results from empirical analysis are presented in fourth section. Finally, conclusion is evaluated in fifth section.

## 2. Literature Review

Considering literature, there are many studies on tourism and terrorism. One of them was published by Yaya (2008). Yaya (2008) presented findings that terrorism has damaged tourism in this article. Findings indicate that terrorism is affecting tourism but this effect is minimal. Although the effect is minimal, terrorism activities caused approximately 6 million tourists to decline between 2000 and 2008. Another article on this subject was examined by Feridun (2011). Article which includes between 1986 and 2006 years is analyzed by means of ARDL model. Likewise, empirical results reveals that tourism is relationship with terror in the long run. The evidence acquired from the long term and short term parameter guesses points out the presence of a negative causal impact of terrorism on tourism.

Madanoglu, Olsen and Kwansa (2007) investigated the impact of terrorist bombings on the market values of hospitality and tourism enterprises. In other words, this article analyzed at the impact of the recent terrorist bombings in Istanbul, Madrid and Bali on the market values of traded tourism firms in these countries. The results displayed that markets reacted negatively to these disastrous events, but reaction in Turkey was lighter than in Spain. Bassil, Saleh and Anwar (2017) investigated the effect of domestic and transnational terrorism on tourism demand to Turkey, Israel and Lebanon. It is used seemingly unrelated regression (SUR) model in study and the data is from 1995 to 2007 on monthly. It is found that tourists think Lebanese and Turkish tourism markets as alternative. The findings showed that terror activities effected tourism as expected and Terrorism in Israel influences tourist arrivals to Turkey and Lebanon.

Terrorism is not only a case effecting negative factor in tourism. Besides, terrorism also affects defense spending. The dynamic effects of terrorism and crime in Europe on public order and defense spending have been investigated by Drakos and Konstantinou (2014). The study was analyzed by panel method between 1994-2006. The findings of the study showed that terrors and crime caused a shock and resulted in 0.05% increase in public spending and defense spending when terrorism increase 1%. In addition, it was observed that the response that occurred with terrorism reached peak in the following year. It was also found that public expenditures are ineffective in reducing terrorism. While Danzell and Zidek (2013) analyzed similar subject, they changed location of dependent and independent variable as different from previous article. Accordingly, in a data set covering 34 countries and nine years, the effect of defense spending on terror activities was investigated. In other words, it has been investigated whether spending on counterterrorism will reduce terrorist number in the country or not. The data are designed with cross section time series having temporary boundaries. Finally, the statistical results of Poisson models support the hypothesis that general expenditures among countries in the sample are negative effect to terrorism. In addition, it is shown that the null hypothesis cannot be rejected at 1%, 5% and 10%. Feridun and Shahbaz (2010) analyzed whether or not military measures is effective. In order to analysis this topic was used defense spending and terror data. It was preferred ARDL bound test and Granger-causality analysis for investigation and was used data between 1986-2006 years. Results show that there is a unilateral causality running form terror attacks to defense spending as expected.

Terrorism is not just a phenomenon affecting tourism. Many authors have examined terror from different perspectives. Güre and Elveren (2014) investigated whether there is a causal nexus between separatist terrorism and income inequality in Turkey. Because it is asserted that economic deficiency in southeastern Turkey is the primary reason for the battle continuing for a long time against the Kurdish insurgents. At the end of analysis, the findings show that income inequality is not a main reason of increase of separatist terrorism in Turkey and support the old findings.running form terror attacks to defense spending as expected.

Yıldırım and Ocal (2013) examined the determinants of provincial terrorism in Turkey. it is taken in consideration spatial dimension in this study. This article includes between 1990 and 2016 years. Spatial variations are investigated by means of geographically weighted regression (GWR) to acquire topically different parameter estimates. Analysis results demonstrates that rises in schooling ratio and income prone to decrease the country average level of terrorism. But, an increase of unemployment rises level of terrorism.

## 3. Data and Methodology

The impact of terrorism on tourism has been analyzed in the study. Terror activity which occurred in Turkey between 2002 and 2018 is taken as independent variable. Likewise, tourism income was defined as a dependent variable in the sample period. Moreover, this data is measured in constant prices and US dollars (thousand dollars). While terrorism data are from Global Terrorism Database (see http://www.start.umd.edu/gtd/), tourism data are from TURSAB database (see https://www.tursab.org.tr/istatistikler-icerik/turizm-geliri).

Stationarity tests were performed to current data in this study. Unit root tests developed by Dickey and Fuller (1979) and Philips Perron (1988) were used while looking to stability degree of series. Unit root tests which applied are made as intercept and intercept- trend. The cointegration tests such as Engle-Granger (1987) and Johansen (1988), which are mostly used in the literature, make analysis at the same stability level. If the variables are stable at different levels, analysis is not possible. Therefore the variables must be stationary at the level. This model adapted to study is as follows:

$$lnGTI_t = \sum_{i=1}^{m} a_i \, lnGTI_{t\text{-}i} + \sum_{j=1}^{m} B_j \, lnTOUR_{t\text{-}j} + u_{1t} \tag{1}$$

$$lnTOUR_t = \sum_{i=1}^{m} \lambda_i \, lnTOUR_{t\text{-}i} + \sum_{j=1}^{m} \delta_j \, lnGTI_{t\text{-}j} + u_{2t} \tag{2}$$

where GTı represents Global Terrorism Index while TOUR represents tourism. Moreover, logarithm of data has been taken. In order to analyze the above equation, it is firstly necessary to determine the lag length. Some information criteria are used to determine the appropriate lag length in model. These are the Akaike (AIC), Schwarz (SBC), and Hannan-Quin (HQ) information criteria, respectively. After determining lag length between variables, relationship between variables is examined by granger causality.

This hypothesis adapted to study is as follows:

$$H_0 = \sum_{i=1}^{m} \beta_i = 0 \qquad \textit{there is not the causality} \tag{3}$$

$$H_1 = \sum_{i=1}^{m} \beta_i \neq 0 \qquad \textit{there is the causality} \tag{4}$$

According to results of the test, if critical value is greater than 5%, H0 is rejected, the alternative hypothesis is accepted. Otherwise, the hypothesis cannot be rejected. Thus, whether is not the causality between the variables is tested.

## 4. Empirical Results

The unit root test was first applied to the data in the analysis section. In cases where stability was not achieved at level, the unit root tests were repeated with the first difference of the data. Augmented Dickey-Fuller (ADF, 1979) and Phillips and Perron (PP, 1988) unit root tests were applied to determine the stationary levels of series.

*Table 1: lnGTI Unit Root Test*

| | | ADF | | PP | |
|---|---|---|---|---|---|
| | | t - stat | Prob | t - stat | Prob |
| Level | Intercept | -1,392 | 0,5860 | -1,299 | 0,6297 |
| | Intercept and Trend | -2,162 | 0,5111 | -2,161 | 0,5117 |
| First Difference | Intercept | -4,174 | 0,0007 | -4,241 | 0,0006 |
| | Intercept and Trend | -3,977 | 0,0095 | -4,013 | 0,0084 |

*Table 2: lnTOUR Unit Root Test*

| | | ADF | | PP | |
|---|---|---|---|---|---|
| | | t - stat | Prob | t - stat | Prob |
| Level | Intercept | -2,601 | 0,0928 | -2,913 | 0,0438 |
| | Intercept and Trend | -2,114 | 0,5383 | -2,063 | 0,5666 |
| First Difference | Intercept | -3,407 | 0,0107 | -3,387 | 0,0114 |
| | Intercept and Trend | -3,611 | 0,0289 | -3,627 | 0,0277 |

Table 1 and Table 2 show the unit root test results of Terrorism and Tourism data, respectively. Terrorism data was tested as both intercept and intercept- trend via ADF and PP methods. In both cases, it is emerged that results was not stable in level. Tourism data is tested by same Unit Root Test technique, too. However, it is determined that data are not stable at level. For this reason, the first difference is seen. As a result, lnGTI is I(1) and lnTOUR is I(1).

*Table 3: Lag Order Selection Criteria*

| **Lag** | **AIC** | **SC** | **HQ** |
|---|---|---|---|
| 1 | -1,5423 | -14699 | -1,5879 |
| 2 | -1,6967 | -1,5882 | -1,7651 |
| 3 | -1,8811* | -1,7364* | -1,9723* |
| 4 | -1,7069 | -1,5260 | -1,8209 |
| 5 | -1,6067 | -1,3897 | -1,7435 |

Table 3 shows appropriate lags length of model. While determine lags length, (AIC) Akaike information criterion, (SC) Schwarz information criterion and (HQ) Hannan-Quinn information criterion is used. According to the table, the appropriate lag length is third lag. This result is achieved by using stars next to numbers. Briefly, lag having the greatest number of stars is the appropriate lag length.

*Table 4: Granger Causality Wald Tests*

| **Equation** | **Excluded** | **Chi2** | **Prob.** |
|---|---|---|---|
| lnGTI | lnTOUR | 2,7988 | 0,247 |
| lnTOUR | lnGTI | 6,4045 | 0,041 |

According to table 4, results indicate that there is unidirectional Granger causality from terrorism to Tourism. According to first value, Tourism is not cause of Terrorism, therefore Hypothesis is not rejected. But second value is smaller than %5 critical value. So, hypothesis is rejected and alternative Hypothesis is accepted. As a result, Terrorism is cause of Tourism. Naturally, terrorism in countries such as Turkey always affects tourism and other variables.

## 5. Conclusion

This article dealt with the relationship between terrorism and tourism income in Turkey. For this purpose, 2002-2018 period was examined and annual data were used. ADF and PP unit root tests were used to find stationarity level of logarithmic data and the lag length of data were determined. Then, Var-Granger Causality Test is used as a method of study in article.

Considering the history of Turkey, terror has always been an obstacle in Turkey's development. The most important sector affected is also tourism. It is obligatory to be constrained necessary measures for the development of the country and eliminate terrorism. The result of the study supports this situation.

Considering the analysis was made, unit root tests firstly were applied. Taking difference non-stationary variables, has become stable. Then, the lag length of the model was determined and the model was established.

According to the results, Tourism is not cause of Terrorism. But, Terrorism is cause of Tourism. Because, for many years was terror activity in Turkey's East borders. Even if the period changed, actions of different ethnicities emerged. As a result, Turkey has struggled with terrorism in every period.

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# 7

# THE INTREACTION AMONG CREDIT RISK PREMIUM, TEROR, MACROECONOMIC AND FINANCIAL VARIABLES: EVIDENCE FROM TURKEY

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## INTRODUCTION

Financial markets are one of the institutions that will affect the environment of uncertainty in economic, social and political life in a country. CDS (Credit Default Swaps) premiums are taken into consideration in measuring the credit risk of the country and especially in evaluating the risk perception of international investors. It is of utmost importance that the credit risk of the country is evaluated accurately and appropriately in the decision-making process of international investors to invest in both direct investments and portfolio investments in one country. For example, following the deterioration in economic and financial indicators in the country or an increase in the credit risk of the country following a political instability, leading to an increase in the risk premium, it causes international investors to move in both bond and bills and equity markets and increase liquidity problems in the markets. As a result of the countries credit risk reflecting a country's economic and financial performance and being a significant measure of a country's resilience to economic and financial shocks, it directly affects the resource costs that the country will face in foreign borrowing.

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The difference in CDS premiums reveals the progress in the credit cost of the units in a country. That is, the progress indicates the performance of the real economy. Since there is a solid interaction between the country's credit risk premium and the risk premium and thus financing costs of all real and financial institutions operating in the country, in terms of financial stability, it is crucial to accurately detect the basic dynamics in CDS pricing and the elements leading to changes in CDS premiums.

On the other hand, the uncertainty environment in the economic, social and political life of the country does not affect the financial markets. An important factor that determines the degree to which financial markets are affected by the current situation is uncertainty and terrorism is one of the important factors that create and increase uncertainty.

According to Abadie and Gardeazabal (2005), in terms of international economy, terrorism, causes negative impacts on specific sectors such as decrease in physical and human capital stock, high uncertainty, increase in security expenditures rather than productive sectors, tourism and trade sectors. According to Frey et al. (2007), increased spending on terrorism in the markets to prevent terrorist acts caused an increase in production costs and increased demand for aviation and service sectors and increasing uncertainty level increases the risk premium. Reduction of investments in the markets along with increased risk premium, public expenditures, security measures, military expenditures, etc. increase of employment opportunities, increase in the tendency to save and the increase in capital outflows from the country are encountered. Therefore, the terror events disrupt the financial markets and this leads to an increase in the credit risk premium of the country. However, although there are many studies between CDS and financial and macroeconomic variables in the literature, the existence of a relationship between CDS and terror events has not been investigated.

For this aim, Turkey has attempted to examine the country between the 5-year CDS premiums will lead to changes in the credit risk of macroeconomic and financial variables thought to the relationship between terrorism. Therefore, in the Turkish banking sector, non-performing loans and capital adequacy as well as financial indicators such as BIST 30, growth, unemployment rate, inflation, current account deficit and cointegration between CDS premiums and causality relationship were analyzed by econometric application. In the study, quarterly data for the period of 2008Q2-202018Q2 are included in the analysis. TurkStat, CBRT, Bloomberg and Fredd were used for data collection.

## Literature

When the literature on the evaluation of credit risk is examined; there are many studies to determine credit notes and factors affecting the probability of default, however, there are few studies on the determinants of CDS premiums. Many studies in the literature mainly focus on estimating the probability of default and examining the factors affecting credit risk by using credit ratings (Anton, 2011:44). However; In recent years, due to the rapid development in the CDS market, the analysis of whether the factors affecting the risk premiums are also related to CDS premiums are of interest to the researchers (Cesare ve Guazzarotti, 2010: 6). Thus, the number of studies to examine macroeconomic and financial variables affecting CDS premiums has increased.

In the literature, the factors that affect the credit risk are analyzed and the variables that have the potential to affect CDS premiums are as follows: GDP growth rate, current balance / GDP, export / GDP, imports / GDP, export growth rate, interest rates, risk-free interest rate, debt / GDP, debt / export, reserves / debt, reserves / imports, reserves / GDP, real exchange rate, external debt, government revenues, household debt, GDP, per capita risk appetite, inflation rate, unemployment rate, political stability, default history, volatility in the stock market (Sand, 2012: 19).

In their study in 2009, Tang and Yan have tried to measure the impact of changes in macroeconomic indicators on CDS premiums in the country and found a negative directional relationship between GDP growth and

CDS premiums; at the same time, they pointed out that the CDS premiums decreased when the risk appetite increased and systematic risk was low.

Brandorf and Holmberg (2010), examined the macroeconomic variables that affect the CDS premiums of the PIIGS countries (Portugal, Italy, Ireland, Greece, Spain) that cover the problematic countries within the Eurozone. In this study, the effects of macroeconomic variables on GDP growth rate, inflation rate, unemployment rate and gross debt stock were investigated. While regression analysis was performed for five countries, Germany was included in the analysis for reference. As a result, it is revealed that unemployment rates are one of the macroeconomic variables that have an impact on CDS premiums. In the study; in many cases it is stated that the rising public debt increases the CDS premiums and the results of the effect of the GDP growth rate change from country to country, the inflation rate is the macroeconomic variable with the least effect on CDS premiums.

CDS also in Turkey has made various investigations on. In a study carried out in 2015, Koy investigated the relationship between CDS and Euro-bond premiums in the January 2009-November 2012 period, including the beginning of the European Debt Crisis. In this respect, the relationship between CDS premiums and Euro-bond premiums of eight selected countries was examined by unit root test and Granger causality analysis. The results provide evidence that the CDS premiums in France and Italy lead to bond premiums.

Akkaya, in his study in 2017, examined the internal factors affecting the Turkish bonds' CDS premiums for the January 2008-March 2016 period; gold prices, BIST return index, the ratio of exports to imports has identified causality between Turkey CDS 5-year term of the bonds denominated in US dollars.

In addition, there are many studies examining the impact of literature on terrorist acts on financial markets. Using the working-approach approach, Karolyi and Martell (2005) have investigated the effects of terrorist attacks on the securities market and concluded that terrorist acts in a developed and democratic country affected firms more. In addition, it has been found that the forced abduction of a company manager will have a greater negative impact than any bombing on any building or facilities.

Arin et al. (2008), multivariate GARCH model in their study of acts of terrorism applied on Indonesia, Israel, Spain, Thailand and Turkey securities on stock market fluctuations that have reached the conclusion that create different size in each country. In the study which used daily data between 2002.01 and 2006.12, it was observed that the volatility of the terror index affected the stock returns, they concluded that Spain and England are more resistant to terrorist attacks and that investors in this country are more resistant to terrorist attacks.

Chulia et al. (2007) examined how volatility transfer between US and European stock exchanges is affected by terrorist acts in their work using the multivariate GARCH model. According to their results, 11 September 2001 in New York, the terrorist act caused fluctuation in the European stock market, 11 March 2004 Madrid and 7 July 2005, the terrorist attacks in London did not affect the volatility of the US stock exchange. In another study that examined the relationship between financial markets and terrorist incidents, Chen and Siems (2004) have concluded that, as the period required for the US financial market to return to its former state as a result of a terrorist attack was shorter than 40 days, many financial markets concluded that this period was much longer.

## Methodology

### • Principal Component Analysis

The basic component analysis is the process of explaining the variance-covariance structure through several linear combinations of the original variables. The overall goal is to achieve variable reduction and interpretation as well as to take measures against the rank problem and to remove the linear relationship in the variance-covariance matrix (Johnson and Wichern, 1998: 356 and Tabachnick and Fidel 2007: 25).

Algebraic basic components, X1, X2... Xp; p special linear combinations of random variables. Geometrically, these coordinates represent the new coordinate system obtained by rotating the coordinates of the X1, X2... Xp in the original system. The new apses provide a simpler structure and represent maximum variability. (Johnson and Wichern, 1998: 356).

## • Johansen

The cointegration analysis states that even if the series of variables are not stationary, there may be a static combination of these series and if so, it can be determined (Tarı, 2010: 415).

According to the cointegration analysis, if the two variables, such as $X_t$ and $Y_t$, which are not stationary in I(0), are stationary at any point I(d), the linear combination may be stationary.

$$X_t = b_1 + b_2Y_t + U_t \tag{1}$$

$$U_t = X_t\text{-}b_1\text{-}b_2Y_t \tag{2}$$

In this equation, if the linear composition of $u_t$ is determined as stationary in I (0), it is stated that $X_t$ and $Y_t$ variables are cointegrated (Gujarati, 2009:726). One of the methods used to determine the existence of a long-term relationship between the variables is Johansen (1990) cointegration analysis. This method requires calculation of the vector error correction model used when the variables are cointegrated to obtain likelihood ratio.

## • Hatemi J Causality

Hacker and Hatemi-J (2006) use the Toda-Yamamoto causality test (1995) to determine the causality between the variables in the bootstrap granger causality test but critical values are obtained by simulating bootstrap monte carlo despite the risk of possible normal non-dispersion of errors.

However, the missing aspect of this model is that it cannot distinguish between positive and negative shocks. In this context, the asymmetric causality test developed by Hatemi-J (2012) in the presence of asymmetric information in the financial markets and the heterogeneity of the market participants, the results of this test may be misleading as the participants do not respond to similar positive and negative shocks of the same size. In this context, Hatemi-J asymmetric causality test (2012) Hacker and Hatemi-J (2006) is the decomposed form of the positive and negative shocks of the bootstrap granger causality test. In other words, this method is very suitable for studies using financial time series. In short, if we explain the model (Yılancı, 2013)

$$y_{1t} = y_{1t-1} + \epsilon_{1t} = y_{10} + \sum_{i=1}^{t} \varepsilon_{1i} \tag{3}$$

$$y_{2t} = y_{2t-1} + \epsilon_{2t} = y_{20} + \sum_{i=1}^{t} \varepsilon_{2i} \tag{4}$$

## Results

In this study, as the first method mentioned above, according to the basic components method, the factors affecting CDS were extracted according to the basic components method and the number of important components was determined as 2 according to the Kaiser criterion. The main components are those with a variance greater than 1, as can be seen in Table 1. Factor number is assumed to be as much as the numbers of basic component 2 factors have been obtained. According to the results of the factor analysis (Table 2), the factors are named as follows (Table 2 shows the shipments with an absolute value over 0.30; this is because, after exceeding this value, the uploads showing a correlation can be considered statistically significant, considering the 95% confidence interval.

The first factor is called the open position trend of the banking and financial system. The reason for this nomenclature is that this factor strongly influences the variables (NPL ratio, Currency Cart, CPI, Capital Adequacy) that show the relationship between the financial structure of the banking system and foreign exchange reserves. The increase in the said

NPL ratio, Currency Cart, CPI and the decrease in Capital Adequacy are perceived as an increase in the fragility of the banking system in the economic literature due to the international liquidity problem.

The second factor is called the unsustainability of the current account deficit, as the ratio of the current account deficit completely affects the variables affecting the relationship between economic growth and the currency basket rate.

*Table 1: Principal Components/Correlation*

| Component | Eigenvalue | Difference | Proportion | Cumulative |
|---|---|---|---|---|
| **Comp1** | 3.79706 | 1.96684 | 0.5424 | 0.5424 |
| **Comp2** | 1.83022 | 0.831244 | 0.2615 | 0.8039 |
| **Comp3** | 0.998975 | 0.804097 | 0.1427 | 0.9466 |
| **Comp4** | 0.194878 | 0.090002 | 0.0278 | 0.9744 |
| **Comp5** | 0.104876 | 0.037053 | 0.015 | 0.9894 |
| **Comp6** | 0.0678236 | 0.061655 | 0.0097 | 0.9991 |
| **Comp7** | 0.0061689 | . | 0.0009 | 1 |

*Table: 2 Principal Components (eigenvectors)*

| Variable | Comp1 | Comp2 |
|---|---|---|
| **Non-Performing-Loan Rate** | -0.3754 | - |
| **Capital Adequacy Rate** | -0.4026 | - |
| **Currency Basket** | 0.4383 | 0.2932 |
| **Bist30** | 0.4655 | - |
| **Growth Rate** | - | -0.575 |
| **Consumer Price Index** | 0.4759 | - |
| **Current Account Balance** | - | 0.7087 |

## Cointegration

The first stage of the cointegration test is the unit root tests applied to determine the integrated degrees of the series. Table 3 shows the ADF unit root test results for the batches. Accordingly, CDS, PCA1, PCA2 and Terror variables are first aware of the I(1) level is integrated.

*Table3: Unit Root Test –Levin-Lin-Chu (ADF)*

| | **Levels** | | **First Difference** | |
|---|---|---|---|---|
| **Variables** | Constant | Constant and Trend | Constant | Constant and Trend |
| CDS | -2.713***<br>(0.003) | -2.824***<br>(0.02) | -3.473***<br>(0.00) | -3.047<br>***(0.00) |
| TER | -0.5366<br>(0.2958) | -0.481 (0.31) | -4.2851***<br>(0.00) | -3.23*** (0.00) |
| PCA1 | -1.919<br>(0.192) | -0.160 (0.43) | -4.0412***<br>(0.00) | -2.922***<br>(0.00) |
| PCA2 | 0.6112<br>(0.72) | 0.358 (0.64) | -2.226**<br>(0.01) | -0.862**<br>(0.019) |

*Note: *, ** indicates rejection of the null hypothesis of at 1% and 5%, levels of significance*

When Table 4 is examined, the most appropriate delay length in the model is selected as 2 according to all information criteria. Since the variables were stationary at the same level, Johansen cointegration test was applied to investigate the long-term relationship between them.

*Table:4 Lag Leng Selection Criteria Results*

| **Lag** | **LogL** | **LR** | **FPE** | **AIC** | **SC** | **HQ** |
|---|---|---|---|---|---|---|
| 0 | -528.4252 | NA | 82451942 | 29.57918 | 29.75512 | 29.64059 |
| 1 | -398.767 | 223.299* | 150327.* | 23.26485 | 24.1445* | 23.5719* |
| 2 | -386.7257 | 18.06232 | 194183.2 | 23.48476 | 25.06828 | 24.03745 |
| 3 | -374.1034 | 16.12853 | 257125.3 | 23.67241 | 25.95972 | 24.47074 |
| 4 | -357.9555 | 17.04502 | 308143.2 | 23.66419 | 26.65529 | 24.70817 |
| 5 | -332.7894 | 20.97177 | 262182.1 | 23.15497 | 26.84984 | 24.44458 |

*Table 5:Johansen Cointegration Test Result*

| **Trace** | | | | |
|---|---|---|---|---|
| **Hypothesized** | **Eigenvalue** | **Trace Statistic** | **Critical Value(0.05)** | **Prob.**** |
| **None** * | 0.644591 | 87.76985 | 63.8761 | 0.0001 |
| **At most 1** * | 0.534073 | 47.42492 | 42.91525 | 0.0166 |
| **Eigenvalue** | | | | |
| **Hypothesized** | **Eigenvalue** | **Max-Eigen Statistic** | **Critical Value(0.05)** | **Prob.**** |
| **None** * | 0.644591 | 40.34493 | 32.11832 | 0.004 |
| **At most 1** * | 0.534073 | 29.78532 | 25.82321 | 0.0142 |

When Table 5 is examined, as the result of the Johansen cointegration test, the Trace statistics and Maximum Self Value test values were higher than the critical value; two cointegration vectors were found in the model at the 5% significance level. Therefore, it is possible to say that the Credit Default Swaps Teror Financial Market Risk (PCA1) and Current Risk (PCA2) series affected each other in the long term by looking at the results obtained by the Johansen cointegration test. Finding the cointegration relationship between the variables we have examined shows that the tendency of deviations in the short term can be considered within the framework of vector error correction model.

In practice, the error correction parameter is expected to be statistically significant and negative. According to the test results of the error correction model shown in Table 6, as the error correction factor is -0.91 and the probability value is 0, the error correction mechanism is working and the imbalance occurring in a period can be improved in the next period. Therefore, the long-term relationship in the model established for the relevant period is consistent, indicating that it will be re-equilibrated in the long run if there is a deviation from the balance.

*Tabl:6 Error Corection Model Results*

| **Variable** | **Coefficient** | **Std. Error** | **t-Statistic** | **Prob.** |
|---|---|---|---|---|
| **ECM(-1)** | -0.918977 | 0.169441 | -5.423567 | 0 |
| **D(PCA1)** | -15.40204 | 21.8396 | -0.705234 | 0.4853 |
| **D(PCA2)** | 54.80531 | 9.362435 | 5.853745 | 0 |
| **D(TER)** | 0.027395 | 0.066983 | 0.408987 | 0.685 |
| **C** | -5.074759 | 6.911202 | -0.73428 | 0.4677 |

Finally, the results of the asymmetric causality analysis of Khatemi-j (2012) using the positive and negative shocks of the series are presented in Table 7. As can be seen, the W-stat value of the variables was found to be a causal and true towards PCA1 positive shocks from CDS and Terror to PCA1 at the significance level of 1%. In addition to these, it has been determined that there is a causality towards the CDS negative shocks from terrorist events.

*Table 7 : Hatemi-J Asymmetric Causality Test Results*

| Model | Test Value | 1% | 5% | 10% | Lag |
|---|---|---|---|---|---|
|  | 35.067*** | 9.183 | 4.971 | 3.295 | 2 |
|  | 738.868*** | 142.593 | 55.916 | 30.207 | 2 |
|  | 7.556** | 15.244 | 7.454 | 5.439 | 2 |
|  | 31.347* | 177.852 | 42.117 | 23.99 | 2 |

Note: *, ** indicates rejection of the null hypothesis of at 1% and 5%, levels of significance. And also Table shows only significant results

## Result

The alteration in CDS premiums shows both the real situation and expectations regarding the country's economic performance; therefore, the country is largely taken into account by international investors in assessing credit risk. It is thought that the relationship between macroeconomic and financial variables and CDS premiums for the country will become apparent in periods of high financial stress and fluctuations in credit markets. Therefore, it is possible to make a forecast on the credit risk of the country by looking at the CDSs traded in the market and by analyzing CDS premiums, both investors and policy makers can take appropriate actions.

In the study, the relationship between the Turkey 5-year CDS premiums and the macroeconomic and financial variables that are thought to lead to a change in the country's credit risk and the relationship between the terrorist incidents. Therefore, in the Turkish banking sector, in addition to financial performance such as BIST 30, non-performing loan and capital adequacy, the cointegration, causality among macroeconomic indicators and CDS premiums, such as growth, unemployment, inflation, current account deficit and real exchange rate appreciation, was analyzed with the help of the principal component analysis. In the study, quarterly data for 2008Q2-202018Q2 period are included in the analysis. As a result, we found that there is causality between the variables, where there is cointegration and positive shocks in the financial indicators from CDS to Terror and financial indicators. In addition to these, we found that there is causality from Terror incidents towards CDS negative shocks.

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# SECTION II

# FINANCIAL CRISIS, CORPORATE POLICY, AND CRYPTOCURRENCY

# 8

# THE HISTORICAL ASSESSMENT OF FINANCIAL SCANDALS

*Emine Kaya*[1]

## 1. Introduction

Financial statement users need accurately reported information when evaluating firm performance. The financial statements which are prepared in accordance with generally accepted accounting principles and standards and have a fair appearance are included in the reliable statements (Erkan and Arıcı, 2011). Financial scandals since the 1980s reduce the reliability of the financial statements of large-scale firms (Özkul and Pektekin, 2009). Financial scandals are the use of financial resources in a morally questionable manner which is defined as a widely known situation with serious consequences for third parties. Morally questionable financial behaviour may be realized without scandal but, when it has influence on third parties, this may result in widely known scandals.

Financial scandals and fraud occur more frequently in certain periods. Financial reporting, on the other hand, plays an important role in the emergence of financial scandals and fraud. The financial scandals have three dimensions. The first is the use of financial resources; the latter is questionable ethical behavior; the third is broad public knowledge. Financial scandals have some reasons such as the corporate bankruptcy, the fraud, the accounting and the financial market manipulations (Toms, 2019). Financial scandals prevent financial information contained in the financial statements from being reliable, understandable, comparable and responsive. Creative accounting is at the heart of financial scandals. Creative accounting is the fraudulent financial reporting that occurs with various arrangements made in financial statements (Çıtak, 2009). In addition to creative accounting, fraud plays an important role in the emergence of financial scandals, and fraud originates from the ineffective implementations of corporate governance and internal control (Rezaee, 2005).

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The Sarbanes-Oxley law was enacted to reduce the impact of insecurity in the United States coming form financial scandals, and this law introduced regulations that could prevent public damage to a certain extent. (Özkul and Pektekin, 2009; Birecikli, 2006). This law requires the establishment and effective use of an internal control system in order to ensure the reliability of corporate governance financial reporting and the achievement of the objectives of the firms; in addition, it places significant responsibilities on business management and independent auditors (Alagöz, 2008; Gönen, 2009). Financial scandals reduce the credit rating of firms due to the decrease in capital amounts of firms and increases in borrowing levels. Financial scandals generally arise from errors and fraud in financial reporting and a weak internal control system of the firm (Agrawal and Chadha, 2005). In addition to errors and fraud, the factors which affect the formation of financial institutions are below (Atmaca, 2012):

- Efforts to continue fraudulent financial reporting to maintain this outward trend through pressure on securities and on the firm and fraudulent reporting if it does not meet the expectations of investors
- Distorting financial reports of firms under pressure due to fluctuations in money and capital markets
- Lack of internal and external audit
- Non-compliance with ethical rules by professional members.

The aim of this study is to evaluate the financial scandals from the ancient times to the present, particularly the 21st century scandals. In this context, we examine the causes and brief histories of financial scandals from a theoretical perspective. After presenting financial scandals form a chronological perspective, we include the proportions of financial crimes, financial scandals and faud for United Kingdom and United States because the frequency of financial scandals in these countries are higher than the other countries. We expect our study to contribute to the existing literature by presenting the trend and change of financial scandals over time. The another contribution of this study to the existing literature is the presentation of financial scandals which are dominant in the United Kingdom and United States. Finally, this study provides a chronological order of the finandal scandals and sheds light on the studies which examine financial scandals.

## 2. Overview of Financial Scandals

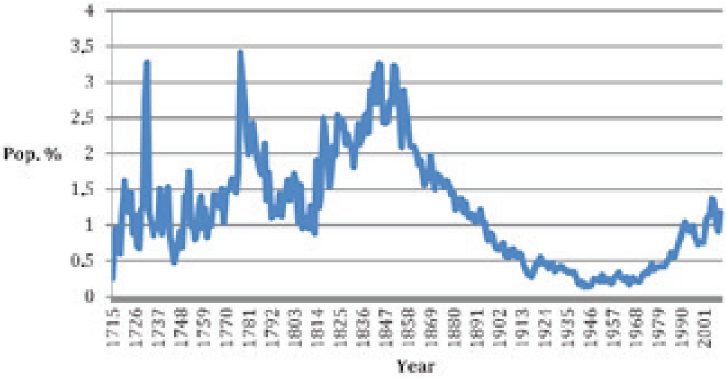
Financial reporting has an important role for financial scandals in the limiting and facilitating oppotunities. It is seen that financial scandals follow the global financial crises. The internationalasation of finance provides the increasing of manipulation, financial scandals. Jones (2011) states that fraud is a result of mismanagement. Gray et al. (2005) also assess the unethical behavior, conflicts of interest, and mismanagement of managers of firms and investment institutions, from the earliest speculative bubbles of the eighteenth century to recent history. Smith (1992) claims that there is a dramatic increasing in the take overs and other corporate transactions when financial scandals are high.

The big South Bubble scandal of 1720 occured an important case for British economy. The scandal had common features with other scandals. Investors had false information, politicians were bribed, and dividends were paid out of capital (Jones 2011). But, fraudsters were subject to severe criminal penalties (Taylor, 2013). The City of Glasgow Bank (CGB) of 1878 scandal was an important for railway and bank scandals. In this year, the rail network rapidly demanded new capital on an big scale, and this was provided from the savings of new investors. In 1845, this scandal broke out with great fraud (Turner et al., 2013). Gray et al. (2005) emphasized that financial scandals were used by corporate leaders to seek arrogance, status seeking or overcoming errors. In the nineteenth century in England, Taylor (2013) examines the increase in fraud. Similarly, Robb (2002) says that fraud is facilitated by limited or almost no regulation.

The Penn Central scandal was important scandal for the United States as turning point. Because, after this scandal, Financial Accounting Standarts Board was establised. So, it was seen that Penn Central an the other scandals of the late 1960s and 1970s marked the necesssitiy of corporate governance, accounting and auditing standarts. Their features are to avoid exchange controls and faciliate speculative investments (Raw, 1977). This capital transfers were made thorugh Bahamas until 1973 (Shaxson, 2012).

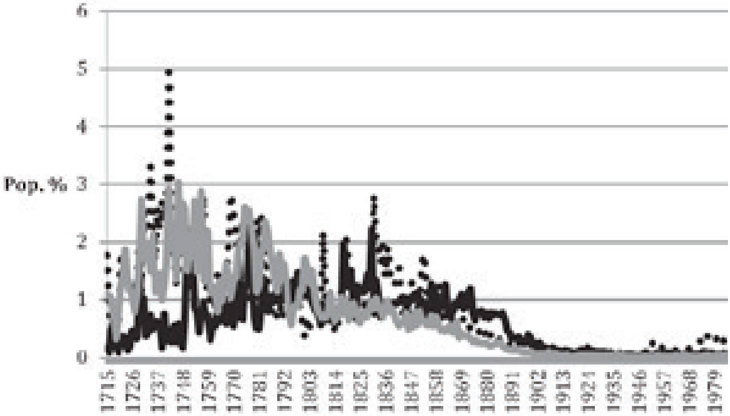
Figure 1 gives an index of United Kingdom for fraud in financial scandals. After the 1860s, frauds were reduced (as shown in Figure 1). Figure 1 shows that the fraud which came with the financial scandal began to fall after the 1850s. In addition, Figure 1 provides information about the fraud declining in United Kingdom in the midd-nineteen century.

*Figure 1. Fraud Index, 1715–2009*



*Resource: Tom (2019)*

*Figure 2. Financial Crimes, 1715–2009*

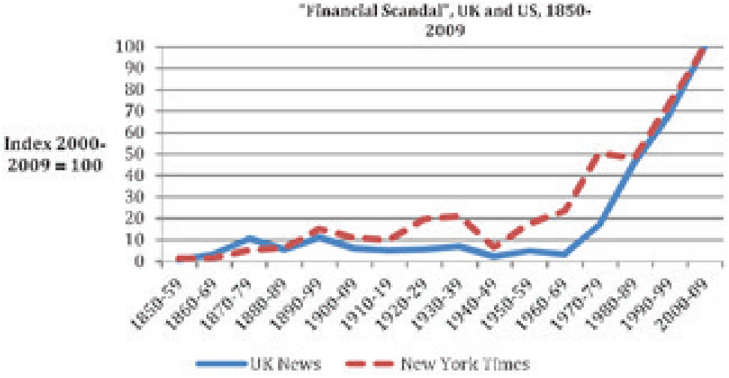


*Resource: Tom (2019)*

In the second half of the nineteenth-century when a financial crime occured, a specific response (Wilson, 2014) and regulation was done by lawyers rather than accountants (Lee et al., 2009). As a result of financial crimes in the nineteenth century (Wilson, 2014), legal arrangements were made in response to financial scandals (Lee et al. 2009). In this case, it is seen that the competent authority usually focuses on business problems in the formation of financial scandals.

There is consensus in the literature that the main causes of financial scandals are inadequate legal regulations and auditing (Toms, 2019). Figure 2 presents financial crimes for 1715–2009 time period for United Kingdom and United States. We can see that financial crimes rise between 1730-1900 due to the railways and banking scandals in the Figure 2, on the other hand, financial crimes decrease after 1900s. Figure 3 shows financial scandals for United Kingdom and United States in 1850–2009 time period. We can say that financial scandals increase in 2000s. Because, there are very big financial scandals after 2000s such as Enron and Worldcom.

*Figure 3. Financial Scandals for United Kingdom and United States, 1850–2009*



*Resource: Tom (2019)*

## 3. From The Historical Process to The Present Financial Scandals

Of all the financial scandals that have taken place from the past to the present, the most interesting and well-known ones are the ancient and middle ages, 17th and 18th centuries and 19th century, 20th century and 21st century scandals.

### 3. 1. Ancient and Medieval Financial Scandals

The earliest known financial scandal of ancient and medieval period is the case in the BC 3rd millennium in which a fraudulent exchange of an accounting account was carried out. This scandal has evidence on the "Cruciform Monument Sip in Sippar, Mesopotamia" (Jones, 2011). On the monument, now in the British Museum, there are records of the temple's renewal costs and high income from the king (Parker, 1991).

Another financial scandal of this period belongs to the British merchant, called the Cely Family, who engaged in wool trade in the late 15th century. In this financial scandal, fraud was made regarding both the weight and price of the bales of wool. The accounts of the firm reviewed by external experts and the experts was not able to determine exactly how the accounts cheated. However, when the spouse of a deceased member of this family was deprived of an income about 3-3.5 years, it was determined that there was a fraud in the records (Parker, 1991).

## 3. 2. 17th and 18th Century Financial Scandals

Balloon-shaped financial scandals with evidence from the 17th and 18th centuries are the South Sea Balloon and the Mississipi Balloon. During the wars between 1689 and 1714, France and England used their privileged firms to restructure their national debt. Although these firms, whose shares were the cause of speculation in 1719 and 1720, were monopoly trading firms, they reduced the state debts converting into stocks. After a certain period of time, these firms caused the formation of balloons (Gray et al., 2007). While South Pacific Balloon is purely a product of fraud, the Mississipi Bubble is the result of a misleading idea-based mistake.

In the South Pacific balloon, securities were used as instruments of currency-like conversion. The South Pacific firm took over the state debt, and the shares of the firm were given to the people who would receive from the state. This situation increased the demand for the stocks of firm. As the demand for South Pacific shares increased, share prices rose considerably. One of the executives sold the shares and the other shareholders sold their shares and there was a panic in the market. As a result, South Pacific stock prices began to fall and the balloon formed.

In the Mississipi Balloon, the issuance of the authority to issue money to Mississipi was effective. When the shares of the firm gained value, the shareholders were paid cash in advance. In 1720, when the shareholders who were trying to sell shares could not sell the shares, a balloon was formed (Gray et al. , 2007).

## 3. 3. 19th Century Financial Scandals

The nineteenth century is a century in which there have been major changes in the financial sector, leading to economic developments. After geographic discoveries, globalization is encountered. In the 19th century, industrial change took place and technology developed. The most obvious example of this situation is the use of coal instead of wind and water energy. In addition, steam energy was used in the transport sector. As a matter of fact, railway and telegraph services were developed. These developing railways had been seen as an investment tool for local investors as well as facilitating transportation. This prepared the ground for the Railway Scandals.

In 1846, George Hudson took over the four railroads in the United Kingdom, imposing suspicious accounting methods in secrecy, imposing different prices on the transport of the same product to different people, and endangering public safety for the sole purpose of making profits. They were accused of fraudulent records and distributing more dividends to their shareholders than the capital. Apart from this scandal, there are two other railway scandals. The first of these; in 1857, Leopold Redpath was found guilty of deceiving the shareholders of the Great North Railway. He did this scandal with fake stocks. The other scandal emerged as a result of the investigation of Northern British Railways Company. It had showed that some of the suspicious incomes created in previous periods and transferred to the capital account. In this sandal, moreover, the operating expenses were low (Jones, 2011).

Another noteworthy scandal of this period was the of City of Glasgow Bank Scandal in 1878. Externally viewed as a well-managed, stable and profitable firm, the profibility of bank rose from 3% to 12% between 1859-1878 year, while the value of its shares rose from 88 euros to 243 euros and had more branches than other Scottish banks. Its net asset value was 12 million euros, and in 1876, 1877 and 1878 years, seven executives were charged with fraudulent balance sheet charges. The following reasons were listed as the reasons for the indictment of the executives. These;

- The amount deposited in the bank is less than 1.006.217 euros
- The amount of the payment order is 973,300 Euro

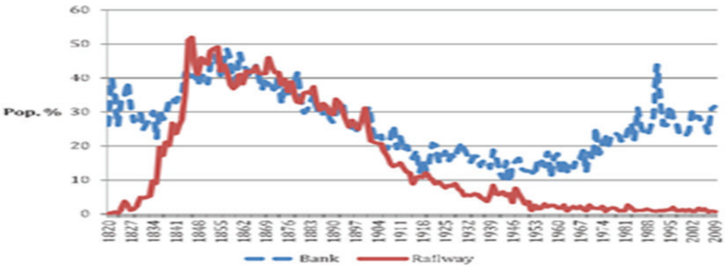
- Advance value is lower than 2.698.539 Euro
- Cash amount exceeding € 29,95
- The government shares and unsecured bonds are higher than € 753,211
- Earnings are higher than € 125,763
- There is no provision for provision of 450.000 euro.

These above frauds continued over the years. To protect the market value of the bank in addition to above frauds, it was made some frauds such as misrepresentation of assets and liabilities, the overvaluation of the assets and other investments, and the purchasing of bank shares with fraudulent accounting entries. Although efforts were made to save the bank in the following years, the bank could not escape bankruptcy. Figure 4 indicates the Bank Railway Fraud Popularity Index for 1820–2009 time period.

When we look at the Figure 4, we can see bank and railways balloons effect on Bank Railway Fraud Popularity Index. Thus, there is a big rising 1850s in the index caused by financial scandal wihich are bank and railways scandals. However, as of 1890, the bank and railway scandals stopped watching parallel trend and followed an opposite trend. Later, the bank and railway scandals were on the rise again.

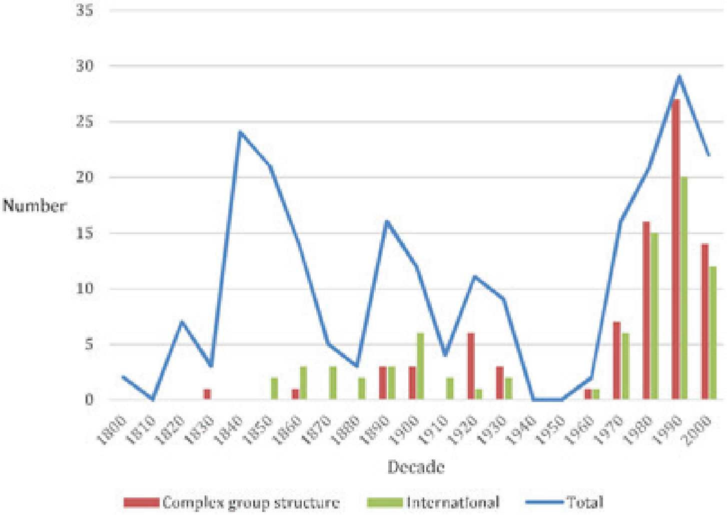
Figure 5 shows corporate financial scandals between 1800–2009 years in United Kingdom. We can see from Figure 5 that corporate financial scandals fluctutate for 2000s and between 1800–2009 years. Especially, in 1850 and 1990 corporate financial scandals are very high. Becaue, in these time periods, regulatory authorities loosened control (Tom, 2019). So, we can see the results of this situation form Figure 5. On the other hand, Figure 5 confirms the trend for big financial turmoil as a group. The fraudsters increased after the 1960s, so they made it necessary to examine the balance sheet and income statement for the beneficiaries.

*Figure 4. Bank Railway Fraud Popularity Index, 1820–2009*



*Resource: Tom (2019)*

*Figure 5. Corporate Financial Scandals, 1800–2009*



*Resource: Tom (2019)*

## 3. 4. 20th Century Financial Scandals

Looking at the scandals at the beginning of the 20th century, the main problems with P&O were the dividends of firms taken from New Zealand and invested in the United Kingdom market. There had been hidden reserves in order to show low asset values. These hidden backups were also a major problem for the Royal Mail Steam Packet Company in the United Kingdom. Hidden reserves were mainly created when the firm used the accounting techniques to reduce the value of its assets (Jones, 2011).

Tablo 1 gives 20th century financial scandals. As can be seen in Table 1 below, financial scandals in the 20th century were the highest in number (13 of them) in the United States. The remaining scandals took place in Australia, 4 in the United Kingdom, 2 in Germany, 2 in New Zealand and 1 in Greece.

The pyramid system was used in Kreuger & Toll financial scandal. In this system, there is a constant need to sell new shares in order to acquire new capital and pay dividends to existing shareholders. The most important feature of these shares was that they were sold to certain individuals in certain amounts and regularly provided high dividend. In addition, the biggest mistake related to the system was that these dividends were paid from capital rather than profit (Flesher and Flesher, 1986). As a result of this system, 250 million dollars worth of assets were not included in the reported assets. A value of three times that amount was wasted and after the death of the owner, the share value decreased from 5 dollars to 5 cents, leading to bankruptcy of the firm.

The Kreuger & Toll financial scandal was the first example of the implementation of the United States Securities Law of 1933 and contributed to the creation of this law. Ivar Kreuger which was the owner of the Kreuger & Toll firm caused to the Kreuger & Toll scandal. It was considered that the Kreuger & Toll scandal was one of the biggest scandals known in history and Ivar Kreuger was seen as a financial genius in the 1920s, also contributed to the development of the American financial reporting system (Flesher and Flesher, 1986).

The McKesson & Robbins scandal, which was the financial scandal faced by audit firms in 1937, revealed that 20% of the assets of firms were fictitious and had false documents (Weil, 2004). In 1963, interest and uncollectible receivables were capitalized in the Reid Murray scandal in Australia. H. G. In the Palmer case, the wrong record of uncollectible receivables was used. In the MiniSec scandal, losses and parallel credit applications and accounting practices of investments were cited as one of the reasons that caused the scandal.

*Table 1. 20th Century Financial Scandals*

| Firm | Country | Year |
|---|---|---|
| P&O | New Zeland | 1917-1936 |
| Charles Ponzi (Ponzi Scheme) | United States | 1920 |
| Royal Mail Steam Packet Company | United Kingdom | 1931 |
| Kreuger & Toll Inc.(The Swedish Match King) | United States | 1932 |
| McKesson & Robbins | United States | 1937 |
| Reid Murray | Australia | 1963 |
| H.G. Palmer | Australia | 1965 |
| Associated Electrical Industries (AEI) | United Kingdom | 1967 |
| Equity Funding Corporation of America | United States | 1973 |
| Minisec | Australia | 1974 |
| Cambridge Credit | Australia | 1974 |
| Lockheed Corporation | United States | 1976 |
| Renouf & Judge Corporations | New Zeland | 1980 |
| Nugan Hand Bank | Australia | 1980 |
| ZZZZ Best | United States | 1986 |
| Barlow Clowes | United States | 1988 |
| Co op AG | Germany | 1988 |
| MiniScribe | United States | 1989 |
| Polly Peck | United Kingdom | 1990 |
| Bank of Credit and Commerce International | United Kingdom | 1991 |
| Bank of Crete | Greece | 1992 |
| Phar-Mor | United States | 1992 |
| Balsam AG | Germany | 1994 |
| Informix Corporation | United States | 1996 |
| Sybase | United States | 1997 |
| Cendant | United States | 1998 |
| Waste Management Inc. | United States | 1999 |

*Resource: Yardımcıoğlu and Ada (2013).*

In the AEI scandal, there were factors such as different accounting principles and creative accounting; in the Renouf and Judge Corporations scandal, the use of creative accounting and accounting information for fraud interest was also striking (Jones, 2011). At the end of the 20th century, in the Waste Management scandal which emerged in the United States in 1999; the founders of the firm had been found guilty of committing financial fraud for more than 5 years. The reason for this scandal was the misrepresentation of financial results between 1992 and 1997 (Yardımcıoğlu and Ada, 2013).

## 3. 5. 21th Century Financial Scandals

Especially in recent years, the attention of the public has focused on emerging issues such as the differentiation of the accounting records of large firms, accounting frauds, mismanagement, bankruptcy and high executive salaries. Most of these events took place in the United States, which was cited as an efficient capital markets, corporate governance rules and accounting systems (Tiscini and Donato, 2006).

The scandals began with the collapse of Enron and Arthur Andersen, and then continued with Worldcom, Kmart, Tyco, Global Crossing, Adelphia. In addition, some of these scandals were thought to be the result of the 2000 crisis, but the excess of poor corporate governance and misrepresented financial reporting revealed failure of the United States corporate governance system. In the United States, more stakeholder-oriented norms apply, and anyone can acquire rights to the business by purchasing shares. In Europe, the situation is different. Firms in Europe traditionally increase their capital through the typical European banking system rather than the securities market, or through retained earnings. The state protects citizens from the ups and downs in stock and bond markets (Tiscini and Donato, 2006). Table 2 presents 21th century financial scandals.

*Table 2. 21th Century Financial Scandals*

| Firm | Country | Year |
|---|---|---|
| Xerox | United States | 2000 |
| Flowtex | Germany | 2000 |
| Enron | United States | 2001 |
| HIH Insurance | Australia | 2001 |
| One. Tel | Australia | 2001 |
| ComRoad | Germany | 2001 |
| Vivendi | France | 2001 |
| Kmart | United States | 2002 |
| Homestore.com | United States | 2002 |
| Global Crossing | United States | 2002 |
| Qwest Communications International Worldcom | United States | 2002 |
| Adelphia Communications | United States | 2002 |
| Halliburton | United States | 2002 |
| Reliant Energy | United States | 2002 |
| Tyco Inc. | Switzerland | 2002 |
| El Paso Corporation | United States | 2002 |
| CMS Energy | United States | 2002 |
| Dynegy Inc. | United States | 2002 |
| Merrill Lynch, | United States | 2002 |
| Salomon, Smith | United States | 2002 |
| Barney, Credit | United States | 2002 |
| Suisse, Goldman | United States | 2002 |
| Sachs, J.P. Morgan | United States | 2002 |
| Peregrine Systems | United States | 2002 |
| Merck & Co. | United States | 2002 |
| AOL Time Warner | United States | 2002 |
| Bristol-Myers Squibb | United States | 2002 |
| Duke Energy | United States | 2002 |
| Mirant | United States | 2002 |

| Firm | Country | Year |
|---|---|---|
| Sunbeam | United States | 2002 |
| Federal Home Loan Mortgage Corporation (Fred die Mac) | United States | 2002 |
| Livent Inc. | Canada | 2002 |
| ImClone | United States | 2002 |
| Nortel Networks | Canada | 2003 |
| Health South | United States | 2003 |
| Parmalat | Italy | 2003 |
| Kanebo | Japonya | 2003 |
| ABB (Asea Brown Boveri) | Switzerland | 2003 |
| Skandia | Switzerland | 2003 |
| SK Global | South Korea | 2003 |
| Fannie Mae | United States | 2004 |
| AIG (American International Group) | United States | 2005 |
| Livedoor | Japan | 2006 |
| Nikko Cordial | Japan | 2006 |
| Lehman Brothers | United States | 2008 |
| Bernard Madoff | United States | 2008 |
| General Motors | United States | 2008 |
| Satyam | India | 2009 |
| Sino-Forest Corporation | China | 2011 |
| Olympus Corporation | Japan | 2011 |
| DHB Industries | United States | 2011 |
| Autonomy Corporation | United States | 2012 |

*Resource: Yardımcıoğlu and Ada (2013).*

Looking at the 21st century scandals in Table 2, it is seen that different investment banks were included in this table. Recent scandals related to banks, particularly those related to mortgages, include direct investment banks. Investment banks had become much more profitable, especially those that had not been complex and made in accordance with regulations.

Banks were able to conclude any agreement at an affordable price anywhere in the world. Rather than focusing on financial and economic reality, analysts and brokers had been encouraged to direct their stocks to investment banking activities with the parent firm without considering their current performance (Giroux, 2008).

Enron and Worldcom were the biggest scandals of United States origin. Although these two scandals are different from each other, they contain great fraud. Enron did a complicated fraud based on complex financial instruments, while Worldcom made uncomplicated transactions (Giroux, 2008).Other scandals that took place in 2002 were relatively large firms. In these scandals, workers lost their jobs and rights, while investors suffered billions of dollars in losses. The resulting crisis has impaired the reliability of financial analysts, leading to the destruction of the top five accounting firms and the image of business managers and supervisors (Comunale et al., 2006). The Enron and Worldcom scandals formed the basis for the preparation of the Sarbanes Oxley Law in 2002 (Giroux, 2008). The purpose of the Sarbanes Oxley Law is to eliminate or minimize financial scandals. However, after the passing of this law, financial scandals were again. In 2003 Health South scandal, and in 2002 and 2004 years Freddie Mac and Fannie Mae scandals in the derivatives markets, and in 2005 the AIG scandal due to a lack of corporate governance and internal audit were examples of scandals that took place (Giroux, 2008). In 2011 and 2012, Sino-Forest (Canada, 2011), Olympus Corporation (Japan, 2011), DHB Industries (United States, 2011) and Autonomy Corporation (United States, 2012) were the few scandals that occurred recently.

## 4. Conclusion

Since 1970s, it was focused to improve accunting and auditing standarts as a responce to financial scandals. Financial scandals have been reduced by the Sarbanes Oxley Law, but financial scandals have not yet been fully prevented. So, in the future, there is the possibility of a new financial scandal again. It appears that financial scandals have continued from the Middle Ages to the present day. This suggests that new regulations are needed to reduce the possibility of financial scandals.

The effects of financial scandals are great. If there is a fraud, financial scandals prevent financial information contained in the financial statements from being reliable, understandable, comparable and responsive. Creative accounting is at the heart of financial scandals. On the other hand, financial scandals may vary depending on the type, the response of regulatory authorities and the magnitude of the impact. In addition, the effects of financial scandals may be increased or decreased relative to the managers, shareholders and intermediaries of the period in which they occur.

This study present a historical overview of financial scandals. In this context, we offer an explanation of financial scandals frequency. When we investigate the literature, we see that financial scandals appear more prevelant in certain times. The main conclusion that we have reached within the scope of our investigations is that financial reporting plays an important role in creating opportunities and facilities for financial scandal and fraud.

It is thought that the financial scandals can be reduced with sufficient care in the audit run and the creation of new regulations. In future studies, financial scandals can be analyzed individually. In this way, it is predicted that examining each financial scandal and its impact individually may be useful for the historical view of financial scandals.

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# 9

# THE FIRST DECADE AFTER THE 2008 CRISIS: DOES NEOLIBERALISM FACING EXTINCTION?

*Mücahit ÇİTİL*[1]

## Introduction

G-20 Finance Ministers and Central Bank Presidents Meeting was held in Argentina in 2018. A declaration consisting of 13 articles about the world economy was published at the end of the meeting. In this paper, the main problems of the world economy were grouped under five headings: financial vulnerabilities, rising geopolitical tensions, global imbalances, inequality and structural modest growth. But these problems have not emerged by chance. All these problems have been created or deepened by the neoliberal policy package.

From the end of the Second World War to the second half of the 1960s, domestic markets for entrepreneurs were protected against international competition. Keeping aggregate alive social and economic opportunities for the wageworker were improved and the state was an active player in the market. The structure which based on Keynesian policies, became unsustainable in the late 1960s and the capital accumulation process was interrupted. So, capital accumulation process slowed down in the late 1960s and inflation and unemployment rates increased during the 1970s. When it was clear that Keynesian policies could not overcome the challenges, the capital accumulated in Western Europe for many years encounter danger of deprecation.

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This shows that, any capital accumulation regime and institutional structures created for the accumulation regime have become dysfunctional over time (Dulupçu, 2003). At this phase, the necessary institutions, norms, social networks and organizational forms must be re-established in addition to the long-term conditions of production, reproduction and consumption (Lipietz, 1987, pp. 32-33). Neoliberalism is exactly the economic policy practices that have emerged to meet these necessities. Therefore, neoliberalism, which began to be seen in the 1970s in South America but received its conceptual expression after the institutionalization process in the 1980s, is not a development embedded in the market. It is a set of consciously formed policies that are based on the problems encountered in the capital accumulation process. (Gambetti, 2009). Just as any other insights, however, neoliberal thought will be sustainable as long as it can provide the capital accumulation.

Neoliberal policies, which we have witnessed today, have received many criticisms from different circles during this period due to their gains and possible consequences. These criticisms reached the peak with the 2008 crisis. Neoliberal thought which applied at different degrees in many countries of the world regardless of government changes from its institutionalization in 1979 to the 2008 crisis, has begun to signal that it has started to lose its features that make it operational and functional in the first decade after 2008 crisis.

The aim of this article is to determine whether the neoliberal approach which has been applied in many parts of the world for almost the last forty years has reached its limits by evaluating the shifts in the important production, finance and trade centers of the world in the 10 years following the 2008 crisis. This assessment is important in terms of showing whether sustainability of the neoliberal thought is possible, as well as enable to predict how economic policies and change the international division of labor. In line with this purpose, first of all, the meaning of neoliberalism, its institutionalization and its development will be explained. Then it will be shown that anti-system, anti-integration and anti-globalization tendencies gain strength which jeopardizing the sustainability of neoliberal thought and query the basic norms and institutions in various parts of the world. Aftermath, increasing real wages will cite as a factor that has the potential to reduce the possibility of capital revaluation in Asia. And finally, it will be shown the shifts in the geography of production, international division of labor, international direct foreign investments, and mergers and acquisitions which may points to a restructuring process.

## The Neoliberalism

The rise in unemployment and inflation forced capitalism to change its operating rules towards the end of the 1970s while the increase in labor productivity, the rate of capital accumulation and the growth in national output slowed down in the main capitalist countries. The fact that Keynesian policies that worked until the mid-1960s did not solve these problems was the reason behind the change in policy preferences and neoliberal thought (Dumenıl & Levy, 2009). Although the world witnessed the first practices of neoliberalism with those in Chile and Argentina as a result of the military coup that broke the power of the unions as early as 1970s, it preferred to remember the transition to neoliberalism in more democratic ways (Harvey, 2005, p. 39).

Neoliberalism which began to be exported to the rest of the world with the respectively appointment of Margaret Thatcher in England in 1979 and Ronald Reagan in 1981 in the United States is the theory of political economy practices that advocate for the well-being of people through the liberalization of the freedom of individual initiative within the institutional structure enabling private property rights, free market and free trade. The state is only responsible for maintaining this institutional structure. For example, the state has to ensure price stability and smooth exchange transactions. It also has to establish military and legal institutions and structures in order to protect private property rights in accordance with the functioning of the market. Moreover, the state is responsible for opening markets where the market is not functioning (i.e. health and education).

Besides, the state should not involve to the market as an entrepreneur. Because of the state does not have sufficient information about estimating price signals insomuch as the market actors and the state interventions may be under the influence of interest groups in government intervention it should be kept to a minimum degree (Harvey, 2005, p. 2).

No country has been dawdled to adopt neoliberal policies since the 1970s. Many states, from the states that emerged after the collapse of the Soviet Union to South Africa and China, adopted different degrees of neoliberal policies. The supra-national institutions such as the IMF and the WB embellished their policies with a neoliberal thought led to institutionalization of neoliberalism at the international level. Countries wishing to increase their welfare levels were given prescriptions appropriate to the neoliberal thought, countries that achieved high growth rates by applying neoliberal thoughts were exemplified for other countries, and developing countries were financed according to their degree of fulfillment of the requirements.

Capital has gained new areas of accumulation through the gradual implementation of neoliberal policies around the world. Production facilities have been moved to places where labor is cheap, areas previously controlled by the public sector have been privatized and financial capital has flowed to places where interest rates are high for a variety of reasons, particularly the external deficit. Governments of countries that have no choice but to implement neoliberal policies, have lifted controls on financial transactions, imports and exports to provide capital to this area of action, focused price stability and teardown the power of trade unions. All of these imply a rise in profit rates (Dumenıl & Levy, 2009).

However, the deregulation of markets, privatization, and the state's transformation of many areas, including social areas, into an area where the private sector can make a profit, point to the limitations of neoliberalism, just as it is in other accumulation regimes. Therefore, the applicability of neoliberalism depends on criteria such as whether the set of neoliberal policies can meet the changing needs of the capital, whether capital finds revaluation areas, whether social commitement is achieved and sustainability of the commitment. Disappearance of these means dysfunctional the neoliberal thought.

## Gaining Strenght Anti System, Integration and Globalization Trends

From the 1980s to the global crisis of 2008, the accumulation regime adopted by capitalism was the neoliberal accumulation regime. All accumulation regimes have a social integrity. The constituents of the society come together to enable the implementation of the policy set that gives the characteristic of the accumulation regime. Conflicts and disputes do not disappear between different segments of society. However, the conflicts and disputes are made manageable by political processes. Therefore, even if a full agreement is not reached, the political basis is established to the implementation of policies. The agents which mediate the establishment of the basis are political parties and organizations. It should not be forgotten that the units affect and shape the views of the society as well as represent the views of the society.

Political parties and organizations legitimated the neoliberalism care of society when the world faced a big wave of globalization especially after 1990. The process of globalization which has developed rapidly with neoliberal policies, would never have progressed without parties, coalitions or presidents who have adopted neoliberal thought. They have fulfilled the function of normalize, apply and explain to society the norms of the accumulation regime based on neoliberal thought. But this has changed dramatically in recent years, especially in the last decade. Liberal-minded politicians or parties either moved away from the governments of the country or attitudinize more nationalist in their policy proposals. This change has been taking place seriously in the world's major production centers, for example in Europe over the last decade, and has destroyed the political and social basis of the neoliberal accumulation regime.

Let's look at Europe first. All over Europe, nationalitarian and right-wing extremist parties have achieved significant success in the elections. In many countries, these parties have either won the elections or become the strongest opponent position (Europe and Right-Wing Nationalism: A Country-by-Country Guide, 2019). The right-wing extremist and anti-EU "Alternative for Germany" was established in 2012, but managed to enter the federal parliament in 2017. Alternative Party had more concrete arguments in the political sphere after Angela Merkel's decision to stretch the borders.[2]

A similar situation exists in Austria. The Austrian Liberation Party (FPÖ), which received 20% of the vote in 2013 and 26% of the vote in 2017, is a coalition partner with the right-wing Austrian People's Party (ÖVP), chaired by Sebastian Kurz. Sweden is another European country where the right is rising. The Swedish Democrats of the Neo-Nazi party managed to increase their votes in the 2014 elections from 12.9% to 17.6% in the 2018 elections. Although the Social Democrats Party was the first party with 28.3% in the last elections, there are two strong right-wing parties in the opposition. The Center Right party finished the elections with 19.84% of the vote. With the right-wing extremist Swedish Democrats, the vote of the right parties is about 37.5% (Sweden's General Election Results in Stalemate as Far-Right Support Surges, 2018).

The situation in France, another strong European country, is not much different. The rise of the Front National (founded in 1972) is an example. Although Marine Le Pen, the candidate of the Front National in the 2017 elections, finished second behind Emmanuel Macron, the difference was very small. The Front National urged France to leave the EU (Frexit), convert from the Euro to Frank as a currency, stop immigration, close the borders and draw apart of NATO and establish closer ties with Russian President Vladimir Putin and US President Donald Trump (Populism in France: Towards Normalisation?, 2017).

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[2] More than 1 million refugees entered the country in 2015 after the decision.

Although the political alliance of Silvio Berlusconi's Forza Italia, Northern League and Fratelli d'Italia's won elections (with 37%) in the last elections right-wing extremist Five Star Movement won 32.2% of all votes. And showed that Italy is one of the places where right the strongest. The Freedom and Direct Democracy Party, which entered the parliament with 10.6% of the votes in Czech Republic in the 2017 elections, the anti-globalization Live Wall party, which managed to enter parliament in Croatia, the Freedom Party, founded under the leadership of Geert Wilders, who left the People's Freedom and Democracy Party (DVV) in the Netherlands and won 13.1% of the vote in the 2017 elections are other examples.

As a result of the national elections reflected in the European Parliament. The share of Populist and Right Nationalists in the European Parliament changed compared to previous years In 2019. Populists previously had 41 seats in parliament, but this number increased to 54 in 2019. Similar change is also seen in the Right Nationalist chairs. The number of chairs, which was 37 before, increased to 54 in 2019 (European Election 2019: Results in Maps and Charts, 2019).The common feature of all these examples is that they are anti-system, anti-integration and globalization although sometimes anti-Islamic, anti-immigrant and racist.

Another important region is the Americas. Even if they have different reasons, what is happening on the American political agenda is no different from what is happening in Europe as a result. There has been a major break in American political history eight years after the 2008 crisis. The stability of American capitalism has been guaranteed by the Republicans and Democrats for many years. However, there was a big break in the 2016 elections and the reason behind that was the demand for change in society.

The demand for change also existed when Obama was elected. Although Obama built his campaign on change, the American community put forward the demands for change that didn't take place during the Obama period by voting Donald Trump in the 2016 elections. Although Trump was not characteristic of the rising right and nationalists in Europe, it reflected the anger of the working class and the thoughts of people who were not satisfied with the current conditions and the system. Even though he is from the business world like his rival Hillary Clinton, the most important feature that distinguishes him from his rival is that give confidence about to realize the demand for change those who dissatisfied with the existing system (both the oppressed business and the working class in the face of competition from Asia-Pacific). Indeed, America has had problems with all trade partners from Asia to Europe during the presidency of Donald Trump.

Unlike the European countries and the United States, the proponent of change is the left-wingers in other parts of the continent, especially in Latin American countries. Kirchner's electoral defeat in Argentina, the defeat of PSUV in the National Assembly elections in Venezuela, the defeat of Evo Morales in the referendum in Bolivia, and the dismissal of Dilma in Brazil led to unrest and broad-based protests in Latin American countries. Michel Miguel Elias Temer, who substituted Dilma Rousseff and Mauricio Macri, who substituted Cristina Fernández de Kirchner, stated that the protests were not against the results of the protests but against the open policies of the right wing (World perspectives: 2018 – A Year of Capitalist Crisis, 2018).

The anti-liberal tendencies in the political tendencies of society in Europe and other parts of the world have the potential to abolish the social commitment that allows the functioning of the neoliberal accumulation regime. The fact that nationalists and right-wing extremist began to take part in the political processes of some parts of the world, especially in Europe where is an important production center, poses a great threat to neoliberal thought. It is no longer possible to manage smoothly the conflicts and disputes which occurs between different parts of society through political processes. The implementation of these processes, which shape economic policies with the supporters of anti-system, anti-integration and anti-globalization ideas, points to the preparation process of the political basis of radical structural changes in the world economy in the coming years.

## Upward Trend of Wages in Asia

Revaluation problem of capital has been main driver direct the world to neoliberal policy sets. This process, which is conceptualized as the "Profit Crisis" first emerged in the world's leading economies. Come to the limits of profit opportunities has started the process of depreciation of the accumulated capital in leading economies. Ernest Mandel evaluated the depreciation process of capital with the decrease in profit rates as follows (Mandel, 1998, pp. 108-109):

*Capital accumulation accelerates during the expansion periods. But this continues to a certain point. There is no problem as the accumulated capital finds revaluation opportunities. When revaluation challenges arise for capital, the process is interrupted. Capital enters a process of devaluation. The most obvious sign of this is the decrease in profit rates.*

It should be remembered that capitalism is a system of commodity production and that the center of this system is the private ownership of capital and the relation of wage labor (Ardalan, 2019, p. 71). Raising profit rates for the continuation of the capital accumulation process become the main problem. The capital that maintains the productivity of labor at high levels continues to accumulate, while low-productivity capital segments are withdrawn from production. It is inevitable that this process, which is called the deprecation of capital in the Marxist literature, pushes capital to search new opportunities.

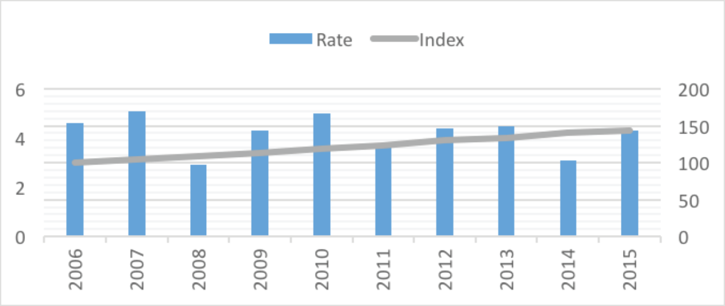
First, the problem of revaluation has overshadowed the market problem to some extent over the last 35-40 years. In other words, because of Europe and especially Western Europe remained an important market with its high purchasing power, the problem of deprecation for capital was more important than where the products were sold. Thus, the world has condemned all approaches that hinder capital and trade flows since the early 1980s.

It is not difficult to predict how capital compensates for profit decreases. Moseley lists these methods as raise product prices, slow down wage increases and sometimes go to wage cuts, increase labor intensity which means that workers work harder. Moseley adds the shift of production to regions where wages are cheaper as well as these methods (Moseley, 2006). The cheaper regions are Southeast Asia, Mexico, Brazil and Eastern Europe after the collapse of the Soviets (Fröbel, Heinrich, & Kyere, 1982, p. 19). This choice shows why wage increases in Asia are important to assess the limits of neoliberalism.

One of the aims of neoliberal policies have facilitated the flow of capital which accumulated in western countries and facing the danger of deprecation to geographies where it could find revaluation. The determinant of the movement in the form of direct foreign investment (productive capital) has been the cost of labor while the determinant of movements in the form of money (financial capital) has been interest rates. The wage rises in Asia where major part of world output has produced, has emerged as one of the factors that make it difficult to get out of the crisis of capital. This means a lower rate of profit and investment opportunity for the investments made by the capital which looking for revaluation areas.

UNCTAD's report published in 2017 shows that wage increases in developing countries have been one of the most important reasons behind attracting multinational companies' investments (UNCTAD, 2017, pp. 27-28). Wage increases were well above the world average in Asian countries in the last 10 years. According to ILO data, wages in Asia between 2006 and 2015 grew by an average of 4.2% per year and increased by 44% in the nine-year period. The graph below shows the change clearly.

*Graphic 1: Real Growth of Wage in Asia (2006-2015)*



**Source:** *International Labour Organization*

As can be seen from the graph above, real wages increased steadily between 2006 and 2015 in Asia. This increase continued even in 2008, when the outbroke of global crisis. Productivity increases slowed down as trade risks began to increase in this region, where economies were based heavily on exports. The rate of increase in real wages have decelerated after 2016. However, according to the ILO's latest report, real wages in this region have grown above the world average even though they have tended to decline in 2017 and 2018 (Asia-Pacific Wage Growth Stalls But Stays Ahead of The Rest of The World, 2018).

This development eliminates the need for neoliberal thought that advocate contagion, freedom of movement, competitive world is best for everyone on behalf of capital which looking for profitable investment areas to solve the problem of depreciation.

## The Trend of Change in the Geography of Production

This chapter is important in two aspects. The first signifies that the neoliberal accumulation regime has reached its limits. So, it is a result. The second, this section shows that the international division of labor which has been shaped for 35-40 years by the neoliberal policies have been reconstructed.

The geography of production has changed considerably since the Second World War. Half of the world's production was produced by the US alone in the 1950s. So, it was the production center of the world. But this picture has changed over time. Europe recovered and became one of the world's most important production centers. On the other hand, with its amazing performance, Asia has become an important geography for the production of world. Today, the US is an economy that produces only 20% of world production. 80% of the total production is producing in other parts of the world. This development has been realized mainly as a result of the reshaping of production sites mainly by means of foreign direct investments along with the recovery of the economies.

Especially after the 1990s, the wave of liberalization which allowed foreign investments to spread all over the world adopted throughout the world. This change affected the geography of production significantly. It is true that production is concentrated in certain places such as USA, EU and Asia. But these regions, especially the EU and Asia, are broad where including many countries. The activity that extends production towards these regions is foreign direct investments and mergers and acquisitions (FDİ and M&A). However, the investments observed after the 2008 crisis have some characteristics that there were not in previous periods. And these features clear up about the future of the capitalist world economy.

When compared to national income and official development financial support, direct investments and portfolio investments, remains the largest and most important source of external financing for developing economies. Many countries have introduced policies to attract foreign direct investment. For instance, 65 countries and economies took at least 126 investment policy measures, of which 84 percent was suitable for investors in 2017. Conditions of access to a number of sectors, including transport, energy and production, has liberalized (UNCTAD, 2018).

However, it has been observed that source of financing (FDI and M&A) has been mostly negative growth in all developing regions in the last decade. FDIs have increased in advanced economies while have remained weak in macroeconomically weak economies. The share of developed economies has increased to 59 percent in global FDIs inflows and FDIs from developed countries to other regions have remained weak. The outflow of investment from emerging economies have declined despite China which the world's second largest investment country.

*Table 1: Average FDI by Groups of Countries (%)*

| Groups of Countries | 1990-2008 | 2009-2018 |
|---|---|---|
| Developing Countries | 17,97 | 3,00 |
| Developing Countries in Asia | 26,86 | 3,72 |
| Developed Countries | 14,81 | 1,66 |
| Developed Countries in Europe | 16,77 | 3,96 |

**Source:** *https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx*

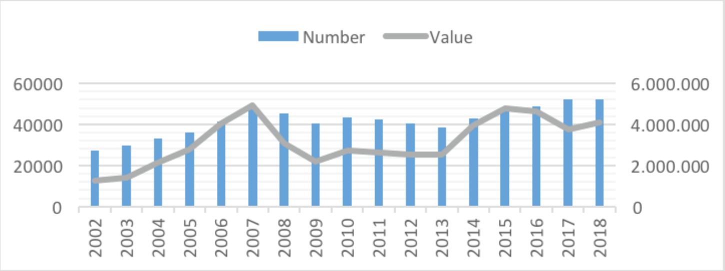
Table 1 shows the change in increase rate of foreign direct investments which have potential to change the geography of production in the last 30 years. Developing countries have become the most important destination of FDIs after the 1990s with the effect of neoliberal policies. The driving forces behind these capital movements can be count as the profitable investment areas based upon cheap labor, natural resources and privatization in developing country. FDIs increased by 18% in value each year in developing countries between 1990 and 2008. As for developing countries in Asia, this rate reached 27%. On the other hand, the increase rate of FDIs was approximately 15% in all developed countries and was 16.7% in developed European countries in the same period.

It has seen that developed countries are not as successful in attracting foreign direct investments as developing countries in the period. The comparison would be more striking when we compare Asian and European countries which are important production centers. The developing countries of Asia have attracted more investment than the developed countries of Europe despite the crisis in 1997. This has provided Asia to increase its share in world production. At the same time, it has become the production center of multinational companies. In the other word, the production has shifted relatively rapidly from west to east for about 20 years.

The changes have observed in foreign direct investments point out that the geography of production has started to change again for the first decade after the crisis. FDIs to Asia's emerging economies decreased from 27% to 3.7% on average from 2009 to 2018. This corresponds to a decrease of approximately 89% in the increase rate. In other words, the capital flows to Asian countries came to a halt compared to the previous period. However, the developed countries in Europe have attracted foreign direct investment, albeit slightly faster than Asia's emerging economies for the first decade after the crisis. But the developed European countries achieved 4% average increase despite increase rate growth decreased 76% (16.7 to 3.96) in this period.

A similar picture observed about the other variable which affecting the geography of production. Mergers and acquisitions have a significant impact on the geography of production. Because production forces such as capital, personnel knowledge and experience, especially technology, can transferred to the host country by this way and may affect production processes and output levels (Vander Vennet, 1996).

*Graphic 2: Merger and Acquisition Worldwide, Billion $ (2002-2018)*

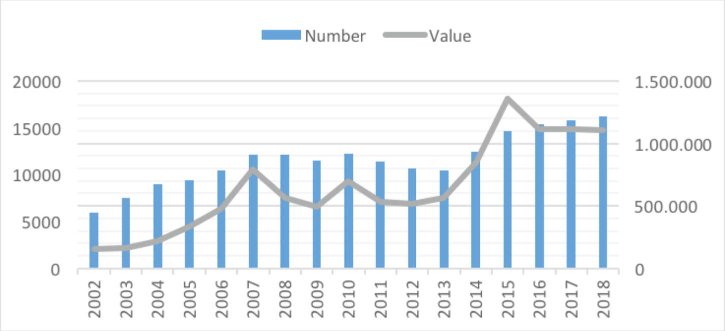


**Source:** *https://imaa-institute.org/mergers-and-acquisitions-statistics/*

Graph 2 shows that mergers and acquisitions were at high levels until the crisis. It would mistake if one could expect mergers and acquisitions affected adversely by the crisis. Because the crisis periods are also periods in which assets depreciate and purchases would profitable. Therefore, although decrease in value was observed the number of mergers and acquisitions did not decrease much in the first years of the crisis. However, the process of depreciation ended by the end of 2013 and the merger and acquisition activities tended to increase as no further depreciation was expected.

Asia-Pacific is one of the areas where foreign direct investments and mergers and acquisitions have most frequently observed. With significant productivity advantages Asian countries became a relief area for capital which looked for revaluation in the first years of the crisis. However, Asia has become disadvantage due to rising wage levels, increasing financial instability and recent radical developments in world trade. Asia is production center but not a consumer market. And it is far from the consumer markets.[3]

*Graphic 3: Merger and Acquisition Asia-Pacific, Billion $,(2002-2018)*



**Source:** *https://imaa-institute.org/mergers-and-acquisitions-statistics/*

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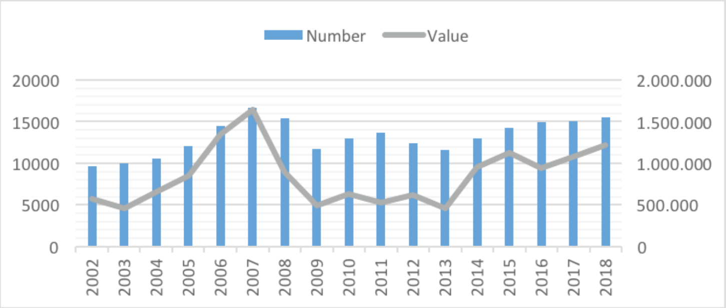
[3] In order to eliminate this disadvantage, many East Asian countries, especially China, have made transportation investments. The largest and most comprehensive of these is China's Belt and Road Project.

This has affected the direction of merger and acquisition decisions. Graphic 3 and 4 show that mergers and acquisitions have entered an upward trend in Western Europe while the slowdown in Asia-Pacific. This change shows that tendency of geographically change of production. The growth rate of M&A decreased to 13% for the first 10 years after the crisis despite increased by 29% on average per year in Asia-Pacific before the crisis. On the other hand, pre-crisis M&A increased by an average of 16% per year in Western Europe. But Western Europe outperformed Asia-Pacific's in the first decade after the crisis.

*Graphic 4 : Merger and Acquisition Western Europe, Billion $ (2002-2018)*



**Source:** *https://imaa-institute.org/mergers-and-acquisitions-statistics/*

It can be seen that the movements of FDIs and M&As which observed from west to east under favuor of neoliberal policies first stopped and then tended to reverse. The conclusion is very important. Because it shows that the developments which belonging to the neoliberal period may have reached its limits. The most important feature of the neoliberal period was that the market problem (consumer markets) was pushed behind the revaluation problem. However, with barriers experienced in recent years, the graphics show that the market problem has started to overcome the production problem again. And this indicates that the geography of production may be reshaped.

## Conclusion

Neoliberal policies will be feasible to the extent that they support the process of capital accumulation. And the process of capital accumulation based on neoliberal policies will end just like its predecessors. The aim of this article is to look for traces of the conditions for abandoning the neoliberal thought that has been discussed for many years in the developments observed in the first decade after the 2008 crisis. This effort will to identify how far the end of the capital accumulation process based on neoliberal policies, as well as help to predict where the process of capital accumulation based on neoliberal policies may evolve.

It has seen that the capital accumulation process based on neoliberal policies can not sustainable with some developments observed in the first decade after the 2008 crisis. First of all, the basic values and norms of the neoliberal have been eroded by the anti-system, anti-integration and anti-globalization movements rising from the important centers of the world. Even if they could not come to the governments, the demands of change from different part of the society (including the capitalist) were expressed by the emergence of the right-wing extremist, nationalist and protectionist parties, organizations and presidents. These anti-neoliberal movements have been supported by both the capitalist and other parts of society just like election of Donald Trump.

On the other hand, the neoliberal thought was instrumental in facilitating the flow of capital to where it could do more profitable. These destinations often were there where labor cheaper. The featured region was the Asian region, which produces 36% of the world's GDP. However, the real wages in this region have increased by 50% in the last 10 years although it has tended to slow down in the last 2 years. This means less profit for capital. But more importantly, this is a development that reduces the need for neoliberal thought, which makes it easier for capital to move easily across national borders.

Finally, the importance of foreign direct investment has occupied the world's agenda for nearly the last 35-40 years. In other words, the question of where to produce have been in front of the question of where the products would be sold. This is because neoliberal policies have facilitated the circulation of both capital and commodities. Thus, access to markets was no longer a problem with neoliberal thought. So, was the most important question was "where is the most profitable way of production?". That is, where capital would flow to revaluate. Each answer to this question has determined geography of production. The geography of production shifted from the west to the east with the neoliberal thought. But the situation has reversed when we looked at the direction of foreign direct investments and mergers and acquisitions in the first decade after the crisis. Although Asia became the most important destination for FDIs and M&As, the movements have slowed down in the last years. FDIs and M&As have started to turn towards the west where maintains its position as the most important consumer market due to its high purchasing power. This is development that has undermined the neoliberal understanding as it contradicts the neoliberal thought that differentiates national markets.

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## 10

# IS REGULATION A DISEASE OR A DRUG? WHAT DID WE LEARN FROM 2008 GLOBAL CRISIS?

*Özlem ÖZTÜRK ÇETENAK*[1]

## 1. Introduction

Since the birth of economics, the debate about the role of the state in the economy has never lost its importance and various theories have been developed in this regard. Even in Adam Smith's "invisible hand" mechanism, the state exists in the economy in termes of providing basic services. There is a consensus in the theory that the state should play a role in the economic scene but disagreement arises when and how the state should step in.

The Great Depression, which began in the United States in 1929, had effects all over the world. All countries except the Soviet Union were negatively affected by the crisis, international production and trade contracted significantly, and unemployment reached serious levels. The dominant paradigm of the neoclassical doctrine that the economy will repair itself was insufficient to overcome the crisis thus the search for a new approach to explaining economic life began. The Keynesian approach, which emerged in this crisis with the help of advanced macroeconomic analysis tools, eliminated the Neoclassical approach with its teachings and the necessity of state intervention in the markets and opened a door for state-based Welfare economics studies. The debates started in the "Welfare States" scope in developed economies and have progressed in the "Development Economics" scope in the less developed countries. As a result, studies conducted from both branches have brought the discussions about the role of the state in the economy again.

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After the Second World War, the Keynesian approach became dominant paradigm until the oil crisis 1970s. High inflation problems and the contraction in the economies at 1970s due to the oil crisis caused the voices against the Keynesian Theory to rise. For this reason, since the mid-1970s, Neo-Liberal discourses have started to rise again.

Free market discourses that gained momentum in the 1980s have once again influenced the world and a rapid deregulation process has begun. However, in 2007, the crisis emerged in the US financial system and expand rapidly through European countries first and then other countries, made it compulsory for the state to intervene in economy especially in the financial markets. The crisis has directed attention to over-deregulated financial markets and the debate on the regulation of financial markets has again flared up.

## 2. Theoretical Discussions on Public Intervention

The market system has always been the subject of discussions since economics took its place in the science world. The topic first came to the fore with Adam Smith's book "Wealth of Nations" and since then the weaknesses and strengths of the market system have been the focus of economic discussions for nearly 250 years. The question of whether economic rules should be determined by market conditions or by public authority has been one of the most debated economic problems since the 18th century.

Although the debate on the state's field of intervention continues, the role of the state in the economic order has expanded during the twentieth century. In the past, the duties of the state in the form of defending, making laws and maintaining social order were added to the provision of education and health services, social security and macroeconomic management. With this change, economic policies have started to be implemented in order to ensure justice in income distribution and fight against poverty.

Essentially, all discussions about market economy are based on Adam Smith's "An Inquiry into the Nature and Causes of the Wealth of Nations" (1776) book. Adam Smith's book, also known as the founder of economic science, is based on the idea that the conditions of market economy are valid in the economic field. However, among the economists who came after him, how Smith determined the foundations of the system that he envisaged frequently discussed. The question at the center of these debates was the role of the state in the Smith's economic system. Adam Smith did not believe that the principle of "laissez faire" was good or bad in all conditions. However, he believed that defense, justice and education services were the services that the state had to provide (Viner, 1927, p. 222).

On the other hand, J. Stuart Mill defines everything that promotes general happiness as the duty of the state. Similar to J. S. Mill, many representatives of the Neoclassical school, such as Alfred Marshall and Arthur C. Pigou, criticized the arguments of classical liberalism and argued that the state should intervene in the economy to ensure social prosperity (Ölmezoğulları, 1998, p. 64).

However, there are also theorists, such as representatives of the Austrian school of economics, who see the monopoly profit as an incentive for entrepreneurial activity and argue that the state should not intervene in the markets even if they are monopolists. According to Ludwig V. Mises and F. A. Von Hayek, important representatives of the school, no one will fully understand the functioning of the market. General or partial interventions (planning and government intervention) to this incomprehensible system are meaningless and dangerous efforts. The market system is a dynamic balance system and the main reason for economic crises is the cyclically interventions to this system which made by the state and banks (Tekeoğlu, 1993, p. 219-220).

Although the discussions on the role of the state continued in the 19th century, the prevailing understanding of free market concept was observed in Europe in the pre-war period. After the First World War, some of the European states did not succeed even if they preferred liberal policies and tried to repair the political and economic institutions of the pre-war period. Post-war economic difficulties, unemployment and unstable currencies required more government control, especially in the economic sphere, resulting in revival of protective policies in economics. The Great Depression, which followed these difficulties in the first decade after the war and emerged in the USA in 1929, led to the increase of these tendencies. The solution to the crisis was written by a British economist J. Maynard Keynes. In his book "General Theory of Employment Money and Interest" (1936), Keynes argued that the liberal economic system would not always produce successful results and that the state should intervene in the economy through monetary and fiscal policies.

Keynes' most important argument for state intervention in the economy is that markets will not always be fully employed. Keynes argues that full employment is a very rare special case. In order to shift from this underemployment to full employment, the state must intervene in the economy. According to Keynes, uncertainties in the market are another important factor that requires the state to take a role in the economy. According to him, the uncertainty is a fundamental characteristic of real life. Supply and demand preferences in the market are formed under uncertainty. Therefore, it is not possible to talk about a set of preferences that will guide the society at large. The state should implement active economic policies to guide preferences in an environment of uncertainty (Paya, 1997, p. 185).

Friedman argues that the state controls brought by Keynesian theory are flawed at two main points. First of all, even if the activities of the state provide efficiency with uniform standards in various fields, it eliminates diversity. Second, it disrupts the functioning of the "invisible hand" mechanism not only in economic activities but also in other areas of human life. In this context, the state should not engage in activities such as control of communication devices such as radio and television, mass housing construction, state monopoly in postal services in addition to the regulations related to economic life such as price, wage, interest, rent controls, import and export restrictions (Friedman, 2008, p. 65-69).

One of the striking debates on the issue is between Friedman and Galbraith in the late 1970s. Both Friedman and Galbraith discussed the political implications of the analysis of economic choice between the state and the market, but presented opposing views. Following the Schumpeter tradition, Galbraith accepted the virtues of the market and argued that the concepts of uncertainty, inefficiency and social injustice emerged in the process of market evolution and maturation. In contrast, Friedman, as a follower of the Adam Smith tradition, argued that in a free market economy economic and technological development, efficient resource use, an increasing standard of living and a reasonable income distribution despite some exceptions would be achieved (Wolf, 1993, p. 2).

Galbraith's anti-market view is also supported by the theory of market failure, which forms the basis of the welfare economy. This theory examines issues such as public goods in the market, externalities, increased returns to scale, various flaws in the market, and income distribution disturbances even in active markets. Stiglitz defines market failure as the failure of the market to achieve the "Pareto optimal" or "first best" resource allocation and the choice of the second best. Such an acknowledgment means waste of resources and a decline in social welfare (Stiglitz J. , 1994, p. 64).

The government intervenes because the free-running markets produce inadequate or unwanted results in some cases. According to some economists, market failures are a necessary but not sufficient condition for state intervention. In fact, the main problem is how to determine the success and failure of the market mechanism. There are two generally accepted criteria for this problem. These are justice in efficiency and income distribution.

Efficiency in the market can be defined as the inability to create higher economic utility at the same cost. The condition of the activity is that the costs related to the creation of economic utility are less than the monetary value of the utility. Equity in the distribution of income is a more uncertain concept and efficiency is a more widely used criterion for measuring the success or failure of the market economy (Wolf, 1993, p. 17).

The views opposed to the state ‘s intervention in the economy express these reactions within the framework of the principal - agent problem. According to this view, the politician, bureaucrat, trade union leader, who doesn’t have the factor of production, are treated as an agent who are hired by owners of the factor of production to perform specific tasks. Since agents are active rent seeking rational individuals, a conflict arises between their duties and personal interests. Political leaders who prioritize their personal interests can use their power to strengthen themselves under the weak constraints of existing laws. This is called the principal-agent problem and is fundamentally based on the existence of incomplete information conditions (Drazen, 2000, p. 22-24).

The first group of regulation theory explains the regulation from a “public interest” perspective. This public interest can be defined as the best possible allocation of scarce resources for individual and collective goods (Aslan, 2005, p. 9). According to the theory of public interest, regulation is a means of eliminating the disadvantages of imperfect competition and protecting undesirable market outcomes, in order to protect, develop and ensure efficient resource allocation. Regulation not only repairs imperfect competition, but also stabilizes the unstable market (Hertog, 2000, p. 225).

The Theory of Special Interest Groups was developed by members of the Chicago School of Economics and the Virginia School of Political Economics. Accordingly, regulations are directed by well-organized groups to serve their own interests. Thus, arrangements to maximize social welfare do not serve the interests of the masses, but serve a smaller number of effectively functioning groups. As a result, companies that are successful in lobbying and reaching a certain scale benefit more from the arrangements to be made than the groups that are not well organized (Brown & Jackson, 1994, p. 49).

According to George Stigler (1971, p. 3) one of the important figures of this theory, regulations are transformed into intense activities about sharing public interest. The largest firms of the sectors will work for the construction of regulations that put forward their interests, prevent competition and create economic rent for themselves and will push the public interest to the second place.

Public Choice Theory tries to examine regulation in terms of rent seeking and social welfare losses. There are two sides here. First; bureaucrats and politicians who seek to increase their own interests rather than the public interest. The second one; This is the demand front that is represented by pressure and interest groups, which is composed of companies and consumers, which tries to increase their interests. Regulation will become the main cause of rent-seeking activities and social welfare losses in an environment where both parties are trying to increase their own interests (Çetin, 2005, p. 114).

The Regulatory Capture Theory claims that regulation is created in line with the needs of firms and for their benefit. “Regulation is achieved by an industry and is shaped and implemented in accordance with its needs and benefits” (Stigler, 1971, p. 3). Theory includes the view of the “protection of the producer” in a way different from the theories of regulation based on the view of “consumer protection”. Even a political coalition is emphasized by extending its scope further (Peltzman, 1993, p. 822-823).

The Austrian School, pioneered by Menger, Wiesner and Böhm-Bawer, sees the regulation of an industry as synonymous with the determination of property rights for the wealth generated by that industry. According to the theorists of the Austrian School, regulators are seen as an advocate and an entrepreneur who seeks to explore opportunities for political profit through the redistribution of property rights within the industry rather than a policy/regulation practitioner (Çetin, 2005, p. 114).

Institutional theory opposes the view that traditional theory, that there is a cohesion in the economic system. According to this idea, there is conflict between interests, not adaptation in the economy. There is a conflict, not harmony, between the employer and the worker, the producer and the consumer. Therefore, there is a need for a regulatory role of the political power that will ensure harmony between these groups in the economy and this political power needs supervision, control and intervention (Kirmanoğlu, 2007, p. 15-16). Institutional Economists support liberal and democratic reforms in order to make the distribution of income more equitable (Tekeoğlu, 1993, p. 175).

## 3. Public Interventions to Regulate Markets

Regulation is defined in different ways as it is an interdisciplinary concept. Regulation in the literature; regulating a specific area, determining the rules for those who will operate in this regulated area and supervising the compliance of these rules, applying sanctions to those who violate the rules, issuing licenses or warranties, and providing the necessary information. According to simpler definition, regulation is to determine the standards and rules, to ensure the legal responsibility to perform the audit, to ensure the accountability of bureaucrats and to perform the audit (May, 2007, p. 8).

Regulation activities within the scope of public service can be grouped under 3 headings. Economic regulation: Regulation to improve the efficiency of the markets. Social regulation: Regulation activities aimed at protecting the rights of the society and increasing their welfare. Administrative regulation: It is a set of rules governing the procedures in which the state is involved (Ardıyok, 2000, p. 9-11).

The basis of economic regulations goes back to the 1870s. It was first applied in the US transportation sector. Over time, it has been recognized that even industries that affect the public interest and have a competitive structure can be regulated. Economic regulation is defined as the regulations aimed at improving the efficiency of the markets and increasing social welfare. It also includes the control of prices and wages, control of interest rates, control of production standards, control of entry and exit to the markets and control of exchange rates. Economic regulations are divided into structural and behavioral regulations. Structural regulations include arrangements to prevent imperfect and destructive competition. Behavioral regulations are the rules that regulate the behavior of market agents (Ağcakaya & Halıcı, 2005, p. 101).

In regulation, making legal arrangements and applying sanctions for the organization and supervision of a field or industry should be considered as a tool, not an aim. The main objective should be to ensure efficiency and productivity in the field to be regulated. After the 1980s, with the heavy privatization operations all or some part of the natural monopolies were sold to the private sector. Then, in order to direct and supervise these activities regulatory institutions have been established. The purpose of these institutions is to ensure that the work to be carried out at the lowest cost and to prevent over pricing that will lead to excessive profits (Kirmanoğlu, 2007, p. 170). Another stage of the regulation process is the establishment of legal legislation related to the regulations.

As in all legislative activities, many parties have an impact on the preparation of regulatory legislation. As a requirement of modern democracy, politicians who reconcile these demands from all segments of society with the aim of securing the interests of the all parties and increasing welfare of the society, make the final decision. There are two important variables in this decision. The first one is the determination of the bureaucratic structure that will carry out the regulation task in the industry to be regulated. The second is the determination of the authority and responsibilities of the regulatory body (Ardıyok, 2000, p. 19).

Independent regulatory bodies are autonomous regulatory bodies that are organized to provide public services in accordance with market priorities, with no accountability to public authorities. Institutions have a strategic and decisive role in the transformation of the state. Because they occupy strategic areas in the country's management and economy. The only mechanism that will link local, national and global levels to the new management model is the independent regulatory institutions. These institutions are prototypes of the new state organization that emerged at the beginning of the 21st century (Bayramoğlu, 2005, p. 88-100).

Independent regulatory institutions are independent of elected governments and the general administrative structure of the state and are defined as "non-political and aburocratic institutions". They are mostly government-appointed members and are managed by a board type organization. Because of they have legislative, executive and judiciary-like duties in their field, they are dominant power (Sönmez, 2007, p. 489).

On the other hand, it is stated that the influence of politics and traditional bureaucracy has been narrowed with these institutions and important public powers have been taken out of the public sector. Accordingly, the industries regulated and supervised by these institutions are included in the decision-making process, while independent regulatory institutions are moved away from the political structure and brought closer to market forces. This situation is described as opening up the use of public power and authority to market forces (Özer, 2007, p. 202).

One of the most important tasks of the independent regulatory agencies is to maintain the order of the industries in which it operates. This means arbitration between the interests of different groups. Institutions, with these regulatory powers they have, can apply various sanctions, giving permission, license and approval, issuing regulations, communiqués, conducting audits in the field of duty, applying administrative sanctions, fines and banning from activities to the organizations and persons in the sectors in which they operate (Atay, 2000, p. 221).

Regulation duty is performed by the authorities and employees in independent institutions. What is expected of these authorities is to realize the goals that are believed to reflect social welfare. However, the authorities will work under many constraints, only a small part of which will be envisaged by law. In cases not regulated by law, the organization will have to take initiative. Furthermore, the regulation of the objectives does not constitute a guarantee that these will be implemented, the application may be different. Another important issue is the credibility of the regulator. In order to invest in regulated industries, the investor must believe that the regulatory rules will not change in the future and that the regulator will not abuse the bargaining power. In addition to this, it should be clearly stated that the duty of the regulatory body to protect and develop competition (Atiyas, 2000, p. 30-31).

## 4. Deregulation and the Lessons from the 2008 Global Crisis

In the post-1980 period, the state was restructured through marketization, privatization and deregulation to increase the role of internationalizing institutions, in order to direct institutions interested in welfare and labor policies and to strengthen the political role of the market (Albo, 2002, p. 8).

The dominant view of the period was revealed in 1990 by J. Williamson's policy proposals for Latin American countries, which he called the Washington Consensus. The policies proposed to countries in the Washington Consensus are as follows: fiscal discipline, redefinition of priorities in public expenditure, tax reform, interest rates set freely by market conditions, liberalization of the entry of foreign direct investments, trade freedom, competitive exchange rate, privatization, property rights and deregulation (Arestis, 2004, p. 252).

The Washington Consensus was soon linked to Neoliberal thinking, rather than a prescription that Williamson had specifically proposed for Latin American countries. This understanding, which sees the state as a problem rather than a solution institution, suggested trade liberalization, the reduction of the state's share in the economy through privatization and the reduction of public expenditures, and also the determination of key factors such as interest rate and exchange rate should be left to the markets. Consensus has become an opinion reflecting the understanding that "imperfect markets are superior to imperfect state" and deregulation studies have gained momentum all over the world (Öniş & Şenses, 2003, p. 2).

Deregulation simply means that the state abolishes the previous regulations. Governments have some reasons to start the deregulation process. Some of these factors are related to the number of firms in the market. Excess or insufficient number of firms may cause problems in the market. Another reason for deregulation is that prices in the market move away from costs. Another reason for deregulation is that the cost is higher than the expected benefit from the regulation. if the cost of regulation exceeds its benefit, these regulation practices are abandoned.

There are some points to consider in a good deregulation process. First, competition rules are mandatory unless public interest requires otherwise. The rules for anti-competitive agreements, activities that would mean the abuse of dominant position and the rules for mergers that distort competition must be applied without exception. Competition authorities should be equipped with powers to oversee deregulation activity and the necessary institutional infrastructure should be established for this purpose.

Developments in the late 1990s have shown that deregulations, an extension of neoliberal policies based on the Washington Consensus, have failed. The first example of this is that the Latin American countries that emerged from the debt crisis could not achieve economic growth. The second negative development is the crisis in East Asian economies due to regional financial markets. Finally, structural adjustment programs have failed to reduce poverty and sustain economic growth in low-income countries (Hayami, 2003, p. 41).

The fact that the competitive market economy is the general choice and some of the adversities that followed have revealed the need to determine the rules of the game. For this reason, many countries have started to work on regulation and have formed their own regulation policies and even made these policies as slogans.

As a result of the criticism of the Washington Consensus, which was the dominant view in that period, a new development slogan started to be formed in the mid-1990s. It was Joseph Stiglitz who led the formation of this approach, called the Post-Washington Consensus. According to Stiglitz, in the new agenda that is emerging, the government and markets should be seen in a complementary relationship, not a substitution; governments should be considered as institutions that help build markets. Governments need to create the necessary institutional infrastructure for markets to operate effectively. This institutional infrastructure should, at a minimum, include effective laws and legal institutions to ensure their implementation. In order for markets to operate effectively, property rights must be clearly defined, anti-trust laws must be in place for effective competition, and contracts must be guaranteed to ensure confidence in the markets. There is a problem of government failure, and if governments use the market or market-like mechanisms, they can be effective (Stiglitz, 1994, p. 32-34).

Another economist with similar views to Stiglitz is D. Rodrik. According to Rodrik (2001, p. 14) a reinforced Washington consensus was needed in response to the failure of the Washington Consensus. Accordingly, beyond the liberalization and privatization, institutional pillars of market economies need to be created. Thus, reforms included financial regulation and prudent monitoring, governance, anti-corruption, legal and administrative reform, labor market flexibility and social security networks.

Ercan (2003, p. 6) defines the difference brought by the Post Washington Consensus as the transition of capitalism to the institutionalization process. According to him, the first generation of structural reforms aimed at eliminating the existing regulations and carried out mainly within the framework of deregulation and privatization. In the period when the second generation reforms were implemented, the reorganizing function of the state came to the fore. The second generation of reforms will require a reminder that the state will do things that the market cannot do, and that the state must be redefined with new functions.

This intellectual transformation of the tasks of the state has been observed in OECD studies especially after 1990s. According to OECD approach, the term "regulation" in the first sense is used mostly with reference to the traditional state understanding. In this sense, the report emphasizes that the "regulation" style should now be overcome. Therefore, the transition from the old "regulation" to the new "regulation" will be achieved through "regulatory reforms" (OECD, 1997, p. 9)

The agreed view is that the state has very important functions to undertake in terms of regulation, social security, welfare development and distribution. The only role that the state plays on economic activities is not only to engage in rent-distributing interventions. The establishment and protection of the institutional and legal infrastructure necessary for the efficient functioning of the market economy is a work and process that only the state can undertake. At this point, what is to be discussed now is not whether the state intervenes in economic activities or not; it would not be wrong to say when, by what tools and how to intervene (TÜSİAD, 2002, p. 19).

The financial crisis that started in the US in 2008 and the international reflections of the crisis led to discussion of the role of financial markets in the global economy and structural reform demands to prevent the crisis. Yet effective reform of the global financial system is not possible without policy coordination. The globalization of industries and markets has increased policy links between countries. However, the institutional mechanisms necessary for the coordination of these policies have not been sufficient. The leaders of the G-20 summit in April 2009 prepared a reform package that prevented excessive lending and excessive risk taking. These reforms can be listed as follows (World Bank, 2009, p. 93-96):

- Governments should broaden their control over financial institutions and financial instruments through financial regulation.
- not only Banks but also non-bank financial institutions should be regulated.

- Compensation of top managers should be reassessed to reduce risk taking in the short term.
- Regulators should also strengthen reporting requirements applicable to organizations.

However, as all countries experience regulatory failures at different levels, the measures to be taken will differ from country to country. The meaning and content of liberalization in financial markets is quite different from other industries. As a result of the increasing internationalization in the financial sector, the weakness of the banking system in a country, regardless of whether it is a developing or developing country, can significantly threaten financial stability in the national and international arena. In order to ensure financial stability, effective monitoring and supervision of the robustness of the banking sector is a generally accepted requirement.

Although local regulation efforts have strengthened the financial structures of the countries, they cannot eliminate the effect of the spread of crises in the financial markets which have become integrated as a result of globalization. Therefore, global cooperation and standards should be established.

The recent crisis has revealed the inadequacy of regulations at the national level. With the deepening of the crisis in 2008, each country started to apply the solution method that it deems appropriate for itself. In the US, interest rates were lowered by introducing liquidity to markets through open market transactions. Asset purchases were extended from short-term markets to long-term markets, thereby he monetary base doubled in a short time.

In 2010, a financial reform package called Dodd-Frank Wall Street Reform and Consumer Protection Law was prepared in order to regulate post-crisis financial markets in the USA. This law gives regulatory authorities wide powers. According to Dodd-Frank, regulatory authorities are responsible for processing, monitoring and modifying these regulations as circumstances change. The law provides a wide range of measures, each of which is believed to contribute to the financial crisis. These measures are mostly directed to regulated banking organizations, especially the largest banks that are perceived as too large to fail by the government. This emphasis on regulated banking institutions is understandable. Most of the pre-crisis shadow banking activities were done indirectly by regulated banks or by large investment banks that had transformed themselves into regulated banks. The law also introduces regulations on derivatives and markets (Tarullo, 2019, p. 63)

It was not only the US government that took post-crisis measures. The UK announced that it would buy assets and the European Central Bank announced that it would buy 60 billion Euro bond, and the Japanese Central Bank published the list of financial instruments to be purchased (Özdemir, 2009, p. 32-33). However, the over-integration of international financial markets prevented the success of these measures taken at the local level and the international solution became a necessity.

The necessity of regulation, which is seen as a burden in times of crisis, is understood more during crisis periods. Policy-makers should first recognize that regulation is a necessity as a precaution against possible future crises. Afterwards, it should make a choice by considering the costs of regulation and the cost of crises in the absence of adequate regulation, and should implement it by making the choice of optimal regulation before it emerges (Aizenman, 2009, p. 15-19).

Regarding the logic and content of regulations, the regulation of financial markets according to other areas of the economy has different approaches. The most important reason for this difference is that financial markets have a higher impact on the overall economy than other markets and have a close relationship with the monetary policies implemented by governments. Therefore, in financial regulations, in addition to ensuring the effectiveness of the markets, stabilization of issues such as unemployment, inflation, balance of payments and increasing the effectiveness of monetary policies are considered as structural criteria (Gowland, 1990, p. 39-41).

There is no clear clarity as to how financial markets will be regulated. However, it can be said that the regulation to be made should be basically rule-based and flexible. Considerations when planning financial regulations can be summarized as follows (Brunnermeier, Crocket , Goodhart, Persaud, & Shin, 2009, p. 59-92)

- The regulation to be applied should be based on a just cause such as a market failure in financial markets.
- Effective regulation should provide incentives for financial institutions to internalize externalities that may arise as social costs exceed private costs.
- Concentration in the banking system has increased in many countries as a result of the reaction to the crisis. Further intervention may be undertaken if necessary to encourage competition.
- An approach that encourages longer-term funding should be adopted.
- As the fluctuations vary between countries as well as between times, the emphasis on the regulator powers should be directed to the host country.
- Because the crisis management is costly, the Central Bank and the Ministry of Finance should work together.
- Crisis management can be done at the national level and efforts to prevent the crisis can be done at the international level.

The regulation of financial markets needs to be based on some basic principles. These principles (Pistor, 2009):

- Diversity: means the existence of alternative regulations that can produce new solutions to new problems.
- Systemic risk management: It means that the regulation should focus on systemic risk management rather than the market participants' benefits. because regulation designed to prevent future crises will conflict with the bonuses of market actors who are interested in their own interests.

- Principle of willingness: Emphasizes the need for financial market actors to be willing to participate in the regulations. Since the financial crises began to appear on the economic scene, there has been a constant need for new reforms. Instead of changing laws and regulations, regulatory responses to changes in the market should be constantly monitored and a process-oriented strategy highlighting compliance.

Since the power to influence the overall economy is an important factor in the regulation of financial markets, ensuring the safe and healthy functioning of financial markets has constituted a traditional perspective. For example, the idea that the effects of a crisis in the banking system will lead to a general economic crisis; it has caused the regulations to concentrate on the rules that prevent banks from taking too much risk and consequently weakening their financial position (Swann, 1989, p. 9).

## 5. Conclusion

1. Liberal policies and technological developments have led financial markets to enter internationalization. The short-term positive effects of international capital flows have paved the way for financial liberalization policies in developing countries. These policies aimed to make institutional infrastructure and market conditions attractive for foreign investors.

The 1990s are known as the years when the world met with monetary or financial crises in the literature with the effect of globalization. In these years, the crisis in Argentina, Mexico, Asia and Turkey have shown the world how painful the process of integrating into the global system can be especially in countries that have not completed their economic development and do not have sufficient financial markets. The early 2000s were the period when these countries started to implement stabilizing policies, especially in monetary and financial fields, with the contribution of IMF programs.

Until the 2008 Global Crisis, financial crises were seen as a problem stemming from the failure of developing countries to fully manage market conditions. The crisis that emerged in the US and reached a global dimension in the second half of 2008 has eliminated this widespread belief and once again the fact that over-deregulated markets can create big problems.

After the crisis, each country intervened in the financial markets in accordance with their own conditions. Interventions are generally aimed at restructuring bank balance sheets with financial and structural instruments. In addition to the measures taken in the post-crisis period, macroeconomic stability policies have been widely implemented. Central banks of many countries changed policy interest rates. The interest rate reduction was carried out simultaneously by ensuring coordination between the countries.

The interventions made after the 2008 crisis were limited to the practices implemented by the central banks to ease the markets. According to the emergence of the crisis, each country has made various arrangements to keep its markets under control. In countries where the crisis is severe, in addition to the CB interventions, either rescue packages have been announced, or bankrupt banks have been transferred to various mutual funds or other banks.

The IMF, one of the institutions structured to ensure the stability of the international financial system, was in touch with the European countries for the first time in this crisis. Besides the financial support dimension, the European experience is different from the previous support experiences for the IMF. For the first time, the IMF experienced the implementation of a support program in countries with high democratic practices and faced high public resistance.

Although the last major crisis of the world originated in the United States, the EU has been greatly affected by the crisis. The European Union has caught the crisis unprepared. Even though the economic and monetary integration steps within the Union were completed in the process until the crisis emerged, the transition to political unity could not be achieved. As a result of economic and monetary union, although member states have delegated many decision-making powers to EU institutions, crisis required more transfer of authority. In addition, as in the case of Greece, common standards on the economic and financial data of countries have become obligatory to prevent situations that may lead to asymmetric information problems.

Important steps have been taken within the framework of the banking system on behalf of post-crisis financial regulation. The most important of these is the Basel Capital Accord Rules. However, it is stated that the regulations regarding liquidity have not been completed yet and the capital requirements for large banks should be slightly higher. On the one hand, while regulating activities are in progress, some economists have expressed concern that regulators will continue to carry out their main objectives, structural reforms, after financial stability is achieved. In all studies related to regulations, the emphasis is on the healthy functioning of the free market.

The tight measures taken immediately after the crisis began to be loosened over time. For example, in the United States, Congress made some amendments to the Dodd-Frank Act in early 2010, which concerns small and medium-sized banks. In addition, banking institutions have resorted to relaxing arrangements for large banks and proposed a reduction in the capital requirements of eight “systemically important” banks and three “super-regional” banks. However, the post-crisis regulatory approach has not created a structural solution to prevent shadow banking. There is no authority granted to the FED or any other institution to regulate shadow banking forms that may pose a threat to financial stability. “Shadow banking” includes a wide range of non-bank intermediary activities, many of which pose little or no threat to financial stability. To the extent that post-crisis regulation makes risky activities costlier for banks, the transition of these activities to shadow banking is increasing. Unusual “shadow” financing is one of the main causes of the financial crisis, especially in the repo markets (Tarullo, 2019, p. 69-71).

Another discussion on the issue concerns the Basel Accords. While changes in Basel regulations continue, objections are raised particularly against the risk weighting approach. For example, Former Governor of the Bank of England, Mervyn King, (2016), argues that the claim that it is possible to calibrate risk weights is an illusion and that the simple leverage ratio is a more robust measure for regulatory purposes (Davis, 2017).

Although the issue of regulation of the banking sector has been discussed intensively after the global crisis, the necessity of regulating non-bank financial institutions should not be ignored. Of course, non-bank financial institutions should not be subject to the same regulations as banks. Different institutions in the financial sector should be evaluated within their own structure and necessary measures should be taken in matters such as excessive risk, borrowing and transparency. In particular, there is a need for arrangements that are made outside the banking system and that may create short-term financing or liquidity shortages and cover the entire system for transactions. However, it remains unclear whether the regulatory tendency will continue or whether it will disappear when things are in the way as in previous history of financial crises.

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# 11

# TALENT MANAGEMENT IN ORGANIZATIONS: A GENERAL ASSESSMENT

*Leyla İÇERLİ*[1]

## Introduction

In a rapidly changing environment, employees in organizations need to manage issues such as production, finance, marketing or technology in the best possible way both to outperform the competition in order to keep up with this advantage in a sustainable way. With the impact of developing technology and globalization, one of the factors that will enable organizations to gain advantage in sustainable competition and continue their activities is to have talented employees. On the basis of critical elements such as having an innovative thinking system, creating value with it, developing new products, making a difference in sales, marketing, production or customer relations, increasing productivity, reducing costs or strengthening teamwork are "talent". Therefore, talent management is an important concept for the success of human resources management. The concept of talent management is the process of attracting and developing talented people to the business and actively benefiting these talented employees. In other words, talent management is a management strategy that is used to cope with the problems faced by the organization, to achieve organizational goals and targets by implementing competitive strategies and policies, and to focus on human resources. Considered in this respect, talent management can be defined as identifying high-potential employees with the competencies they will need in line with the strategic objectives of the organization within or outside the organization and adapting it to the system and being trained in a planned way in line with its competencies (Fettahlıoğlu, et al. 2016, p.134).

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With the impact of globalization and rapidly changing environmental conditions and increasing competition, businesses face many opportunities and threats. In the face of this situation, the most important problem of businesses is how to gain competitive advantage and how to maintain it. Businesses need to have strong structures in order to take advantage of opportunities and fight against threats. In the field of strategic management, there are many opinions and theories about how businesses can achieve sustainable competitive advantage. One of these theories is the Resource-Based Opinion, which has received a lot of attention from many researchers (Ağraş and Kılınç, 2014, p. 2). This view advocates that business should determine their own resources and capabilities rather than the industry structure to achieve competitive advantage and it must compete with resources that are not available to competitors and cannot be imitated (Cantürk and Çiçek, 2016, p. 97). Therefore, the most basic way of achieving competitive advantage and sustainability for organizations is to see talent as a strategic resource.

The aim of this study is to explain the concept and applications of talent management from a theoretical point of view and to provide resources for future studies related to talent management. For this purpose, in this study, it is mentioned that the birth and development of talent management concept in terms of working life and importance of talent management in terms of human resource management especially with the transformation of digital and accordingly talent management practices.

## Concept of Talent

When the etymological origin of the word talent is examined, it can be stated that it is used in different meanings in the historical process of thousands of years. It is used by Assyrians, Babylonians, Greeks and Romans in terms of weight; in the Bible in terms of currency and capital; and human resources approach in terms of human resource as the ability to be considered synonymous. It was used as a trend until the 13th century; in the 15th century as treasure, wealth, mental blessings and natural skill; and in 17th century as natural property or mental strength (Tansley, 2011, p. 267). The word of talent, commonly used in everyday life, becomes an important resource for businesses when it comes to business life. Talent is a concept that includes success, skill, leadership, practicality, creativity and good use of time at the same time. In other words, the concept of talent can be defined as the ability of an individual to do things more easily and creatively in a certain period of time and to mobilize the individuals around him in achieving success. Therefore, TALENT can be regarded as a whole of the concepts that constitute the word itself: Triumph, Ability, Leadership, Easiness, New-fangled and Time (Doğan and Demiral, 2008, p. 150). According to Erdoğan (1999, p. 87), talent is the whole of a person's mental characteristics such as being able to comprehend, analyze and conclude certain relationships, and all of his bodily characteristics in the form of realizing certain phenomena. In this case, talent can be thought of as the mental and physical capacities of individuals to regulate their behaviors. It is expressed as a potential of an individual, performance and critical skills (Blass, 2007, p. 3). Talent is considered as a person's ability to think strategically, to be competitive, to empathize, to focus, to behave according to the environment while effectively applying their thinking, emotion and behavior skills (Buckingham and Vosburgh, 2001, p. 21). It is the mental characteristics of a person being able to comprehend, analyze, and conclude specific relationships and all physical features such as the ability to perform some phenomena. In this case, the ability is the mental and physical capacity of individuals to regulate their behavior (Örnek et al., 2018, p. 24). Talent is seen as an extraordinary level of mastery achieved through systematically developed skill and knowledge. The important characteristics of the talent are that it is an innate existential structure, it is related to performance and potential, and it includes high abilities that lead the person to a level of mastery in one or more fields. As can be seen, talent refers to the innate capacity of the person, which is a source of prospective capabilities. A person's talent turn into skills and competences in the learning environment and lead to high performance and success. What makes talent valuable for organizations is that they are the source of prospective capabilities and affect the performance and success of individuals and organizations (Akar and Balcı, 2016, p. 957).

The concept of talent for businesses is an important organizational strategic resource. Therefore, having skilled employees in the work environment and making the most of these employees will increase the productivity of the work (Altınöz, 2009, p. 5). In fact, businesses with the right capabilities rather than the most talented are the most productive and most generative. Talent management is a necessity for a number of reasons for businesses that want to survive from a long-term perspective. These reasons can be listed as (Çırpan and Şen, 2009, pp. 111-112):

- To be able to survive by keeping up with the changes,
- To be innovative to drive change and to grow and become a leader in this way
- Achieving goals
- Not to be affected by the changing demographic structure
- To meet employee expectations
- To increase the value of the business

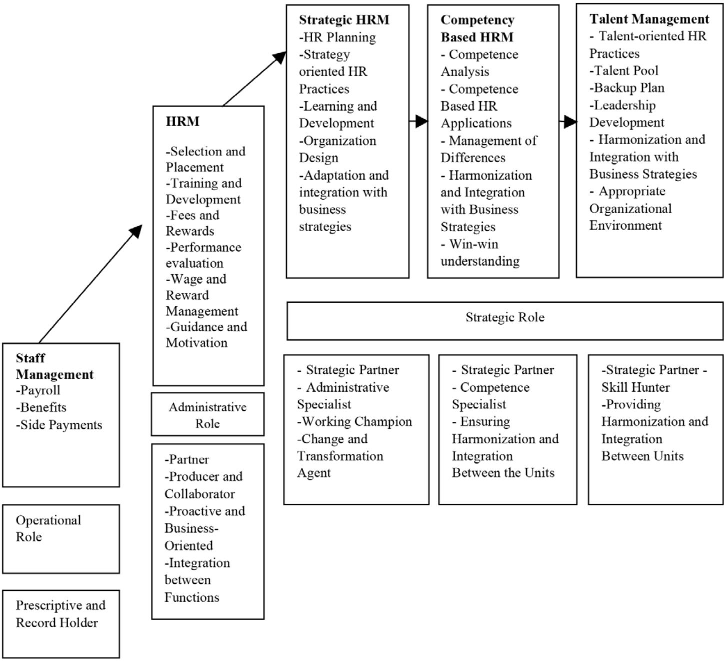
## Talent Management

There is a need to increase the efficiency of the organization at the heart of the business world. In order to achieve this efficiency, sometimes capital and sometimes machinery have gained importance for companies. Workers in the business world have been harmonized with different values for years and sometimes defined as a production factor and sometimes as a human resource. Nowadays, giving more value to employees has made them named as “talent employees” and talented employees behind every successful company has led to the development of “talent management” concept (Örücü and Akyüz, 2018, p. 21).

Talent management is defined as a management process that systematically tries to close the gap between the talents that a business needs to meet the challenges it faces and to achieve its goals by realizing its strategies and as a management process with human resources at the center (Çırpan and Şen, 2009, p. 110).

Talent management is the integration of processes involving various stages with business strategies such as workforce planning, recruitment, training, development of personnel, review of skills, success planning, performance evaluation, retention (McCauley and Wakefield, 2006: 4). In other words, talent management is the implementation of systems or integrated strategies designed to attract, develop, maximize and retain people with the necessary skills and abilities to meet the current and future needs of the organization (Kehinde, 2012, p. 179). More broadly, talent management is a process that covers strategically based Human Resources Management activities intended for developing a workforce plan to support the competitive strategy of the business, identifying additional capabilities needed by analyzing existing capabilities, creating an appropriate working environment to attract qualified employees who will meet these needs, recruiting the right candidates, developing of existing capabilities and ensuring that these capabilities are retained (Alayoğlu, 2010, p. 71). Figure 1 shows the development and changing roles of Human Resources Management

*Figure 1. Development and Changing Roles of Human Resources Management*


Staff Management
-Payroll
-Benefits
-Side Payments
Operational Role
Prescriptive and Record Holder
HRM
-Selection and Placement
-Training and Development
-Fees and Rewards
-Performance evaluation
-Wage and Reward Management
-Guidance and Motivation
Administrative Role
-Partner
-Producer and Collaborator
-Proactive and Business-Oriented
-Integration between Functions
Strategic HRM
-HR Planning
-Strategy oriented HR Practices
-Learning and Development
-Organization Design
-Adaptation and integration with business strategies
Competency Based HRM
- Competence Analysis
- Competence Based HR Applications
- Management of Differences
- Harmonization and Integration with Business Strategies
- Win-win understanding
Talent Management
- Talent-oriented HR Practices
-Talent Pool
-Backup Plan
-Leadership Development
- Harmonization and Integration with Business Strategies
- Appropriate Organizational Environment
Strategic Role
- Strategic Partner
- Administrative Specialist
-Working Champion
-Change and Transformation Agent
- Strategic Partner
- Competence Specialist
- Ensuring Harmonization and Integration Between the Units
-Strategic Partner -
Skill Hunter
-Providing Harmonization and Integration Between Units

*Source: Alayoğlu, 2010, p. 75 & Altıntaş, 2018, p. 27*

When the figure is evaluated, in the early stages of the development process, the role of Human Resources Management, which is called Personnel Management, at this stage is operational. In the next stage, human resources management, which is shown as a partner position, has become more effective in determining and implementing policies towards employees and its role within the organization has reached the managerial level. At the next stage, where globalization and environmental factor changes are gaining momentum, the role of human resources management in the enterprise and organization has started to be evaluated at strategic level. Conceptually, the topic continues to be discussed under the title of talent management.

As information and informatics have reached unbelievable dimensions today, organizations are directly or indirectly affected by this change. In line with the visions and missions of the organizations, increasing the talent level of human resources has become very important after the use of technology in organizations. In this sense, it is very important to increase the capabilities of the human resource, which is one of the most important benefits of the information age for organizations, recruitment of personnel capable of playing critical roles in the organization and strengthening all these benefits with technology. This will increase the level of global competitiveness of organizations and allow them to review their strategic policies in line with changes in labor supply and demand. Bringing a new approach to human resource management. Talent management, bringing a new approach to human resource management, means the effective use of human resources, which integrates the intellectual capital of the organization with its capabilities on the production, storage, transfer and use of information. Therefore, effective talent management practices in human resources management cover the following processes (Yüksel, 2014, p. 82):

- Determining the existing and future strategies of the organization,
- A clear definition of talent that will lead the organization to success,
- Implementing effective talent management practices in line with the strategic objectives of the organization,
- Implementing the right strategies in recruitment,
- Identifying individual and team goals with corporate goals, and specifying clear expectations for the measurement of business performance and including feedback practices,
- Moving talent management practices further than usual to improve business performance,
- Use not only talent management strategies, but also all instruments that will enable the effective implementation of talent management,
- Continuously measuring the effectiveness of the workforce to keep the business up to date.

## Talent Management Process

The talent management process consists of making human resources planning in line with the business strategy, determining the talent strategy in line with this plan and fixing which talents are needed in the field by analyzing the existing workforce profile, identifying and attracting talented employees, including these people in the organization and developing, evaluating and retaining these talents (Alayoğlu, 2010, p. 78). The steps required to achieve the desired results are as follows:

**Determination of business objectives and strategies**: Goals, which are the main source of talent management practices, are necessary to determine business strategies. The expected results will not be obtained from an application that is constructed without any answers as to where it is intended to be and as a way to be followed. Therefore, when designing talent management practices, the objectives and strategies are defined clearly (Çırpan and Şen, 2009, p. 113). For this reason, they are the main policies and strategies of firms that shape the talent management systems to be implemented by the firms (Polat, 2011, p. 29).

**Determination of talent strategy**: One of the most important steps that should be taken by businesses that adopt talent management application is to determine an integrated talent strategy in line with the main goals and objectives of organizational culture. Talent strategy requires the business to approach the existing and potential workforce in a strategic way. Because a successful talent management strategy will enable businesses to move to the future faster and more successfully than to a work environment where employees are constantly doing the same job and achieving the same results. Thus, after defining the talent strategy, what businesses need to do is to identify their key positions in the managerial and technical areas that are essential for the implementation of this strategy and job descriptions and requirements for these positions and identify the capabilities they need (Alayoğlu, 2010, p. 79).

**Identification of talented employees**: At this stage, key employee characteristics that can perform the desired performance in key positions according to the defined job descriptions and requirements are defined (Alayoğlu, 2010, p. 79). Key employees are seen as directly contributing to the business' production or services. The desired characteristics of the ideal employee are as follows: knowledge, skills, experience, interest and training are detailed in the field of experience. This ideal profile definition is the point to be achieved when raising or assigning a person to the relevant position (Çırpan and Şen, 2009, 113). According to this (Alayoğlu, 2010, p. 79):

**(a)** It is determined who are the employees with the talent appropriate to the ideal profile in the business.

**(b)** It is identified that the gap between the present and the needed skill and the specific areas of this gap.

According to the skill, effort and responsibility required by a task with working conditions, the most important key positions in a business are determined by the most responsible, working in the most demanding environments and the most talented employees. Contrary to this situation, the most important critical position is thought to be the highest paid employees according to the opinion of the relative scarcity of employees' skills in the labor market and the value they create for the business which reflect their wages.

3 methods are used to determine key positions. The first method is a "fee-based" approach. Accordingly, the relative scarcity of capabilities in the labor market and the value they create for the business are generally considered to be reflected in wages. Therefore, from a wage-based perspective, the most critical positions are those with the highest salary. The second method is an organization chart-based approach. According to this method, key positions are determined according to those who take the most responsibility and who work in the most demanding environments with the most severe conditions and the highest skills. The third

method is the strategy-based approach. According to this approach, unlike the other two approaches, it is necessary to start from strategy and move forward instead of starting from existing systems and going backwards (Huselid et al., 2008, p. 34).

The common and most important feature of successful employees is whether they have the potential to learn new skills. When determining talented, in other words high-potential employees, businesses take the potential criterion of learning new things into account. Therefore, employees with high learning agility have a high ability to be able to solve mentally complex problems by establishing new connections between the elements, to think analytically, to identify problems, to be able to grasp quickly, to identify the steps to be taken accordingly, to understand other people and to produce collective solutions, to cope with the issue of change, to get results by creating inspiration and confidence environment, and to understand their skills, capacity and impact on others by creating personal awareness (http://insankaynaklarigunlugu.com).

Internal and external resources can be used to identify potential talented employees. In the process of potential identification, first of all, the capabilities of the institution should be taken into consideration and if potential candidates with the desired characteristics cannot be found inside, new capabilities should be included from outside the institution. Whether internal or external, in determining potentials, the crucial question is how to determine "who is the right person?" The point here is to accurately measure whether the person has the necessary and sufficient qualifications for the position being considered (Çırpan and Şen, 2009, p. 114).

In the evaluation of the existing employees of the business, the labor force value added matrix can be utilized. According to this matrix, businesses can evaluate their employees by dividing them into 4 categories according to their job and qualifications (Alayoğlu, 2010, p. 79-80):

*Table 1. Employee Assessment Matrix*

| | |
|---|---|
| Hardly Replace Employee<br>Low Added Value Employee<br>Inform him/her | Hardly Replace Employee<br>High Added Value Employee<br>Include him/her to capital |
| Easily Replace Employee<br>Low Added Value Employee<br>Switch him/her to automation | Easily Replace Employee<br>Highly Added Value Employee<br>Differentiate or Export him/her |

*Source: Alayoğlu, 2010, p. 80*

- In the lower left box of the matrix, there are low value added and easily replaceable employees. The business may need such employees, but its success is not directly based on them. For this kind of work, enterprises can switch to automation system.
- In the upper left box are qualified production workers, experienced executive assistants or office workers such as quality assurance, internal audit, internal communication and those who have learned a part of a complex job, but who are doing well in their position. Although it is in a position that produces low added value in terms of qualifications, it is difficult to replace the employees who perform these tasks that require expertise and experience. Therefore, this group of employees, which are important for the functioning of the business, should be kept in the firm, but they should be supported and encouraged to develop their knowledge and skills.
- The employees in the lower right box do the jobs that customers value highly; but they are easy to replace by quality and work. Therefore, employees in this group are either differentiated by improving their skills or are dismissed and these services are outsourced.
- In the upper right box, “stars” in other words, “talents”. These persons are employees who are almost irreplaceable in terms of their current abilities as individuals. These employees form the human capital that is difficult to imitate to provide competitive advantage to the firm. Thus, with these employees, which are play a critical role in the

> development of different products and services produced and offered to the market with its talents and experiences, the businesses have the opportunity to make consumers prefer them over their competitors and thus gain competitive advantage.

The knowledge, skills and experiences of the employees involved in the capital should be ensured. That is, the transformation of temporary human capital into organizational capital must be realized. Thus, the intellectual capital can be made permanent and the value increase and the resulting value increase are maintained (Kurşunmaden, 2007, p. 50).

When the matrix is evaluated, it can be stated that there are difficult tasks that are of great strategic importance in the upper section and here are employees with superior performance and talent that are difficult to replace. According to this assessment, the group of employees in the upper right box, referred to as “stars” can be regarded as the most valuable assets owned by businesses; so, they should be invested. The other three squares either constitute substitutable groups of employees or are mostly labor costs for the business (Alayoğlu, 2010, p. 81).

**Workforce planning**: This stage is aimed at determining which period, in which number, in which positions and what abilities are needed for critical managerial and technical positions determined within the framework of the company’s objectives and strategies. After this determination is made, the ideal employee profile that can perform the desired performance in defined key positions is identified. Accurately identifying the profiles of employees is important for extracting the talent portfolio with the ideal profile required for the business and convenient skills can be deployed, if appropriate. If there are not enough employees in the existing talent needed, external employment may be applied for the vacant positions; however, it is important to note that the right skills are brought to the business; because talent management is not an authorization, it is an investment and it is quite costly. Businesses should therefore predict which skills they will need in which area, they should plan to address externally only the shortage of additional talent needed or will need, taking into account the talent portfolio of existing employees. However, in attracting talents, since the business and HR practices are directly related to the perception of labor market, HRM practices need to be approached from this perspective (Alayoğlu, 2010, p. 81).

**Attracting talented employees and ensuring their participation in the organization:** In order to attract and recruit talented employee candidates in the required fields, unique and extraordinary practices are made which will make the business different and attractive compared to its competitors. These include appropriate working environment, wage and reward systems, career opportunities, social rights, benefits packages and the like (Alayoğlu, 2010, p. 81).

**Development and evaluation of talents**: At this stage, the programs which will be carried out for the development of talents and how to create a supporting corporate culture are discussed. The main reason why skilled employees leave the business is that they often find better facilities and opportunities elsewhere. Therefore, at this stage, development activities are planned for the employee who is potentially identified and recruited. Within the scope of this plan, all learning and development practices such as training, coaching, mentoring and rotation are taken into consideration in the future preparation plan of talented employees. However, it should be acknowledged that the activities required for each aspect of the talents to be developed may be different. In addition, investments to develop talent can be very costly for businesses. Therefore, it should be aimed to ensure the return of the investment to the business and to protect it as long as possible. The way to achieve this is to establish the balance between the interests of employees and employers correctly. At this stage, evaluating talents in the right place and in the right way is another issue that needs to be emphasized. The basic steps in the assessment of talents can be listed as follows (Alayoğlu, 2010, p. 82):

- As a result of investments made in employees within the scope of development plans, the extent to which the existing gap is closed with the ideal profile should be measured and evaluated accordingly.

- The results of the evaluation should be decisive in promotion of employees, in continuing to remain in the pool of potential candidates, or in making the decision to remove the him from the pool.
- Employees in the potential talent pool should be evaluated to be assigned to the position they were raised in case of a need.
- The factors should be considered in this evaluation that the likelihood that employees' current shortcomings will influence their success in the position to be appointed and the time it takes for the gap to close.
- Following the promotion decision, the appointed employee must be monitored in his new role and systematically given feedback.

It is important to make this transition slowly and controlled in order to minimize the risk of failure in new powers and responsibilities for employees who are expected to fill an important position in the future and to get the return on investment.

**Retention of talents:** Retention of talented employees is the efforts of keeping the employees who will play a role in realizing these goals in order to achieve the objectives of the business (Frank et al., 2004, p. 13). Therefore, the point that should be taken into consideration and emphasized at this stage is to include some applications such as showing talented employees that they are important to the company, and they are aware of their performance and contributions, providing an appropriate working environment, being assigned in the right positions depending on their qualifications, strengthening their belonging to the business with motivating wage and reward plans (Alayoğlu, 2010, p. 83).

When businesses enter the race to acquire qualified and talented people, individual performance will stand out team performance, and talented people will be sought from outside without recognizing the value of valuable employees within the business, staff turnover rates will increase, employee job satisfaction will be reduced, employee training and development efforts will be neglected and an elitist cultural structure will be established in the business (Erdemir, 2006, p. 32)

## Training and development of talented employees

One of the best ways to ensure the productivity of the employees in human resources management is the training and development of the employees. Training is the discovery of a change in behavior that is appropriate to the predetermined objectives at the end of a change process. There are some principles that should be taken into consideration in training activities. These are individual differences, motivation, connection with job analysis, practical work, reinforcement, selection of trainers and receivers, and training methods. Development usually refers to individual and continuous training activities for employees. In this context, it is aimed to reveal the talents that exist in people but remain hidden, to improve them and to make them ready for the changes and developments that create continuity. In order to increase the knowledge and skills of the employees, talent development programs, which are one of the training and development methods applied by the businesses, reveal the needs and desires of talented employees through different techniques such as questionnaires, interviews and 360 degree performance appraisal. After the analysis of development needs, individual development plans of the individual are prepared and implemented. Apart from that, regarding the concept of backup, if the talent pool method is applied, development programs are implemented that take into account the competence needs of the backed up position. The studies for the development of talented employees are as follows (Altınöz, 2009, pp. 73,74,80):

- Orientation is a process in which job descriptions and all information such as business policy and management philosophy are communicated to the employee.
- Work simulation is to provide learning by performing a sample of the work within the framework of certain rules.
- Rotation is a training and development program which is used to increase the knowledge and experience of employees by working in different units, to see the functioning of other units and to provide information for senior levels.

- Project work is to take part in a certain project as a team and act with team awareness.
- Reading is to follow the publications related to the sector and business lines.
- Electronic learning is to enable employees to access information through the internet.
- Participation in strategic meetings is to ensure that employees who are considered to be capable of participate in meetings held by senior executives.
- Mentoring and coaching are techniques that provide guidance to employees for their individual development.

## Talent Pool Approach

It is an advantage for businesses to create talent pools from within itself, except for the companies that have a lot of technological changes and are growing rapidly. Filling newly opened or vacant positions from within the company increases the morale of employees and their trust and loyalty to the company. In addition, employing insider talent brings less cost to businesses according to the selection and placement activities performed among non-business candidates (Doğan & Demiral, 2008, p. 154). The primary objective of the talent pool approach is to increase the productivity and efficiency of the company by improving the equipment of the employees with high potential. The other objective is to enable employees, who are in the talent pool and providing the desired level of performance, to form the basis of the future high-level staff. Businesses apply some training to the employees who enter the talent pool. In this training, interviews, psychoanalytic analyzes and valuation center applications to determine the potential are applied to the candidates to determine their managerial potential and it is sought to ensure that employees have high job performance. These include competencies such as employee's desire to succeed, common sense and high verbal communication skills and the employee is required to have continuous learning ability (Altınöz, 2009, p. 101).

## RESULT

In today's conditions, with the increasing need for qualified employees, the companies that want to be superior in competition show the importance of the concept of talent in the effort to recruit highly critical employees, to keep these employees in hand and to build the corporate reputation of the business in order to provide and maintain this superiority. It is the human being, which is an important organizational resource in achieving the objectives of the businesses, and its capabilities. Businesses that do not realize that their employee talents are positively reflected in the results of business activities continue their activities in a static structure. The executives who realize that the competitive advantage in the businesses is talented employees manage the talent management process well. In talent management process, it is important to ensure the effectiveness of talent management practice, not only with the recruitment of talented employees, but also to maintain and develop them and to make the talent approach assimilated from the highest level to the lowest level. Talent management is an important process that will increase organizational success in businesses.

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# 12

# THE CONTRIBUTION OF BLOCKCHAIN TO ECONOMY AND TRADE

*Selminaz ADIGÜZEL*[1]

## 1. The Concept of Crypto

Bitcoin is digital decentralized currency working on a peer-to-peer network. Bitcoins are generated in a so-called "mining" process where network participants, so-called "miners", use the computing power of hardware to solve the computationally complex problems. Electronic transaction of money, electronic payment methods have emerged. Electronic money and payment methods (credit card, PayPal, electronic money, e-cash, electronic check, e-wallet, synchronizes between and mobile payment, escrip, IPIN, PcPay, First Virtual, etc.) Against this background money increasingly it loses and becomes digital.

In particular, bitcoins are a "reward" for problem solution. Bitcoin "economy" is based on BlockChain technology. BlockChain can be considered as a shared public ledger, which includes all transactions in bitcoins (Lo & Wang, 2014, Kancs, Ciaian & Rajcaniova, 2015). The term crypto currency, which was created by combining the words crypto and currency, means crypto (encrypted) currency (Alptekin E, 2017, p.1). A crypto currency is a currency that uses cryptography (cryptography) in its structure. (Gandal and Halaburda, 2014) Virtualization of money with the development of technology challenges also brings with it. Credit or hacking systems behind bank cards the risk of theft of cards and more. Bitcoin is the result of the development of technology. As technology advances, digital

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coins will be used in the market to replace money. It will serve with its fast, economic aspects that will be developed as risks arise.

Instead of being physically used by using a certain password, it has the ability to be accumulated and used in the virtual wallet. Like real money, you can shop in a virtual environment and make money flow. Crypto money is a virtual wallet that can be used on websites or gaming platforms, whether we can put it in our wallet in real life. The theoretical infrastructure of crypto currencies was introduced by Wei Dai in 1998 (Dai, 2012). It was produced in 2008 by a person or group known as Satoshi Nakamoto. Digital virtual money has no nationality. It is not under the rule of any nation. According to Fabian Zbinden, blockchain is a programmed digital accounting technology. The issue of how virtual money works is the subject of research for those interested in mathematics, algorithms and technology. In this system that works with password, digital money is released to the market as the password is decrypted. Bitcoin is purchased with money when the password cannot be decoded. There is no security of the money as it cannot be controlled by the state or a bank. This non-insured money is not counted as the responsibility of the central bank through the state in some countries. This digital notebook running on a peer to peers / P2P network is comparable to a conventional database to a certain extent. A shared central database is not based on one or more distributed books (F, Zbinden, G. Kondova, 2019, p.2). Bitcoin is released by decoding the password system. Those who can't decode buy bitcoins with money. Bitcoin also has a currency system like other currencies. Currently, 1 Bitcoin is traded at 6,200 USD and , there is approximately 103.3 billion dollars bitcoin in the market (Turan Z, 2018, p 3). There are currently 1565 different types of crypto money in the market and this number is increasing day by day.

According to Kristoufek (2013) the price formation of Bitcoin can't be explained by standard economic theories, such as future cash-flows model, purchasing power parity, or uncovered interest rate parity, because several features of currency supply and demand, which usually form the basis of currency price, are absent on BitCoin markets. In particular, Bitcoin is not issued by a specific central bank or government. Thus, it is detached from the real economy implying that there are no macroeconomic fundamentals that would determine its price formation (P Ciaian,M Rajcaniova &d'A Kancs, 2015, p2).

The framework of Decentralized Autonomous Enterprises (DAE) empowered by smart contracts and the crypto-currencies, offers our future to replace today's unhealthy competition for survival of capital with the collaboration for value creation. The collaboration for value creation offers to build a more stable, more socially just, and less judicially-driven economic environment (D Kosten , 2015, p .2).

Blockchain technology provides decentralized consensus and potentially enlarges the contracting space through smart contracts. Meanwhile, generating decentralized consensus entails distributing information that necessarily alters the informational environment. Smart contracts can mitigate informational asymmetry and improve welfare and consumer surplus through enhanced entry and competition, yet distributing information during consensus generation may encourage greater collusion (Lin William Cong, Zhiguo He, 209, p1).

Bitcoin is considered to very little part of the economic system, which is used as a form of exchange and payment, where currency and sustainability are discussed. It has become a subject of international trade and economic research as a form of exchange and payment. The following table shows the characteristics of the European Central Bank's currency and the moneymatrix.

*Table 1: ECB Money Matrix (Source: European Central Bank)*

| | | | |
|---|---|---|---|
| Legal Statü | Unregressive | Local Different Kinds Money | Digital Currency |
| | Regressive | Banknote And Currency | Electronic Currency<br>Savings İn Commercial Banks |
| | | Physical | Digital |
| | | Currency Format | |

**Source** *Y. Gultekin, Y. Bulut (2019), p2.*

Today, with a market value of over $ 245 billion, the crypto currency is traded by the EU. It is seen that digital money, which is not regulated according to the EU Central Bank money matrix, that is, any central bank is not regulated by the government, is considered as money and does not need to be represented by physical material. Bitcoin is the digital currency owned by more people with the highest transaction flow among the crypto currencies. According to the European Central Bank, trading with bitcoin is not reliable and has the ability to trade slower. It is a gambling tool where you can lose, money you see as an investment very quickly. Since this currency is not guaranteed by the European Central Bank, the ECB (European Central Bank) has warned the citizen on its official website (https://www.ecb.europa.eu/explainers/tell-me/html/what-is-bitcoin.en.html. Acssesed Date 12.09.2019). Anyone who opens an account on a digital wallet with an IBAN number, can realize the transfer money. At the 2018 World Economic Forum, international high experts said the blockchain was exposed to corruption risks and added a layer of security to the transactions. Bithumb, Poloniex, Bithumb, Poloniex, Bitfinex, Coincheck, Kraken, Gemini, Coinbase etc. virtue.

According to the European Central Bank, there are three kinds of virtual currencies.

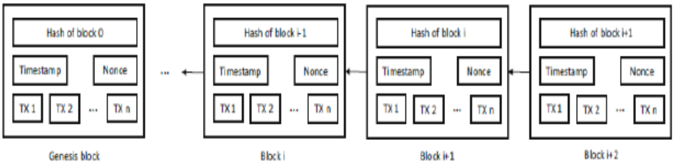
1. Closed Virtual Money is used for the exchange of goods and services in closed systems.

2. The currency which has two-way flow is obtained with fixed currency or real exchange rate with fixed exchange rate. Virtual shopping is done but crypto money cannot be converted into real money

3. Virtual money scheme with two-way flow: The money can be converted into real money. These currencies are bitcoin, bidirectional is a virtual money flow (Europe Central Bank Acsessed Date 12.10.2010).

A classic example of a blockchain illustration can be seen below (Example of a blockchain, Zheng, as cited in Nofer, Gomber, Hinz, Schiereck, (2017):

*Figüre 1 Blockchain İllustration*

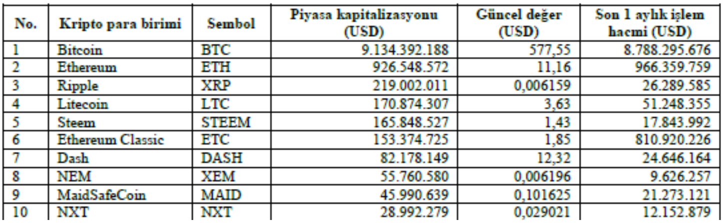

Hash of block 0
Timestamp
Nonce
TX 1
TX 2
...
TX n
Genesis block
...
Hash of block i-1
Timestamp
Nonce
TX 1
TX 2
...
TX n
Block i
Hash of block i
Timestamp
Nonce
TX 1
TX 2
...
TX n
Block i+1
Hash of block i+1
Timestamp
Nonce
TX 1
TX 2
...
TX n
Block i+2

**Source** *: Oscar Nawrot, 2019, p 8.*

The following table shows the value of the crypto currencies in USD and the one-month **transaction** volumes of the crypto currencies.

*Table 2: Market Capitalization, Current Value and Trading Volume of the Top 10 Crypto Currencies in the Market*

| **Number** | **Cripto Currency** | **Symbol** | **Market Capitization** | **Currency Value USD** | **Last one month transaction volume USD** |
|---|---|---|---|---|---|



| No. | Kripto para birimi | Sembol | Piyasa kapitalizasyonu (USD) | Güncel değer (USD) | Son 1 aylık işlem hacmi (USD) |
|---|---|---|---|---|---|
| 1 | Bitcoin | BTC | 9.134.392.188 | 577,55 | 8.788.295.676 |
| 2 | Ethereum | ETH | 926.548.572 | 11,16 | 966.359.759 |
| 3 | Ripple | XRP | 219.002.011 | 0,006159 | 26.289.585 |
| 4 | Litecoin | LTC | 170.874.307 | 3,63 | 51.248.355 |
| 5 | Steem | STEEM | 165.848.527 | 1,43 | 17.843.992 |
| 6 | Ethereum Classic | ETC | 153.374.725 | 1,85 | 810.920.226 |
| 7 | Dash | DASH | 82.178.149 | 12,32 | 24.646.164 |
| 8 | NEM | XEM | 55.760.580 | 0,006196 | 9.626.257 |
| 9 | MaidSafeCoin | MAID | 45.990.639 | 0,101625 | 21.273.121 |
| 10 | NXT | NXT | 28.992.279 | 0,029021 | 12.152.879 |

**Source** *Europe Central Bank Acssessed Date 17.10.2019.*

Bitcoin uses the concept of global digital single currency which allows for cryptographic proof in lieu of trust, and solves the problem of over-printing of traditional money that contributes towards inflation, amongst several other benefits. Blockchain structure in terms of market value, different from the others bitcon currency It is a unit. Bitcoin's supply is 21 million.

## 2. Research Method

In this study, the contribution of bitcoin to the economy and the transaction volume were examined using the literature search method. Although it is not reliable in the money market, crypto money is used in the world. The crypto-currency Bitcoin, which issues the world is given to use in Turkey.

## 3. Blockchain

Don Tapscott the real ingenuity of the virtual-digital money relationship was in the cloud, but everybody wrote poetry bitcoin and rain very good to draw attention to the blockchain relationship is a message.

Blockchain (distributed ledger technology) is a network software protocol that enables the secure transfer of money, assets, and information via the internet, without the need for a third-party intermediary such as a bank (Swan, 2015).The crypto currency stored in the blockchain network has the ability to save each information by linking it with the algorithms thanks to the advanced password algorithm in which each information is stored.. When you make a transaction by credit card, our commission is charged. You need to pay about $ 10 commission to get 1000 dollar bitcoin. There are brokerage houses to buy and sell Bitcoin constantly. Bitcoin can't be taken because it is where the authority of the state is, because the state is predetermined in this regard. In terms of the word, bitcoin is called a crypto currency whose issuance and security is not determined by an official or private institution.

Nakamoto has identified a number of parameters that include the constant 21 million Bitcoin supply, as well as the inflation rate by those nodes being implemented by users. Numerous nodes spread around the world.

These networks form the blockchain. This distributed network is typically called block chain.

Nodes are miners. Creates new bitcoin. They copied. Since Bitcoins are only available as a digital coin, they can be copied or counterfeited. As miners solve the puzzle, as the codes are decoded, computer technology spreads into the block network. use advanced computer power to solve a complex mathematical puzzle. As soon as the block is finished, the miners are rewarded with new bitcoins, so they create new ones. This repeats approximately every 10 minutes. Due to the increasing number of users and processing difficulties, individuals and corporations invest in large, expensive and dedicated machines exclusively for Bitcoin mining in private warehouses to gain more.

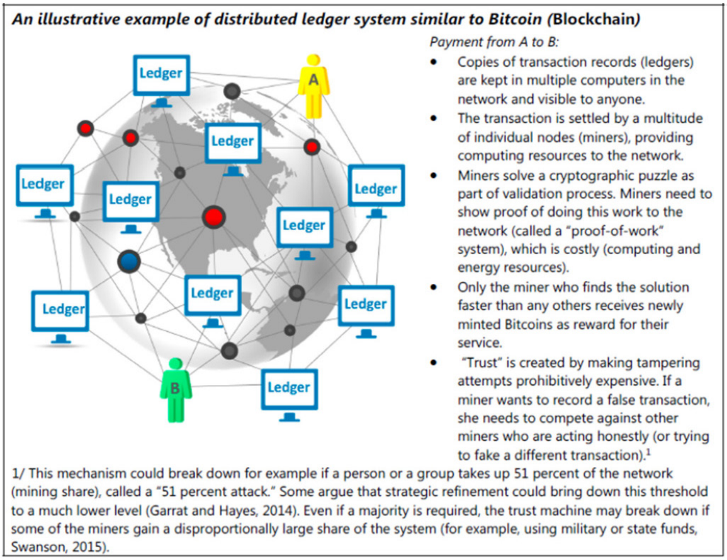
Briefly, blockchain technology allows the information (for example, processes) to be permanently saved to blocks that form an invariant chain after approval. This information cannot be overwritten, deleted or modified in any way. It allows Bitcoin to function as a decentralized and secure network.

On the one hand, there are completely open blocks like Bitcoin, Ethereum or Waves network. It works with two different mechanisms called PoW or PoS. Pos is a process that calculates the share of the coin held by the node that uses less energy. It uses different consensus mechanisms such as Proof of Purchase (PoS). PoS is an alternative that does not require advanced processing power and consumes less energy than PoW. all nodes are exposed by the same entity (Sonmez, 2014: 8). As of the end of 2017, there were 1,367 crypto currencies. These are traded in 7,467 markets. Total market capitalization 612 thousand 925 billion dollars, one-day transaction volumes (volume 24 hour) 31 thousand 416 billion

It is the dollar. Crypto currencies as of February 7, 2018 the number is 1,506 and they are 8,608 traded on the market. Total market devalues fall to $ 386,226,509 billionand a daily trading volumes of 35 billion dollars

Blockchain is a programmed digital ledger technology (DLT) based on cryptography. Since the cryo money is not considered as electronic money, it is not included in the Special Services and Electronic Money Law. Figure 1 shows how Blockchain Technology works.

*Figure 2 An Illustrative Example of a Distributed Ledger System Similar to Bitcoin (Blockchain).*



***An illustrative example of distributed ledger system similar to Bitcoin* (Blockchain)**

*Payment from A to B:*

- Copies of transaction records (ledgers) are kept in multiple computers in the network and visible to anyone.
- The transaction is settled by a multitude of individual nodes (miners), providing computing resources to the network.
- Miners solve a cryptographic puzzle as part of validation process. Miners need to show proof of doing this work to the network (called a "proof-of-work" system), which is costly (computing and energy resources).
- Only the miner who finds the solution faster than any others receives newly minted Bitcoins as reward for their service.
- "Trust" is created by making tampering attempts prohibitively expensive. If a miner wants to record a false transaction, she needs to compete against other miners who are acting honestly (or trying to fake a different transaction).[1]

1/ This mechanism could break down for example if a person or a group takes up 51 percent of the network (mining share), called a "51 percent attack." Some argue that strategic refinement could bring down this threshold to a much lower level (Garrat and Hayes, 2014). Even if a majority is required, the trust machine may break down if some of the miners gain a disproportionally large share of the system (for example, using military or state funds, Swanson, 2015).

**Source:** *(IMF Staff Discussion Notes SDN/16/03)*

This digital ledger can to a certain extent be compared to a traditional database. Unlike a common centralized database, the network of a distributed ledger does not rely on one or a few central instances Instead, blockchain functions as a decentralized and distributed network This implies that the entire network must be operated by a multitude of servers, referred to as nodes. Since this network is decentralized, a special consensus mechanism is required to ensure the authenticity, as well as the integrity of the data (F. Zbinden, G. Kondova, 2019, 55).

## 4. Literature Review

With the spread of Bitcoin on the internet, thousands of researches have been made. Some of these are those: The seminal work by Markowitz (1952, 1976), finance stresses the importance of portfolio diversification and a lot of analysis explores the optimal mix of assets that allows for the https://doi.org/10.1016/j.irfa.2018.10.003 Received 19 June 2018; Received in revised form 25 September 2018; Accepted 5 October 2018 The first ever article on cryptocurrency (Bitcoin) on the Financial Times was published on 6th June 2011 (Allowey, 2011) International Review of Financial Analysis 61 (2019) 143–157 Available online 11 October 2018 1057-5219/ © 2018 Elsevier Inc. All rights reserved. T maximisation of the return by minimising the risk (i.e. the volatility). Historically the focus was on shares (e.g. Treynor & Black, 1973), bonds (e.g. Barnes & Burnie, 1990), and derivatives (e.g. Galai & Geske, 1984), and spillover effect both in terms of returns and volatility (Hamao, Masulis, & Ng, 1990; Kearney & Daly, 1998; Pyun, Lee, & Nam, 2000). More recently, research explored the link between portfolio diversification and other aspects such as taxes (e.g. Stein, Siegel, Narasimhan, & Appeadu, 2000) and leverage (e.g. Ruban & Melas, 2011). Closer to our research are the works that focus on the role of currencies in portfolio diversification (e.g. Makin, 1978; Pojarliev & Levich, 2011) and the related spillovers (Johnson & Soenen, 2004). The increasing presence of cryptocurrencies has started to attract some interest among academics who wish to assess bitcoin as an asset to include in portfolios. Sadly, very little has been published so far. There are few works that focus on spillovers (Burnie, 2018; Guesmi, Saadi, Abid, & Ftiti, 2018), on the correlation with other currencies (Baumöhl, 2018) or on cryptocurrency volatility (Katsiampa, 2017). In addition, few academics explore cryptocurrencies' liquidity and their investibility (Dyhrberg, Foley, & Svec, 2018; Karalevicius, Degrande, & De Weerdt, 2018; Wei, 2018), cryptocurrencies' price formation (Brauneis & Mestel, 2018; Ciaian, Rajcaniova, & Kancs, 2015) or the relationship between cryptocurrencies and other financial assets (Corbet, Meegan, Larkin, Lucey, & Yarovaya, 2018). Finally, very little research most of which is based on portfolios of U.S. assets, has been performed so far on portfolio diversification (Brière, Oosterlinck, & Szafarz, 2015; Carrick, 2016 (Wu & Pandey, 2014) A Kajtazia, A Morob, 2019,p2).

## 5. Blockchain in Turkey

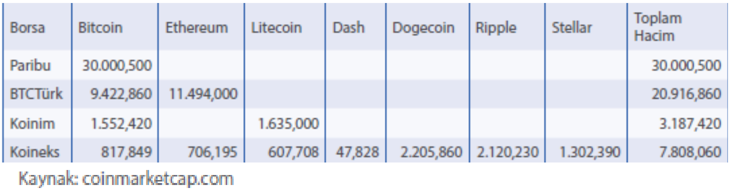
Most of Bitcoin's important distinguishing feature is standard like dollar or euro compared to fiat money

a person, group, company, central authority or provision not by met with a software algorithm control.

Held worldwide last survey, one out of every five people in Turkey in 2019 using crypto crypto currencies and currency transactions carried out with. As of the end of 2017 in Turkey four crypto currency exchanges Paribu, BTCTurk, Koinim and Koineks are active. 360 of BTCTurk, one of the crypto money exchanges 55 thousand active users. he crypto-currency in Turkey the number of users with increasing interest transactions is expected to increase from 9 thousand to 42 thousand in the last six months (

While the use of crypto currencies is becoming widespread, a number of regulations are needed.for example, Akbank transfers money abroad. has started to use blockchain technology to make it more comfortable.

*Table 3 24-Hour Volume Of Bitcoin Exchange In Turkey*



| Borsa | Bitcoin | Ethereum | Litecoin | Dash | Dogecoin | Ripple | Stellar | Toplam Hacim |
|---|---|---|---|---|---|---|---|---|
| Paribu | 30.000,500 | | | | | | | 30.000,500 |
| BTCTürk | 9.422,860 | 11.494,000 | | | | | | 20.916,860 |
| Koinim | 1.552,420 | | 1.635,000 | | | | | 3.187,420 |
| Koineks | 817,849 | 706,195 | 607,708 | 47,828 | 2.205,860 | 2.120,230 | 1.302,390 | 7.808,060 |

Kaynak: coinmarketcap.com

Bitcoin platform BTC Turk and Koinim exchanges the world, with bitcoin purchases and sales operations. In these platforms with close to 500,000 members, a certain percentage of operating commission is charged for the sale of the crypto money, which has risen from 2000 to 20000 rubles since 2009.

The Banking Regulation and Supervision Agency warned consumers that Bitcoin and other similar crypto currencies cannot be evaluated within the scope of the Law No. 6493 on Payment and Securities Settlement Systems, Payment Services and Electronic Money Institutions with the statement made on 25.11.2013. It is the money used in the said law to make payment transactions and is accepted as a means of payment for your real and legal members (Aslantaş, 2016, p. 361). The current currency value of Bitcoin is 1 BTC = 7976.56388684 USD on 20 October 2019. Today's studies are being conducted for legalization of Bitcoin in the world.The volume of Bitcoin and other crypto currencies in the real market is estimated will be very high within 5 to 10 years. Crypto currency is completely digital. Finds usage area in electronic environment. Bitcoin is not a currency banned in Turkey. The system that produces 184 billion counterfeit bitcoin in 2000 is considered to be a secure system today. The state is responsible for governing its people according to the rule of law. This responsibility was given by the Constitution and ordered the state administration to act in accordance with the law. The encryption currency stored in the Blockchain network, the advanced encryption algorithm in which an information is stored, shows the ability to save it by linking it to the algorithms. It provides a communication and information communication without connecting to a center. Not only provide the flow of money, but also the customer and international trade and logistics. The first Bitcoin ATMs in Turkey. It was opened in Istanbul Ataturk Airport (https://eticaretmag.com/turkiyenin-ilk-bitcoin-atm-siistanbul/, 2018 Acsssed Date 12.10.2019). ). Bitcoin as currency. innovative studies for the establishment of research laboratories in Turkey TUBITAK Blockchain leadership are trying to be followed. As long as the adoption of the Internet takes years and the use of blockchain technology, the use of blockchain technology will become widespread in the field of logistics as in many other areas. Airline ticket sales are also taking advantage of the technology in Turkey with blockchain technology.

The company has branches in 141 countries and operates in commercial transactions with crypto Money. Although Turkey Central Bank is not legally accept such as Japan, EU countries, and the US, went on to establish working groups on the BlockChain without sacrificing the blockchain (Banking State Audit Institution, the Republic of Turkey Central Bank and the Capital Markets group consisting of the Authority) has been closely monitoring the blockchain.

## 6. Blockchain Around The World

In December 2018, the market capitalization of cryptocurrencies reached nearly 400 Billion U.S. Dollars, equivalent to 11% of M1 in the U.S.A. While central banks seek to control the price level or inflation of their traditional fiat currencies, Cryptocurrencies, however, are not necessarily controlled by central banks or central institutions. As a result, the price of cryptocurrencies such as Bitcoin has fluctuated wildly. Bitcoin usage in countries such as Japan, Canada, USA, France, England, Germany quite wide. The world's first bitcoin ATM is located in Canada. Korea is among the countries that do not accept

In Norway, Germany does not consider bitcoin as a currency. Already the Euro currency is the goal of the existence of the EU. It is not in accordance with the philosophy of the Union that the European Union is considered to be a single currency, because it is in the philosophy of the European Union. However, the EU does not completely reject the currency that changes the financial transactions in the world. According to the US based market research (Internationale Data Corparation), blockchain spending in Western Europe in January 2018 is estimated to increase to $ 1.8 billion. According to research of this research firm, blockchain will be traded by banks in Europe in 2018, and 46.7 percent of 2018 blokchain expenditures are expected to come from the banking sector. The European Union supports projects by allocating 300 million Euro for the rapidly spreading Blockchain in 2018.

In September 2017, the Mexican government has initiated a blockchain project called "Blockchain HACKMX". The project's main goal is to promote government digital innovation and to address the issue of public contract corruption (Role of Economic Development and Blockchain in Mexico, 2019, p.2). Although 99 studies on bitcoin have been interpreted as 377 times that bitcoin will die, crypto money has always gained value. According to its statistician Willy Woo, it has gained about 40% of the life span of the states' currency (Hakan Ateşler, https: //uzmancoin.com/ bitcoin-itibari-para/Acsessed Date, 12.10.2019).

Bitcoin became a part of the economy as it was traded on the Stock Exchange. In Mexico, he's putting his crypto money into regulations. Crypto money operates in industry, trade and money transfer sector.

Crypto money has been used for drugs, corruption, terrorist organizations, money laundering. The competent authorities are warns with the instructions the citizens. Mexico is among the few countries proactively enacting laws for the fintech industry and the Fintech Act. Today, the market share of the crypto currency, which has increased by 65%, has been in its field until Monday. This is the place where the national currency is in danger. Crypto is causing the currency to break. The global economy, a leader that closely follows the world economy, click here for their countries to be ready for digital money. Carlos Margos wants the crypto money to be used to make the money gain value. The crypto currency, the digital currency unaffected by the differences in exchange rates, is unaffected by inflation and is stable against crises. When transferring money from one wallet to another, the security is secured by being encrypted with a chain of security blocks). As its value increases, its usage area expands. Andrew Bailey, Managing Director of Financial Services, the British Government, warns bitcoin depositors that one day they should consider losing all their money. UBS President Axel Weber ING Bank and FED President warned the public about the crypto currency. However, EU countries have planned to make proposals for G20 countries. Bitcoin are known to be used by IOTA, Bosch, Microsoft, Fujitsu and Samsung

(Chicago Stock Exchange R & D Newsletter 2017 November December – Economy).

Sea transport operators Danish origin Maersk Line increased its profit by using blockchain in cooperation with IBM for paperwork and payment transactions in international logistics activities

In South Korea and Seoul, the international logistics company Lotte joined the BITA Blockchain Association and joined the Origin Trail, a company that aims to build the supply chain and blockchain standards (Yıldırım, 2015, p.89). BITA, which has more than 400 members in the world, has a warehouse management, airway, highway, railway, transportation modes, cargo services, 15 mega terminals, 90 regional dealers and a giant logistics company serving the USA, Asia and Europe, the blockchain in Transport Alliance (Blockchain Union in Transport, BiTA participated)( 2017 Blockchain Spending Guide).

Also, the blockchain can help you realize cost savings. It activates leaner, more automated and error-free processes, and accelerates the physical flow of goods. Milsped, which has a say in Europe in the field of logistics, has increased the use of blockchain in the logistics sector with the partnership established with Bill X-based Platform X, the developer of Bill-Lading platform in the maritime area. The logistics company, which has more than 1800 employees, brought innovation in the logistics field in cooperation with Cargo X. Cargo X makes global Bill of Lading operations possible as an independent supplier of the blockchain base. CargoX, Ocean X logistics, the partnership established in the Transport Alliance The use of the blockchain in the logistics sector was introduced in Germany in Dubai. Cargo X, a partnership with European logistics companies such as Europacific, DBA Group Actual Group, supports port logistics operations and oil has signed a partnership agreement with DBA Group member Actual Group, which provides advanced and comprehensive IT solutions to monitor and control retail business systems in the industry. Cargo X's Swiss logistic companies such as Fracht AG and Ocean X, Transport Alliance, and many logistics companies entered into the blockchain network. Using CargoX's Smart B / L, logistics companies are expected to save up to $ 5 billion a year and reduce the time required to transport documents between senders and buyers by up to 10 days (CargoX, 2018). IBM is interested in UBS, Bank of Montreal, CaixaBank, Erste Group and Commerzbank based trade finance platform has continued with the partnership established for. 18 Similarly before Wells Fargo between Commonwealth Bank of Australia Cotton shipment from the US to China blockchain technology for monetary transactions It was used.

Walmart, Companies like Unilever, Nestle, Dole, Kroger IBM has signed with. Sweden uses blockchain to store land registry records.

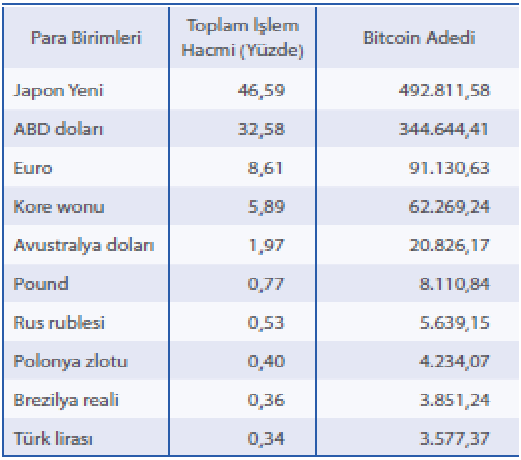
Blockchain technology can be used as a counterfeit measure. Imagine being kept in such a way that it cannot be broken or broken with its transparent and secure structure. Tracking of products can thus become much easier and it can be determined whether the product is counterfeit.

The number of Bitcoin ATMs and Bitcoin accepting businesses is increasing day by day. Bitcoin, E-Bay, Amazon,

Dell, Microsoft, Subway, Tesla and Bloomberg as a means of payment is accepted by many businesses**.**

The following table is given currencies used ın bitcoin transactions. Accordig to Table 4 Japon Japon yeni ve ABD Doları bitcoin işlem hacmi en yüksek paradır.

*Table 4 Currencies Used In Bitcoin Transactions*



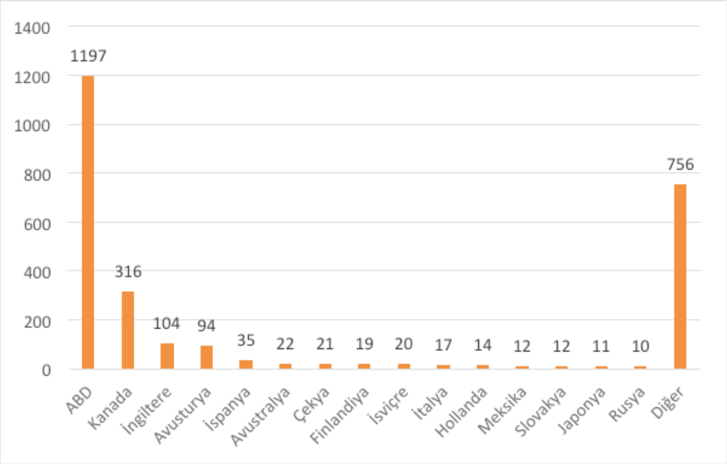
| Para Birimleri | Toplam İşlem Hacmi (Yüzde) | Bitcoin Adedi |
|---|---|---|
| Japon Yeni | 46,59 | 492.811,58 |
| ABD doları | 32,58 | 344.644,41 |
| Euro | 8,61 | 91.130,63 |
| Kore wonu | 5,89 | 62.269,24 |
| Avustralya doları | 1,97 | 20.826,17 |
| Pound | 0,77 | 8.110,84 |
| Rus rublesi | 0,53 | 5.639,15 |
| Polonya zlotu | 0,40 | 4.234,07 |
| Brezilya reali | 0,36 | 3.851,24 |
| Türk lirası | 0,34 | 3.577,37 |

Kaynak: https://www.coinhills.com/market/currency (7

Dubai is one out of seven Emirates that make up the United Arab Emirates (U.A.E.). Dubai is to host Expo 2020 under the theme of "Connecting Minds, Creating the Future". Dubai government has launched a plan to transform U.A.E. to a Smart Country which is a seven year plan, and to transform Dubai to a Smart City which is a three year plan. This research attempts to use these two goals and align them with what Bitcoin has to offer, and also outlines and emphasizes how the use of Bitcoin can advance the economies of other countries in a similar way. It would seem that the reasons for a global currency, as suggested by Bitcoin, are political and social in nature (Anu Singhal, Aqila Rafiuddin, 2014, p 1).

The following Graffic 1 is given Number Of Bitcoin Atm in Count**ries**

*Graphic 1 Number Of Bitcoin Atm in Countries*



*Kaynak: "Coin ATM Radar", www.coinatmradar.com*

Today, 11000 businesses accept transactions with Bitcoin. There are 1,963 Bitcoin ATMs in 61 countries.Nearly 60 percent of Bitcoin ATMs are located in the United States. There are 1,197 ATMs in the USA, 316 in Canada, 104 in the UK and 94 in Austria. A bitcoin ATM is installed every two days.

## RESULTS

In recent years, Bitcoin has attracted the attention of academicians and statesmen who have been working in the fields of economics, commerce and finance. Since the tax, which is the biggest source of income of the countries, is not taken from crypto money transactions and is not under the supervision of the state, the state warns its citizens about crypto money. In 2009, 1 Bitcoin was US $ 0.01, and on 25.0.2019, one bitcoin was US $ 9.204.44. This internet-based crypto currency does not fully feature electronic money. Risks and shortcomings such as serious price fluctuations, complete loss of investments, various operational and security weaknesses, market manipulation.

Because in electronic money, the dominance of the state is essential. In the case of crypto money, the responsible institution is not yet known. The studies are in the direction of the responsibility of the state. Crypto currency is preferred because it is not affected by inflation and there is no exchange rate difference. Although there are companies that perform international trade with bitcoin, countries are cautious for now. Bitcoin, which has become a global trend, is gaining in value as academic research is added every day. There is no accountability because you can transfer any amount of money to any country at any time with the crypto currency. Therefore, it is stated that drugs are used for transferring money in terrorist activities. Although there is concern that the dollar will replace the United States, bitcoin is a danger to the currency of each country in its current state. Because the variable exchange rates in money markets will bring alternative payment methods in international trade. Bitcoin or other crypto currency will increase the value of a crypto currency without nationality, not the state's own money. As this money is not safe, it is stated that the risk of losing all the money at a time and the decrease in the value of the national currency will lead to an increase in the income by decreasing the income. As technology evolves, bitcoin and other crypto currencies will become a currency to be used by countries in their commercial business and operations, as nationality and crypto money fall under the authority of the sovereign state or under the control of a certain group of organizations. Otherwise, it will serve as a technological spy that allows the passage of unlawful money out of all good uses.

Today, developed countries use digital money instead of paper money. Bitcoin and other crypto coins, cards will take. Provides resistance to change. Today, in the EU, if he gave up his money, the symbol of national unity and accepted the Euro, digital crypto coins and blockchain (block chain) with digital digital card, cards, face reading, voice recognition, pupils scanning technology will play important role in new monetary order

Nobel Laureate economist Joseph Stiglitz, currency of one of the main tasks of the state Create a Bitcoin by expressing that balloon and socially stated that it should be banned immediately because it has no meaning.

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# SECTION III

# FINANCIAL DEVELOPMENT, INTERNATIONAL TRADE, AND CORPORATE FINANCE

# 13

# IS THE FINANCIAL DEVELOPMENT IMPORTANT FOR THE AGRICULTURAL GROWTH IN TURKEY BETWEEN THE YEARS OF 1996-2018?

*Esra KADANALI*[1]*, Emine KAYA*[2]

## 1. Introduction

As in the world, agriculture is an important sector for Turkey. The agricultural sector contributes to the overall economic growth by feeding the rapidly growing population, providing employment, and supplying raw materials for the agriculture-based industry. It is necessary to take advantage of the competitive advantage in order to improve agricultural demand, to increase the added value of agricultural products and to maximize opportunities in the domestic and global markets (Dhrifi, 2014).

Dhrifi (2014) explains that agricultural production level has to grow consistently to maintain food security in the face of ever-growing population. To achieve this goal that it is important to the role of financial services to agriculture sector. In the Global Agriculture and Food Security Program (GASP) annual report (GAFSP, 2014) is indicated that growth originating in agriculture has been two to four times more effective in reducing poverty than gross domestic income (GDP) growth originating outside of agriculture. It is stated that agricultural growth is the pioneer of broad-based economic growth and development.

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The use of modern technology and new production techniques in production has an important role in the growth of the agricultural sector. Agricultural financing sources and their access to these sources can be effective for producers to realize production based on modern technology. While access to technology and equipment in agricultural production is determined by the borrowing capacity of producers, this capacity is largely dependent on the level of development of agricultural banking (Seven, 2016). Financial development is generally defined as a process that improves the quantity, quality and efficiency of financial intermediation services. Therefore, the first measure of financial development is a percentage of GDP and the ratio of the banking system loan to the private sector. It can be stated that the financial development in agriculture and the use of modern production techniques and thus the productivity will increase. Increases in productivity will also contribute to agricultural growth. Based on these explanations, it is considered that agricultural growth and financial structure can be evaluated together.

In Turkey, some figures relating to the agricultural sector, can be briefly summarized as follows: In Turkey, 14 617 ha of agricultural land. In 2018, the agricultural sector's contribution to GDP was 5.8%. In 2019, the share of agricultural employment in total employment was 19% (World bank, 2019). In 2018, the total export value of agriculture, forestry and fisheries was 4,965,833,303 dollars (TURKSTAT, 2019). The total number of tractors and harvesters are 1 332 139 and 17266, respectively (TURKSTAT, 2018). The total amount of tools and machinery other than tractor and combine harvester is 9 666 593. For 2018, crop production value is 159 142 177 629 TL and animal production value is 225 334 263 602 TL. About agricultural financial situation in Turkey Agricultural Finance Summit (2017) report stated that agricultural loans of private banks is the ratio of total agricultural loans as of 2017 year-end was 31.8%. In 2018, the total amount of agricultural loans granted was 77.8 billion TL and the Republic of Turkey Ziraat Bank had a share of approximately 80% with 62.2 billion TL. The share of private banks in total agricultural loans is approximately 20%.

When we look at the literature, we see that the studies which measure the relationship between economic growth and financial development intensify. However, since there are few studies that measure the relationship between agricultural growth and financial development, we estimate that this study will contribute to literature in this respect. In fact, when considering the importance of the agriculture sector for Turkey's economy, to reveal the interaction of the changes occurring in the financial sector and the agricultural sector is precious and this is an another contribution of this study to the literature. Therefore, in this chapter, it is aimed to study the relationship between agricultural growth and financial developments in Turkey the period covering the years 1996- 2018.

The study consists of four sections. The relationship between agricultural growth and financial development and the importance of the subject are explained in the introduction. In the second part, studies on the relationship between agricultural growth and financial development are presented. In the third part of the study, materials and methods are explained. In the last section, the results of the analysis and discussion are given and the study is completed with the conclusion the evaluation.

## 2. Literature Review

In the literature, there are theoretical and empirical studies about importance and effects financial development in economic growth and relationship between financial development and economic growth (Schumpeter, 1911; Calderon et al., 2003; Güngör and Yılmaz, 2008; Adekunle et al., 2013; Çeştepe and Yıldırım, 2016). However, the study which examines the relationship between financial development and agricultural growth is limited.

In the theoretical literature, various factors affecting agricultural growth and productivity can be listed as follows: Environment, qualified human capital, use of capital, agricultural chemicals, GDP, openness, level of agricultural trade and industrialization, financial development. Financial development enables farmers to invest and adopt new methods of production in the agricultural sector, which helps to increase agricultural productivity. It provides financing to farmers which have insufficient financial resources to purchase inputs such as seeds, fertilizers and agricultural chemicals that increase agricultural productivity. Therefore, it can be said that affordable and accessible financial services are necessary to increase the productivity of the agricultural sector (Zakaria et al., 2019).

Ansari (2001) states that farmers need financial resources to obtain loans under favorable conditions in order to rise agricultural productivity. In addition, Sidhu et al. (2008) estimate the demand for corporate agricultural loan in Punjab (India) using synchronous equations. As a result, they express that there is a positive relationship between using agricultural loan and agricultural productivity that encouraging farmers to use modern technology to increase domestic market output efficiently. Chandio et al. (2016) find that a 1% increase in loans will increase agricultural yield by 0.86% and the impact of the loan on agricultural production is positive and significant.

Yazdani (2008) investigate for Iran economy the relationship between development in financial market and agricultural GDP growth the period 1979-2005. As a result of the study, it is revealed that there is a one-way causality from GDP growth to financial development. Parivash and Torkamani (2008) evaluate the impact of financial markets on the agricultural growth in Iran. In their study, they use the Vector Otoregressive Model (VARM) and Granger causality tests. They conclude that the financial development has a positive effect on agricultural growth. In another study for Iran (Sharif et al. 2009) indicates that Iranian financial markets play the significant role for agricultural growth, but it claims that financial reforms are necessary to improvement of the financial sector still.

Afangideh (2009) explores the effect of financial development on investment and production in agriculture between 1970- 2005. The empirical results show that bank loans for agriculture, make a positive and considerable effect on real gross national saving and real output of agricultural sub-sector. Anthony (2010) investigates the role of agricultural loan, interest rate and exchange rate for the Nigerian economy. The results show that agricultural loan increases the productivity of the agricultural sector and the agricultural sector supports economic growth. Yazdı and Khanalizadeh (2014) reveal an advanced financial system increases agricultural economic activity that contributes to economic growth.

Shahbaz et al. (2011) state that financial development has a positive effect on agricultural growth. Karaoğlan et al. (2017) aim to investigate the relationship between financial development and agricultural support for the period 1986-2015 with a new asymmetric causality analysis method in Turkey. As a result of the study, they state that there is one-way causality from financial supports to financial development among negative components of agricultural variables.

Another study in Turkey is made by Çevik and Zeren (2014). Çevik and Zeren (2014) analyse about the relationship of agricultural loans and financial development for the period December 2005 and October 2013. And they state that result of data analysis, agricultural loans have impact on financial development in positive shocks conditions. But it is indicated that there isn't any relationship between the variables in negative shock conditions. Dhrifi (2014) studies on the nexus of financial development-agriculture productivity between the year 1990- 2012 for 44 African countries. At the end of the study, he finds that financial systems can not beneficence by itself from agriculture sector in African countries, but at the existence of a strong quality of institutions, it contributes positively to agriculture performance.

Onoja (2017) indicates to that financial sector development provides positively to agricultural productivity. On the other hand, he asserts that the magnitude of the effect is however statistically insignificant. Also Onoja (2017) states that agricultural loan has a positive and significant effect on productivity for sample of 75 developing countries, but for developed countries agricultural loan has positive and insignificant effect. Oliynyk-Dunn's (2017) research results prove that in Ukraine, the relationship between the banking component of the financial system and the agricultural growth is a positive.

Lihong and Qinggao (2007) examine the relationship between rural financial development and economic growth in China. Unlike the general results in the literature at the end of the study, they find that development of financial market does not promote the rural economic growth. Narayanan (2016) seeks that the characteristics of the relationship between formal agricultural loan and agricultural gross domestic product (AGDP) in India, specifically the function of the former in supporting agricultural growth. As a result of the study, it is find that agricultural loan has an effect on the increase in input supply. However, it states that agricultural loan has no effect on AGDP. When we evaluate generally these researches, we can say that there is a relationship between financial development and agricultural growth.

## 3. Data and Method

The aim of this study is to show the relationship between financial development and agricultural growth. We use the annual frequency data on Turkey's economy in the period of 1996-2018 for this study. In the literature, agricultural productivity is used as an indicator of agricultural growth (Bayromoğlu, 2010). We follow the literature and assume that agricultural productivity is as an indicator of agricultural growth. In this context, as similar with Bayramoğlu (2010), we use the agricultural production value data to represent the agricultural productivity.

In order to measure the financial development, we prefer total loans data which is given to private sector and the total market value of the shares traded on Borsa İstanbul for a certain period in accordance with Güngör and Yılmaz (2008). We obtain the total loans, total market value and agricultural production variables from official web sites of Republic of Turkey Electronic Data Distribution System, Borsa İstanbul, and Turkish

Statistical Institute. We include the variables in the analysis with percent changes. Figure 1 gives to us the course of the agricultural productivity and financial development indicators for 1996- 2018-time period.

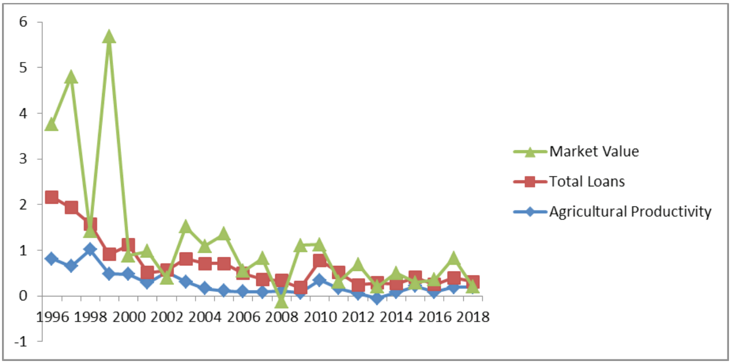

*Figure 1. Course of Variables for 1996-2018 Time Period*

When we look at Figure 1, we can see the volatility of the related variables. Figure 1, the high volatility of the total market value variable is consistent with the case of the theoretical expectation that the volatility of the financial macro variables is high. So that the total market value variable experiences big and small increases and decreases. On the other hand, the total loans and agricultural productivity variables do not move together until 2008, sometimes moving in opposite directions. However, after 2008, they generally follow a parallel course. This situation can be attributed to the expansion of loan volume with the effect of 2008 global crisis. Because the agricultural loans can increase the agricultural production. However, as a result, it is not overlooked that the variables have experienced increases and decreases during the same periods, albeit at different rates.

In this study, the relationship between agricultural growth and financial development is examined with time series analysis. In this context, if you work with time series, first, the stationarity properties of the series are examined. Because when we work with non-stationary time series, spurious regression problem arises (Gujarati, 1995). In addition, determination of the stationary characteristics of the time series is essential to make the right model selection. For these reasons, we examine the time series properties of the variables of agricultural productivity, total market value and total loans. When determining time series properties of related variables, we prefer the Advanced Dickey-Fuller (ADF) Unit Root Test which is widely used in the literature. Then, we estimate the regression with the Ordinary Least Squares (OLS) method, which gives the binary relationships between the variables and the direction of these relationships. In the regression estimation, financial development is an independent variable; agricultural growth is dependent variable. The regression equation to investigate the relationship between agricultural growth and financial development is below:

$$Agricultural\ Productivity_t = \alpha_0 + \alpha_1 Total\ Loans_t + \alpha_2 Total\ Market\ Value_t + \varepsilon_t \quad (1)$$

The variance of the error terms must be constant so that the regression estimations do not bias. On the other hand, to detect whether there is an autocorrelation problem between error terms is important in regression estimations. In this study, we investigate whether there are heteroscedasticity and autocorrelation problems that cause the regression estimation to be biased used Breusch-Godfrey Test and White General Heteroscedasticity Test.

## 4. Results and Discussion

In this part of the study, we present the results and discussion. When reporting the findings, we first report the stationary characteristics of the time series. Then, we estimate the regression for determining the binary relationship between the variables. In addition, when making regression estimation, we examine whether there are deviations from regression assumptions and then report them. Table 1 presents the stationary characteristics of the time series.

*Table 1. Advanced Dickey-Fuller Unit Root Test Results*

| **Variables** | **Level Values** | | **First Difference Values** | |
|---|---|---|---|---|
| | **Constant** | **Constant/ Trend** | **Constant** | **Constant/ Trend** |
| **Total Loans** | -3.45(0)** | -5.71(4) | - | - |
| **Total Market Value** | -5.34(0)* | -7.06(0)* | - | - |
| **Agricultural Productivity** | -2.45(0) | -2.67(0) | -7.36(0)* | -5.41(2)* |

a)* and ** indicate statistical significance at 1% and 5% levels.

b)The values in parentheses indicate the optimum lag lengths for the Advanced Dickey-Fuller unit root test.

As can be seen from Table 1, while the agricultural productivity variable is stationary in first difference, the total loans and total market value variables become stationary in the level value. After determining the stationary properties of the variables, we make a regression estimation and present it in Table 2.

*Table 2. Regression Analysis Result*

| **Dependent Variable=Agricultural Productivity** | **Coefficients** | **Probability** | **t-Statistic Value** |
|---|---|---|---|
| **Constant** | 0.07 | 0.3 | 1.06 |
| **Total Loans** | 0.47 | 0.00 | 3.01 |
| **Total Market Value** | 0.01 | 0.75 | 0.31 |
| **F Test Statistic** | 6.26 | 0.00 | |
| **Breusch-Godfrey Test** | 1.67 | 0.21 | |
| **White General Heteroscedasticity Test** | 0.6 | 0.7 | |
| **Adjustment** $R^2$=0,39 | | | |

a) We take the agricultural productivity variable into the regression analysis with the first difference since it becomes stationary in he first difference.

Table 2 shows that F statistic and its probability value is significance statistically. Moreover, the Breusch-Godfrey Test and White General Heteroscedasticity Test results in Table 2 indicate that there are not autocorrelation and heteroscedasticity problems in regression estimation. Adjustment $R^2$ is 0,39. Regression estimation proves that the total loan variable affect the agricultural productivity variable positively and statistically significant. Thus, a 1% increase in the agricultural loans variable results a increase of 0.47% in the agricultural productivity variable in a significant statistically. As a matter of fact, the total market value of the firms traded on Borsa Istanbul does not affect the agricultural productivity variable statistically.

The finding that the total loans variable affects the total productivity variable may be due to agricultural loans in total loans. Because total loans consist of all banking sector loans including agricultural loans. In addition, the Republic of Turkey Ziraat Bank agriculture loans are still within in total loans. This situation makes the positive relationship between the total loans and the agricultural productivity variables inevitable.

Figure 2 shows graphically the positive and statistically significant relationship between the total productivity and the total loans variables from regression estimation in Table 2. It also presents a positive and statistically insignificant relationship between the total productivity and the total market value variables.

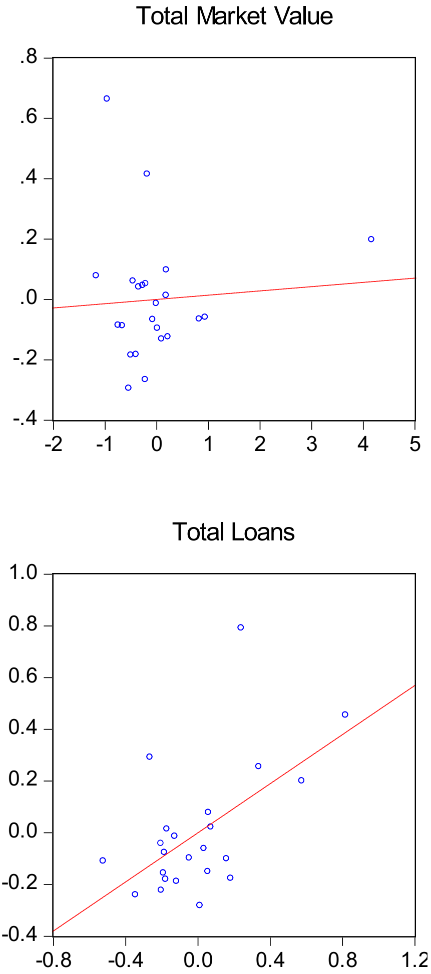

*Figure 2. The Regression Relationship Between The Agricultural Growth and The Financial Development*

Çevik and Zeren (2014) claim that the agricultural loan affects the financial development. This finding is an indication that the agricultural sector stimulates the financial sector. In this study, we obtain the opposite findings with the findings of Çevik and Zeren (2014). Because their findings prove that the agricultural sector has a statistically significant effect on the financial sector. Our findings indicate that the financial development affects positively and statistically significant the agricultural growth. On the other hand, Karaoğlan et al. (2017) explore that the relationship between financial supports given to the agricultural sector and the financial development for Turkey's economy. They state that there is a unilateral the relationship between the financial supports of agricultural sector and the financial development. The findings of Karaoglan et al. (2017) are also in contradiction with our findings.

We support the findings of Sidhu et al. (2018), Shahbaz et al. (2013), and Chandio et al. (2016). Because, Sidhu et al. (2008) research India economy and say that there is a positive relationship between agricultural loan and agricultural productivity. Chandio et al. (2016) find that a 1% increase in loans will increase agricultural yield by 0.86% and the impact of the loan on agricultural production is positive and significant. Moreover, Shahbaz et al. (2013) examine the relationship between agricultural growth and financial development in Pakistan for the period 1971-2011. As a result of the analysis, they find that the financial development positively affects the agricultural growth.

## 5. Conclusion

The aim of this study is to show the relationship between agricultural growth and financial development. We use the annual frequency data on Turkey's economy in the period of 1996-2018 for this study. In determining the relationship between agricultural growth and financial development, we use the total loans, total market value and agricultural productivity variables. In this study, the relationship between agricultural growth and financial development is examined with time series analysis. When determining time series properties of related variables, we prefer the Advanced Dickey-Fuller Unit Root Test which is widely used in the literature. Then, we estimate the regression with the Ordinary Least Squares (OLS) method, which gives the binary relationships between the variables and the direction of these relationships.

Regression estimation proves that the total loan variable affects the agricultural productivity variable positively and statistically significant. As a matter of fact, the total market value of the firms traded on Borsa Istanbul does not affect the agricultural productivity variable statistically. This finding means that financial development plays an important role in the development of agricultural production and hence agricultural growth.

Based on the results, we claim that there is a relationship between financial development and agricultural productivity. In addition, agricultural productivity will increase as the use of agricultural loans which will enable farmers to benefit from modern agricultural technologies. It can be stated that increasing agricultural productivity will increase agricultural growth. That is, we conclude that strong financial development may affect agricultural growth.

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# 14

# CLASSICAL INTERNATIONAL TRADE THEORIES

*Mehmet Ragıp Görgün*[1]

## 1-Mercantilism

An economic theory developed in the 16th to 18th centuries, can be described that the State, in different countries, has sought to control economic life in the interests of political and national strength and independence, and which by virtue of the importance that it has attached to the maintenance of a favourable money balance on foreign trade has been called the Mercantile System or Mercantilism (Horrocks, 1925, s. 1).

The Age of Exploration—besides leading to the discovery and conquest of new lands such as the Americas, and overseas expansion and new trade routes such as with Asia—brought about national economic changes. The fierce competition for trade and empire among European monarchs led to the widespread adoption of mercantilism, an economic policy under which nations sought to increase their wealth and power by obtaining large amounts of gold and silver and by exporting more goods than they imported (www.tamaqua.k12.pa.us, 2019).

The term " Mercantile System " is not a satisfactory one. It does not accurately describe or even aptly suggest the essential nature of the complex of theory and practice which it is used to designate. It has been criticized as implying at once too much and too little.The policy has never assumed the coherence of a definite system, but has appeared rather as a more or less powerful tendency, or group of tendencies, or as a collection of opportunist expedients. Moreover, it cannot be regarded as a typical

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expression of the mercantile spirit, which is by no means necessarily inclined to favour a policy of State direction or to connect itself with an ideal of political and national strength and independence. Again, the feature that gave rise to the name was, it is said, only an incidental result of the teaching of its advocates, and the epithet " mercantile " is altogether inadequate to indicate either the range or the purpose of the regime which it is intended to denote (Horrocks, 1925, s. 2).

During the sixteenth century, the flows of precious metals from the American Colonies OF Spain produced high inflation in Europe, but for the mercantilist gold and silver were the substance and definition of both private and national wealth. Precious metals guaranteed the command over goods, resources and labour all over the world. The power of the state depended on the amount of gold and silver in its coffers, because this international currency made it possible to build ships and pay armies (Vaggi & Groenewegen, 2003, s. 16).

From the sixteenth through the seventeenth centuries, European monarchs adopted a policy of mercantilism aimed at strengthening their national economies. Mercantilists supported several basic ideas:

- A nation's wealth is measured by the gold and silver (bullion) it possesses.
- A nation must export more goods than it imports. In other words, there must be a favorable balance of trade in order for a nation to build up its supply of gold and silver.
- Colonies exist for the benefit of the mother country. Colonies supply raw materials not available in Europe for manufacture and trade, and also serve as a market for the mother country's manufactured goods.
- Strict laws must regulate trade with the colonies. The regulation of trade strengthened the nation's economy because, in addition to providing gold and silver, the colonies could not set up industries to manufacture goods nor buy goods from foreign countries. This strict regulation ensured that all revenue went to the government.

- The government must promote and protect local industries by taxing imported goods.
- Governments can increase revenue by imposing a single national currency and selling monopolies to large producers in certain industries as well as big overseas trading companies.
- Self-sufficiency must be promoted. A country had to use everything it needed within its own borders and not depend on other countries for goods (www.tamaqua.k12.pa.us, 2019).

## 2-Theory of Absolute Advantages

Adam Smith is recognised as the founder of modern economics and as one of the first and most famous thinkers who argued in favour of free trade. However, his theory of international trade is rather poorly known or appreciated. Today most textbooks of economics in general—and of international trade in particular—start their introduction to trade theory with a short chapter on Adam Smith and the theory of absolute advantage, a theory allegedly invented by him (Schumacher, 2012, s. 54).

Adam Smith's theory of absolute cost advantage in international trade was evolved as a strong reaction of the restrictive and protectionist mercantilist views on international trade. He upheld in this theory the necessity of free trade as the only sound guarantee for progressive expansion of trade and increased prosperity of nations. The free trade, according to Smith, promotes international division of labour (http://www.economicsdiscussion.net, 2019).

Smith's thoughts on the division of labour constitute the basis for his theory of international trade. For him, it is the division of labour that leads to "the greatest improvement in the productive powers of labour". As a result of a more advanced division of labour, more output can be produced with the same amount of labour. He illustrates this point with his famous pin factory example,6 which shows that the division of labour produces an "increase of the quantity of work which the same number of people are capable of performing" . Then he identifies three reasons for this development: first, the increase of dexterity in every particular workman; secondly, the saving of the time which is commonly lost in passing from one species of work to another; and lastly, the invention of a great number of machines which facilitate and abridge labour, and enable one man to do the work of many.

Smith describes the effect of the latter division of labor in nail making in the following extract:

"A smith who has been accustomed to make nails, but whose sole or principal business has not been that of a nailer, can seldom with his utmost diligence make more than 800 or 1000 nails in a day. I have seen several boys under 20 years-of-age who had never exercised any other trade but that of making of nails, and who, when they exerted themselves, could make, each of them, upward of 2300 nails in a day." (Negishi, 2000, s. 6)

The division of labour leads to quantitative and qualitative production improvements. This means that output is increased, technological development is stimulated, and workers' skills and productivity are enhanced. As a result, economic growth is promoted and national wealth increases. This can be summarised as "the more specialization, the more growth" (Schumacher, 2012, s. 57)

Every country tends to specialize in the production of that commodity which it can produce most cheaply. Undoubtedly, the slogans of self- reliance and protectionism have been raised from time to time, but the self-reliance has eluded all the countries even up to the recent times. The free and unfettered international trade can make the countries specialise in the production and exchange of such commodities in case of which they command some absolute advantage, when compared with the other countries.

When countries specialise on the basis of absolute advantage in costs, they stand to gain through international trade, just as a tailor does not make his own shoes and shoemaker does not stitch his own suit and both gain by exchanging shoes and suits.

Suppose there are two countries A and B and they produce two commodities X and Y. The cost of producing these commodities is measured in terms of labour involved in their production. If each country has at its disposal 2 man-days and 1 man-day is devoted to the production of each of the two commodities, the respective production in two countries can be shown through the hypothetical Table 1.

*Table:1*

*Absolute Cost Differences in Two Countries*

| Country | Units of Labour (Man- Days) | Commodities X | Commodities Y | Ratio of Exchange |
|---|---|---|---|---|
| **A** | **1** | **20** | **10** | **1 Unit of X=0,5 Unit of Y** |
| **B** | **1** | **10** | **20** | **1 Unit of X= 2 Units of Y** |

*Source: http://www.economicsdiscussion.net, 2019.*

In country A, I man-day of labour can produce 20 units of X but 10 units of Y. In country B, on the other hand. I man-day of labour can produce 10 units of X but 20 units of Y. It signifies that country A has an absolute advantage in producing X while country B enjoys absolute advantage in producing commodity Y. Country A may be willing to give up 1 unit of X for having 0.5 unit of Y. At the same time, the country B may be willing to give up 2 units of Y to have I unit of X. If country A specialises in the production and export of commodity X and country B specialises in the production and export of commodity Y. both the countries stand to gain.

Adam Smith also emphasised that specialisation on the basis of absolute cost advantage would lead to maximisation of world production. The gains from trade for the two trading countries can be shown through Table 2.2.

*Table: 2*
*Gain From Trade*

| Country | Before Trade |  | After Trade |  | Gain From Trade |  |
|---|---|---|---|---|---|---|
|  | X | Y | X | Y | X | Y |
| A | 20 | 10 | 40 | - | +20 | -10 |
| B | 10 | 20 | - | 40 | -10 | +20 |
| World Production | 30 | 30 | 40 | 40 | +10 | +10 |

*Source: http://www.economicsdiscussion.net, 2019.*

Before trade, Country A produces 20 units of X and 10 units of Y. After trade, as it specialises in the production of X commodity, the total output of 40 units of X is turned out by A and it produces no unit of Y. Country B produces 10 units of X and 20 units of Y before trade. After trade it specialises in Y and produces 40 units of Y and no unit of X. The gain is production of X and Y commodity each is of 10 units. The gain from trade for country A is +20 units of X and -10 units of Y so that net gain to it from trade is +10 units of X. Similarly net gain to country B is +10 units of Y (http://www.economicsdiscussion.net, 2019).

## 2.1- Criticism of Absolute Advantages Theory

Looking back to Adam Smith serves a useful purpose. Although many people today have unconsciously absorbed partsof Smith's perspective, seeing how Smith's thinking evolved can allow one to take a more objective view of his mindset,especially when considering the intellectual climate of the time.Smith's discussion of the division of labor seemed like it might allow him to describe the economy with simple laws,without acknowledging the conflict between labor and capital, but, on closer examination, this approach was a dead end.After all, for Smith, progress, fuelled by the division of labor, comes from a master organizing workers into separate tasks.Once the master has created the division of labor in the workshop, nothing more can be done because Smith ignored bothtechnical change and increasing workers' potential (other than the acquisition of the necessary manual dexterity for the job).In fact, Smith's repeated denigrations of workers suggest that he probably agreed with Ferguson's previously cited judgmentthat the mechanical arts "require no capacity; they succeed best under a total suppression of sentiment and reason."As a result, Smith suggested that progress was only possible by extending the market, which could allow a more refineddivision of labor. How then would a market grow? Britain was rapidly increasing its markets by expanding its empire. Smithdenied the value of this method of increasing the division of labor because it depended on the state, rather than the market,in effect, invalidating his voluntaristic scheme. Instead, he presumed that each nation would choose to specialize—Britainin manufacturing and the colonies in raw material production.

According to Smith's own theory, which held that agriculture, unlike manufacturing, does not offer many opportunitiesfor much of a division of labor, colonies would be ill-advised to specialize in raw materials. In fact, much of Britain's disputewith the North American colonies revolved around the mother country's efforts to force the colonists to accept Britain'svirtual monopoly in manufacturing. Smith sidestepped this limitation of division of labor approach by deftly shifting the role of production into the back-ground, as the economy came to be pictured as a system of commercial transactions, which were measurable in terms ofmarket prices. Accordingly, Smith altered his theory of value from one based on the labor used in production to a simplesum of the transactions involved in the payment wages, profits, and rents. At the same time, Smith was able to avoid anyhint that the rise of modern industry demanded stronger and more repressive forms of control. This transaction-based representation of the world, homogenized people by recasting almost everybody—merchants,capitalists, or workers—as merchants, except those who existed with minimal transactions in the market. Smith's marginal-ized group included the aristocracy and self-sufficient peasants, along with "churchmen, lawyers, physicians, men of lettersof all kinds: players, buffoons, musicians, opera-singers, opera dancers Smith classified such people as unproductive labor. After all, everyone is supposed to act as a merchant. At the same time, Smith realizes the necessity of harsh discipline, which contradicts his voluntaristic vision. This con-tradiction creates substantial confusion, which transforms Smith into a socio-economic Rorschach test, in which everybod can find what they want in the works of Adam Smith (Perelman, 2010, s. 495).

## 3- Theory of Comperative Absolute

Eighteenth-century economist David Ricardo created the theory of comparative advantage. He argued that a country boosts its economic growth the most by focusing on the industry in which it has the most substantial comparative advantage. Ricardo's law of comparative advantage which is published in 1817 is one of the most importantand still unchallenged laws of economics, with many practical applications (Fink, 2009, s. 244).

The original Ricardian model (Ricardo 1815) explains international trade flows as a result of different factor endowments in each particular economy. Because labour productivity differs among particular economies, each economy could specialise itself on production of a good it manufactures relatively more efficiently and gains through goods exchange in an international market (Sejkora & Sankot, 2017, s. 2).

The idea here is simple and intuitive. If our country can produce some set of goods at a lower cost than a foreign country and if the foreign country can produce some other set of goods at a lower cost than we can produce them, then clearly it would be best for us to trade our relatively cheaper goods for their relatively cheaper goods. In this way, both countries may gain from trade (https://2012books.lardbucket.org, 2019).

For example, England was able to manufacture cheap cloth. Portugal had the right conditions to make cheap wine. Ricardo predicted that England would stop making wine and Portugal stop making cloth. He was right. England made more money by trading its cloth for Portugal's wine, and vice versa. It would have cost England a lot to make all the wine it needed because it lacked the climate. Portugal didn't have the manufacturing ability to make cheap cloth. So, they both benefited by trading what they produced the most efficiently.

Ricardo developed his approach to combat trade restrictions on imported wheat in England. He argued that it made no sense to restrict low-cost and high-quality wheat from countries with the right climate and soil conditions. England would receive more value by exporting products that required skilled labor and machinery. It could acquire more wheat in trade than it could grow on its own.

The theory of comparative advantage explains why trade protectionism doesn't work in the long run. Political leaders are always under pressure from their local constituents to protect jobs from international competition by raising tariffs. But that's only a temporary fix. In the long run, it hurts the nation's competitiveness. It allows the country to waste resources on unsuccessful industries. It also forces consumers to pay higher prices to buy domestic goods (www.thebalance.com, 2019).

Adam Smith's principle of "absolute advantage" and David Ricardo's principle of "comparative advantage", in general, are based on the technological superiority of one country over another country in producing a commodity. Absolute advantage refers to a country having higher (absolute) productivity or lower cost in producing a commodity compared to another country. However, absolute advantage in the production of a commodity is neither necessary nor sufficient for mutually beneficial trade. For example, a country may be experiencing absolute disadvantage in the production of all commodities compared to another country, yet the country may derive benefits by engaging in international trade with other countries, due to relative (comparative) advantage in the production of some commodities vis-à-vis other countries. Likewise, absolute advantage in the production of a commodity is not sufficient, since the country may not have relative (comparative) advantage in the production of that commodity. David Ricardo's principle of comparative advantage does not require a higher absolute productivity but only a higher relative productivity (a weaker assumption) in producing a commodity. Pretrade relative productivities/costs determine the pre-trade relative prices. Pretrade relative prices in each country determine the range of possible terms of trade for the trading partners. Actual terms of trade within this range, in general, depend on demand patterns, which, in turn determines the gains from trade for each trading partner (Gupta, 2015, s. 10).

The comperative advantage theory of David Ricardo can be explained with the following example;

*Table :3*
*Men's Labor Per Year in the Autarkic Production of Cloth and Wine in England and Portugal*

| Commodities | England | Portugal |
|---|---|---|
| Cloth | 100 | 90 |
| Wine | 120 | 80 |

*Source: Bouare, Oumar, An EvaluationOf David Ricardo's Theory Of Comparative Costs: Direct and Indirect Critiques, Journal of Economic Development,2009, p.101.*

In Ricardo's example of two countries (England and Portugal) and two commodities (cloth and wine),2 England has no absolute advantage over Portugal because it costs more in England (100 men's labor; 120 men's labor) to produce annually both commodities than in Portugal (90 men's labor; 80 men's labor).3 However, England will not be excluded from international trade in Ricardo's theory, whereas it was excluded from it in Smith's theory of absolute advantage. This is because England has a comparative cost advantage in producing cloth and Portugal in producing wine. How do we translate Ricardo's theory of comparative cost advantage? The pre-trade price of cloth in terms of wine in England is 100/120, whereas in Portugal it is 90/80. It appears that England has a comparative cost advantage in the production of cloth because (100/120)<(90/80). Similarly, Portugal has a comparative cost advantage in producing wine because (80/90)<(120/100). Since the pre-trade or autarkic prices of cloth in terms of wine in England and Portugal satisfy the inequality (100/120)<(90/80), any price of cloth in terms of wine (Pc/Pw) between (100/120) and (90/80) after the opening of trade should benefit both countries. Formally, that is,

(100/120)<( W C PP / )<(90/80).

Since Portugal gains by producing wine and importing cloth, and England the reverse, according to Ricardo, Portugal should specialize completely in the production of wine and England in cloth. Thus, Portugal can use 80 men's labor annually to produce wine for its own consumption, and 90 men's labor to produce wine that will be used in part to exchange for English cloth. Similarly, England can use 100 men's labor annually to produce cloth for its own consumption, and 120 men's labor to produce cloth that will be used in part to exchange for Portuguese wine. However, Ricardo writes that to produce "cloth may require the labour of 100 men for one year" in England, whereas it "might require the labour of 90 men" in Portugal.

We thus are left to assume that England and Portugal produce annually the same number of units of cloth (x) with 100 and 90 men's labor respectively, and the same number of units of wine (y) with 120 and 80 men's labor respectively, where x and y could be equal to 1.

Thus, the comparative unit cost of cloth with respect to wine in England is (100/x)/(120/y)= 100/120(y/x),and that of portugal is (90/x)/(80/y)= (90/80) (y/x). In other words, England has a comparative cost advantage in producing cloth because . (100/120)(y/x)<(90/80) (y/x). Let us assume that in the pre-trade era England annually consumes.

Let us assume that in the pre-trade era England annually consumes y units of wine produced by 120 men's labor, and Portugal x units of cloth produced by 90 men's labor. When trade opens, to completely specialize, England will divert 120 men's labor from the production of wine to cloth and Portugal 90 men's labor from the production of cloth to wine. How many units of cloth and wine do England and Portugal produce with these men's labor? England annually uses 100 men's labor to produce (x) units of cloth. Therefore in England, 1 man's labor produces annually (x/100) units of cloth and 120 men's labor (x/100)120 units of cloth. Portugal annually uses 80 men's labor to produce (y) units of wine. Similarly, in Portugal 90 men's labor produce (y/80)90 units of wine. Thus, England will produce in addition to its own consumption of cloth (x), (x/100)120=1.2 x units of cloth, and would exchange (x) units of cloth with Portugal, thereby satisfying the latter's annual consumption of (x) units of cloth. At the same time, (0.2x) units of cloth would be saved by England, because in addition to its consumption, it produces (1.2 x=x+0.2 x)units of cloth. Similarly, Portugal will produce, in addition to its own consumption of wine (y), (y/80)90=1.125y units of wine, where (y) units of wine would be exchanged with England, thereby satisfying England's annual consumption of (y) units of wine. (0.125y) units of wine would be saved by Portugal, which produces (1.125 y=y+0,125y) units of wine (Bouare, 2009, s. 100-103).

## 3.1- Criticism of Comperative Advantages Theory

Ricardo believes that international trade flows depend on the opportunity costs of each country (of one good in terms of another). In reality, international trade flows are influenced by the prices on different international markets. The validity of the "relative advantage" concept that Ricardo introduced was questioned directly or indirectly by various economists (S. de Sismondi, Fr. List, H. Ch. Carey, S. N. Patten, K. Marx, O. Bauer, J. Hobson, J. M. Keynes, M. Manoilescu ş.a.) that didn't share the liberal optimistic view on spontaneous market self-regulation, on perfect competition and on this type of market organization (Alexa, Toma, & Sarpe, 2013, s. 115).

The criticisms against Ricardo's model can be listed as follows:

1-Unrealistic assumption of labour cost:

The most severe criticism of the comparative advantage doctrine is that it is based on the labour theory of value. In calculating production costs, it takes only labour costs and neglects non-labour costs involved in the production commodities.This is highly unrealistic because it is money costs and not labour costs that are the basis of national and international transactions of goods.

Further, the labour cost theory is based on the assumption of homogeneous labour. This is again unrealistic because labour is heterogeneous-of different kinds and grades, some specific or specialized, and other non-specific or general.

2-No similar tastes:

The assumptions of similar tastes are unrealistic because tastes differ with different income brackets in a country. Moreover, they also change with the growth of an economy and with the development of its trade relations with other countries.

3-State assumption of fixed proportions:

The theory of comparative costs is based on the assumption that labour is used in the same fixed proportions in the production of all commodities.This is essentially a static analysis and hence unrealistic. As a matter of fact, labour is used in varying proportions in the production of commodities.For instance, less labour is used per unit of capital in the production of steel than in the production of textiles. Moreover, some substitution of labour for capital is always possible in production.

4-Unrealistic assumption of constant costs:

The theory is based on another weak assumption that an increase of output due to international specialization is followed by constant costs.But the fact is that there are either increasing costs or diminishing costs. If the large scale of production reduces costs, the comparative advantage will be increased.On the other hand, if increased output is the result of increased cost of production, the comparative advantage will be reduced, and in some cases it may even disappear.

5-Ignores transport costs:

Ricardo ignores transport costs in determining comparative advantage in trade. This is highly unrealistic because transport costs play an important role in determining the pattern of world trade.Like economics of scale, it is an independent factor of production. For instance, high transport costs may nullify the comparative advantage and the gain from international trade.

6. Factors not fully mobile internally:

The doctrine assumes that factors of production are perfectly mobile internally and wholly immobile internationally.This is not realistic because even within a country factors do not move freely from one industry to another or from one region to another.The greater the degree of specialization in an industry, the less is the factor mobility from one industry to another. Thus, factor mobility influences costs and hence the pattern of international trade.

7. Two-country two-commodity model is unrealistic:

The Ricardian model is related to trade between two countries on the basis of two commodities. This is again unrealistic because in actuality, international trade is among countries trading many commodities.

8. Unrealistic assumption of free trade:

Another serious weakness of the dosctrine is that it assumes perfect and free world trade. But in reality, world trade is not free.Every country applies restrictions on the free movement of goods to and from other countries. Thus, tariffs and other trade restrict ions affect world imports and exports.Moreover, products are not homogeneous but differentiated. By neglecting these aspects, the Ricardian theory becomes unrealistic.

9. Unrealistic assumptions of full employment:

Like all classical theories, the theory of comparative advantage is based on the assumption of full employment.This assumption also makes the theory static. Keynes falsified the assumption of full employment and proved the existence of underemployment in an economy. Thus the assumption of full employment makes the theory unrealistic.

10. Self-interest hinders its operation:

The doctrine does not operate if a country having a comparative disadvantage does not wish to import a commodity from the other country due to strategic, military or development considerations. Thus, often self-interest stands in the operation of the theory of comparative costs.

11. Neglects the role of technology:

The theory neglects the role of technological innovations in international trade. This is unrealistic because technological changes help in increasing the supply of goods not only for the domestic market but also for the international market. World trade has gained much from innovations and research and development.

12. One-sided theory:

The Ricardian theory is one-sided because it considers only the supply side of international trade and neglect the demand side. In the words of Professor Ohlin, “It is indeed nothing more than an abbreviated account of the conditions of supply.”

13. Impossibility of complete specialization:

Complete specialization will fie impossible on the basis of comparative advantages in producing commodities entering into international trade.

He explains two cases in support of his argument: one, relating to a big country and a small country, and two, relating to a commodity of high value and low value.

14. A clumsy and dangerous tool:

Professor Ohlin has criticized the classical theory of international trade on the following grounds:(i) The principle of comparative advantage is not applicable to international trade alone, rather it is applicable to all trade. To Ohlin, "International trade is but a special case of inter-local or interregional trade." Thus there is little difference between internal trade and international trade.(ii) Factors are immobile not only internationally but also within different regions. This is proved by the fact the wages and interest rates differ in different regions of the same country. Further labour and capital can also move between countries in a limited way, as they do within a region.(iii) It is a two-country two- commodity model based on the labour theory of value which is sought to be applied to actual conditions involving many countries and many commodities. He, therefore, regards the theory of comparative advantage as cumbersome, unrealistic, and as a clumsy and dangerous tool of analysis. As an alternative, Ohlin has propounded a new theory which is known as the modern theory of International Trade (http://www.shareyouressays.com, 2019).

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## 15

# DETECTING THE EFFECT OF COMPANY CHARACTERISTICS ON EARNINGS MANAGEMENT: A RESEARCH ON BIST 50 COMPANIES

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## 1. INTRODUCTION

Through globalization and increasing technology, economic boundaries have disappeared and the importance of qualified information, which mediates the investors to make healthier decisions, has increased with each passing day. Financial information becomes useful and qualified when it is relevant and represents faithfully what it purposes to represent. However, although quality and reliable information is of utmost importance to all stakeholders who will make rational economic decisions using the information in the financial statements; managers can manipulate the information in the financial statements sometimes benefiting from the flexibility of generally accepted accounting principles and accounting standards for their personal or company interests and sometimes violating the principles and standards. This phenomenon, which is expressed as manipulation of financial information in accounting literature, is called earnings management in the most general sense (Yavuzaslan & Kalmış, 2016, p. 354).

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In terms of quality financial information, when earnings management practices are used to mislead users of financial information, they contradict the main objectives of financial reporting and reduce the quality of financial information. In this context, it has a great deal of importance to examine the reasons, motives and results of earnings management, as well as the relationship between these practices and firm characteristics (Temiz et al., 2017, p. 121). As a matter of fact, the studies on earnings management include the purposes such as determining the reasons, results and specific characteristics of the earnings management concept (Temiz & Ipci, 2018, p. 410). Furthermore, since the issues of earnings management analysis are generally focused on examining the external effects and results of the situation emerging in the company, it would be appropriate to relate the characteristics of the companies with the earnings management tendencies.

The study investigates the relationship between earnings management, which is defined as interventions in the external financial reporting process to mislead users of financial information about the financial performance of the company (Karacaer & Özek, 2010, p. 61), and the firm characteristics that includes many variables which are tried to be associated with the earnings management in the literature. For the purpose of the study, it is first determined whether 44 non-bank financial companies listed in BIST50 index whether they engage in earnings management by employing Beneish Model. After the companies are divided into four categories according to the probability of engaging in earnings management, in the second stage the question of which characteristics of these companies have significant impact on the earnings management is tried to be answered. In this direction, the remaining part of the study is organized as follows. First, conceptual framework related to earnings management is established and the related literature is critically reviewed in Section 2. Then the firm characteristics is explained in the Section 3. Data set, variables and the methodology of the research is described in Section 4. Findings and results are discussed in Section 5. In the last section, the study is concluded, and some implications are presented.

## 2. EARNINGS MANAGEMENT CONCEPT AND METHODS FOR DETECTING THE EARNINGS MANAGEMENT

Generally Accepted Accounting Principles (GAAP) provides discretionary power to managers in preparing financial statements. Managers can determine accounting policies to optimize interrelated decision-making processes, such as cost sharing, transfer pricing, or capital budgeting (Aygün & Akçay, 2015, p. 58). Investors make their decisions by relying on the information presented in the financial statements prepared by the company management while making their decisions, and make their own evaluations by performing risk assessment, profitability analysis and financial performance assessment. Especially during a certain process, there could be a perception that rising profits create an increase in firm value and falling profits create a decrease in firm value (McKee, 2005). However, the financial information in the companies' financial statements does not always reflects the truth. Sometimes due to the influence of certain motivators companies may tend to provide misleading information in their financial statements. The reason behind this tendency sometimes serves the interests of the company and stakeholders while sometimes it serves the individual interests of managers. In other words, managers can mislead existing and potential investors who use this financial information by intentionally manipulating the financial reporting process, and mispresenting or not disclosing the accounting information. Such tendency to provide misleading information in the financial statements is called earnings management in the finance literature (Temiz & İpci, 2018, 411). Earnings management can be performed either by presenting the earnings higher than it is or lower. Here, the purpose behind earnings management is decisive.

Earnings management is perceived as a kind of fraud because of its structure. Although earnings management and fraud are sometimes used interchangeably, in substance there is a fundamental difference between them. While earnings management is performed in financial reports by benefiting from flexibility within the framework of accounting principles and standards, fraud results from violation of accounting principles and standards (Beneish, 1999; Leuz et al., 2003; Ahmed & Naima, 2016; Christensen et al., 2017). While the implementations performed within the scope of standards such as increasing and decreasing R & D expenses and postponing sales can be shown as an example of earnings management, operations that violate accounting standards such as recording fictitious sales revenues and inventories are examples for fraud. Hence, due to low volatility in stock prices, increased market value of the company, low cost of capital, high credibility, lower borrowing cost, higher profit-based incentive premiums, avoidance from high taxes and lower dividend payment to shareholders; companies naturally desire to manipulate their profits (Kara et al., 2016, 14).

After fraudulent financial reporting scandals in the accounting field, the reliability and objectivity of the information presented in the financial statements have begun to be questioned. During this process, the studies in the literature that started in the form of defining and measuring (determining) earnings management, have been evolved towards researches that try to identify the factors that may affect and prevent earnings management. In this context, the impact of many factors such as corporate governance practices, audit quality, free float rate, ownership structure, size, capital structure etc. on earnings management has been the subject of various researches. In this respect, the methods that determine earnings management will be introduced briefly and then will be tried to associate with company characteristics.

Many methods have been developed in the literature to determine whether the financial statement preparers use discretionary power over the reported earnings using their accrual accounts. These methods are grouped into three groups, these are; accrual based models, hybrid models and alternative models.

## a. Accrual Based Models

Total accruals are not accepted as an only indicator that the entity engages in earnings management. Total accruals present the difference between unrealized revenues and unrealized expenses in the entity. Negative total accruals indicate that unrealized expenses are higher whereas positive accruals reveal that unrealized revenues are higher. However, discretionary accruals are the indicator of whether the managers engage in earnings management (Ocak, 2013, p. 84).

In accrual-based earnings management, total accruals are an evidence whether an entity engages in earnings management. In the first stage, total accruals are calculated according to the balance sheet or cash flow approach, and in the next stage, total accruals are divided into two groups as discretionary and non-discretionary accruals. At this point, discretionary accruals that is obtained by subtracting non-discretionary accruals from total accruals are accepted as indicators of earnings management (Ocak & Arıkboğa, 2017, p. 101).

Many models have been developed to separate the discretionary accruals from total accruals, which is an indicator of accrual-based earnings management, the most accepted models in the literature are presented in Table 1.

*Table 1. Accrual Based Models*

**Healy Model (1985)**

Healy (1985) uses mean of total accruals divided by lagged total assets in the estimation period for measuring the non-discretionary accruals. The discretionary portion of accruals is the difference between total accruals and non-discretionary accruals in the same period.

$$NDA_{it} = {}^{1}/{}_{n}\sum_{it}^{n}\frac{TA_{it}}{A_{it-1}}$$

$NDA_{it}$:
Nondiscretionary accruals of company *i* at time *t*

$TA_{it}$:
Total accruals of company *i*

$A_{it-1}$:
Total assets of company *i* at time *t-1*

**DeAngelo Model (1986)**

DeAngelo measures non-discretionary accruals buy using last period’s total accruals divided by lagged total assets:

$$NDA_{it} = \frac{TA_{it-1}}{A_{it-2}}$$

Although the DeAngelo Model is essentially similar to the Healy Model, non-discretionary accruals are limited to a single period that has not spread over years as in the Healy Model. However, the biggest criticism of this model is that the company does not consider the impact of the economic environment on accruals.

**Jones Model (1991)**

Jones (1991) assumes that nondiscretionary accruals may change from time to time due to economic reasons such as growth/contraction of enterprises and the change in the normal operating cycle. Under this assumption, Jones formed the model in two stages: estimation stage and determination stage.

1. Estimation Stage: According to the Jones Model, if managers did not manage earnings by applying discretionary accrual, their total accrual will be equal to nondiscretionary accruals.

$$\frac{TA_{it}}{A_{it-1}} = \frac{NDA_{it}}{A_{it-1}} = \alpha_i\left(\frac{1}{A_{it-1}}\right) + \beta_{1i}\left(\frac{\Delta REV_{it}}{A_{it-1}}\right) + \beta_{2i}\left(\frac{PPE_{it}}{A_{it-1}}\right) + \varepsilon_{it}$$

2. Determination Stage: The coefficients $\alpha_{it}$, $\beta_{1i}$, $\beta_{2i}$ obtained in the estimation stage are used to determine nondiscretionary accruals with the following equation:

$$\frac{T\hat{A}_{ip}}{A_{ip-1}} = \frac{\widehat{NDA}_{ip}}{A_{ip-1}} = \hat{\alpha}_i\left(\frac{1}{A_{it-1}}\right) + \widehat{\beta_{1\iota}}\left(\frac{\Delta REV_{ip}}{A_{ip-1}}\right) + \widehat{\beta_{2\iota}}\left(\frac{PPE_{ip}}{A_{ip-1}}\right)$$

$DREV_{it}$:
Change in net sales of company *i* at time *t* compared with the previous period

$PPE_{it}$:
Gross amount of property, plant and equipment for company *i* at time *t*

$\alpha_{it}, \beta_{1i}, \beta_{2i}$:
Company-specific parameters

$\varepsilon_{it}$:
Error term

**Modified Jones Model (1995)**

The Modified Jones Model focuses on the method of subtracting the change in sales from net change in receivables rather than using only the change in revenues for calculating the accruals. Thus, in this model, all changes in the amount of credit sales are assumed to be result of the earnings management (Bartov et al., 2001, p. 426).

$$NDA_{it} = \alpha_1\left(\frac{1}{A_{it-1}}\right) + \alpha_2\left(\frac{\Delta REV_{it}\text{-}\Delta REC_{it}}{A_{it-1}}\right) + \alpha_3\left(\frac{PPE_{it}}{A_{it-1}}\right)$$

$DREC_{it}$:
Change in receivables of company *i* at time *t* compared with the previous period

**Dechow-Dichev (DD) Model (2002):**

DD model is an accrual quality model that is measured by using previous, current and future cash flows of the companies. Thus, this model can be a proxy for determine the tendency of earnings management applications in the companies.

$$ACC_t = \alpha_0 + \alpha_1 CF_t + \alpha_2 CF_{t\text{-}1} + \alpha_3 CF_{t+1} + \varepsilon_t$$

*CF*:
Change in cash flows from operating activities

**Larcker-Richardson Model (2004)**

Larcker & Richardson improved the Modified Jones Model by adding the Book-to-Market Value ratio and cash flows from the operating activities to the model (Larcker & Richardson, 2004, 634):

$$TAC_{it} = \beta_0 + \beta_1\left(\frac{\Delta SALES_{it}\text{-}\Delta REC_{it}}{TA_{i,t-1}}\right) + \beta_2\left(\frac{PPE_{it}}{TA_{i,t-1}}\right) + \beta_3\left(\frac{CFO_{it}}{TA_{i,t-1}}\right) + \beta_4 B/M_{it} + \varepsilon_{it}$$

*CFO* :
Cash flows from operating activities

*B/M*:
Book-to-Market Value ratio

**Kothari Model (2005)**

Kothari et al. include the Return on Assets (ROA) variable, which is a performance indicator, to the Jones and Modified Jones Model for controlling the effect of performance (Kothari et al., 2005, p. 190)

$$\frac{TA_{it}}{A_{it-1}} = \alpha_i\left(\frac{1}{A_{it-1}}\right) + \beta_{1i}\left(\frac{\Delta REV_{it}\text{-}\Delta REC_{it}}{A_{it-1}}\right) + \beta_{2i}\left(\frac{PPE_{it}}{A_{it-1}}\right) + ROA_t + \varepsilon_{it}$$

*ROA:* Return on Assets

## 2.2. Hybrid Models

Although they are developed as an alternative to accrual-based models, the models that include accruals as well as financial ratios based on certain indices and try to determine earnings management with the help of logit and probit models are called as hybrid models.

**Beneish Model (1999):** Beneish is the pioneer of hybrid models for the detection of earnings management. In addition to the linear regressions used to determine the change in accruals; he used some financial ratios of companies as independent variables then compared the independent variables of the companies, which are divided into two groups as engage in earnings management or not engage in, also obtained certain coefficients (Uğurlu & Sevim, 2015, p. 68). Beneish based his model on three assumptions to determine the independent variables that he already used in his model. The first is the assumption that companies with poor expectations for the future will apply more to earnings management. Second is that the variables should be based on cash flows and accruals. Finally, it is stated that earnings management should be determined by using positive research theory which assumes that the incentives are based on contractual incentives (Kara et al., 2016, p. 17). Accordingly, the independent variables that Beneish employed in his model are collected under 8 main headings.

Days Sales in Receivables Index (DSRI): This index shows whether trade receivables and revenues are in balance in subsequent years. According to the Beneish model, the higher level of this index means that profits and revenues are overstated, because the higher trade receivables compared to sales is an indicator that revenues are inflated (Warshavsky, 2012, p. 9). The Days Sales in Receivables Index is calculated as follows:

$$DSRI = \frac{Receivables_t / Sales_t}{Receivables_{t\text{-}1} / Sales_{t\text{-}1}}$$

Gross Margin Index (GMI): When the Gross Margin Index is greater than 1, it indicates that the managers intentionally misreported profit in order to create a positive perception for the investors regarding the future of the company. Thus, Beneish expects a positive relationship between the deterioration of gross profit and earnings management.

$$GMI = \frac{(Sales_{t\text{-}1}\text{-}Cost\ of\ Goods\ Sold_{t\text{-}1})/Sales_{t\text{-}1}}{(Sales_{t}\text{-}Cost\ of\ Goods\ Sold_{t})/Sales_{t}}$$

Asset Quality Index (AQI): If asset quality index is greater than 1, it indicates that the company engages in earnings management by capitalizing its expenses instead of reflecting them as an expense in the statement of profit and loss for the current period. Especially to reach the targeted profit, companies intentionally apply this capitalization method. Therefore, there is a positive relationship between earnings management and the Asset Quality Index. AQI is calculated as follows (Küçüksözen, 2004, p. 281):

$$AQI = \frac{\left(1\text{-}\dfrac{Current\ Assets_{t} + PPE_{t}}{Total\ Assets_{t}}\right)}{\left(1\text{-}\dfrac{Current\ Assets_{t-1} + PPE_{t*1}}{Total\ Assets_{t-1}}\right)}$$

Sales Growth Index (SGI): Although the growth of companies is not a stand-alone evidence of earnings management, large companies can engage in earnings management more due to their capital needs and profit targets. When the SGI ratio is greater than 1, it is considered that the company has involved into the earnings management. Sales growth index is calculated as follows:

$$SGI = \frac{Sales_{t}}{Sales_{t\text{-}1}}$$

Depreciation Index (DEPI): Sometimes, companies change the useful life of their fixed assets or the depreciation method of them to increase or decrease the depreciation expense. When depreciation index is greater than 1, it means that depreciation rate has been decreased and the possibility that the company has modified useful life of assets or adopted a new depreciation method for income increasing has raised (Mahama 2015, 12). Depreciation index is calculated as follows:

$$DEPI = \frac{Depreciation_{t\text{-}1} / (Depreciation_{t\text{-}1} + PPE_{t\text{-}1})}{Depreciation_{t} / (Depreciation_{t} + PPE_{t})}$$

Sales, General and Administrative Expenses Index (SGAI): The index measures the change in sales expenses and general administrative expenses relative to sales. Since a higher increase in these expenses compared to sales may be an evidence that the company could not be effective in managing these expenses or that there would be an effort to increase unusual sales, the index is included in the model by Beneish. Sales, general and administrative expenses index is calculated as follows:

$$SGAI = \frac{(Mkt.Sales\ Expenses_{t} + Gen.Adm.Expenses_{t}) / Gross\ Sales_{t}}{(Mkt.Sales\ Expenses_{t\text{-}1} + Gen.Adm.Expenses_{t\text{-}1}) / Gross\ Sales_{t\text{-}1}}$$

Leverage Index (LVGI): Companies make up their debt structure by combining the costs for short-term bank loans with other expense accounts, thus they show their risk lower than it is. Especially, when the LVGI which is of importance in terms of determining the earnings management that applied to avoid from the inability to fulfill the borrowing conditions, is greater than 1 indicates that the debt burden of the company has increased and raising the possibility of earnings management. The LVGI which is included into the model because of aforementioned reasons is calculated as follows:

$$LVGI = \frac{(Long\ Term\ Debt_{t} + Current\ Liabilities_{t}) / Total\ Assets_{t}}{(Long\ Term\ Debt_{t\text{-}1} + Current\ Liabilities_{t\text{-}1}) / Total\ Assets_{t\text{-}1}}$$

Total Accruals to Total Assets Index (TATA): This ratio indicates whether a high increase or decrease in non-cash working capital leads to a possible earnings management (Küçüksözen, 2004, p. 309).

$$TATA = \frac{\begin{gathered}\Delta Current\ Assets\text{-}\Delta Cash\ and\ Marketable\ Securities\text{-}\\ \left(\begin{gathered}\Delta Short\ Term\ Debt\text{-}\Delta Current\ Portion\ of\ Long\ Term\ Debt\text{-}\\ \Delta Deferred\ Taxes\ and\ Some\ Other\ Legal\ Liabilities\end{gathered}\right)\text{-}Depreciation\ Expenses_{t}\end{gathered}}{Total\ Assets_{t}}$$

Beneish obtained certain coefficients for each index by comparing these indices for companies that engage in earnings management or do not engage in. Then, by using these coefficients, he evaluated each company whether they misreported their financial statements or not; also he concluded that if the result of $M_i$ is close to “0”, financial statement is not misstated, but if the result is close to “1”, the financial statement is highly probably misstated. In this context, the Beneish (1997), (1999) Model is as follows:

$$M_i = \beta_i x_i + \varepsilon_i$$

Where;

$\beta_i$: Coefficient for each independent variable
$x_i$: Book-to-Market Value ratio
$\varepsilon_i$: Error term

The coefficients obtained from the Beneish model are as follows.

$$M_i = -4.840 + (0.920 \times DSRI) + (0.528 \times GMI) + (0.404 \times AQI) + (0.892 \times SGI) + (0.115 \times DEPI) + (-0.172 \times SGAI) + (4.679 \times TATA) + (-0{,}327 \times LVGI)$$

According to the normal distribution function of the “$M_i$” value obtained from this equation; if the probability of earnings management is

- less than 2.94 %, it is stated that there is no evidence that the company engages in earnings management practices
- between 2.94 % and 5.99 %, it means that company probably engages in earnings management
- between 5.99 % to 11.32 %, it is stated that there are serious findings about the probability that the company engages in earnings management
- higher than 11.32%, it is propounded that there are highly significant findings which figure out that the company engages in earnings management (Bekçi & Avşarlıgil, 2011, p. 141).

**Spathis Model (2002):** The Spathis model is similar to the Beneish model in terms of correlating earnings management with certain financial ratios, however it differs from the Beneish model in that it tests this relationship with the logistical regression model instead of probit models like Beneish. When Spathis tested his model, if there is a risk that the false financial statements (FFS) company occurs, he classified the company under category “0”; and categorized control companies under “1” as in the Beneish model. The elements that he takes into consideration while making this distinction are explained in 4 items as follows (Spathis, 2002, p. 183).

It is accepted that financial statements are classified as fraudulent if

- independent audit reports include an opinion that there are serious doubts about the manipulated activities.
- it has been determined by the tax authorities observed that there are serious findings that the company has evaded from taxes.
- the Capital Market Board (CMB) decided the company’s shares were traded in the watchlist market or the shares have been delisted from the stock exchange.
- it is determined by court decisions that the company is engaged in illegal transactions.

After identifying companies that engage in or not engage in earnings management, Spathis ran his model with the following independent variables (Küçükkocaoğlu et al., 2007, p. 8):

- Debt-to-Equity ratio (D/E),
- Sales-to-Total Assets (SALES/TA),
- Net Profit-to-Sales (NP/SALES),
- Receivables-to-Sales (REC/SALES),
- Net Profit-to-Total Assets (NP/TA),
- Working Capital-to-Total Assets (WC/TA),
- Gross Profit-to-Total Assets (GP/TA),
- Inventories-to-Sales (INV/SALES),
- Total Debt-to-Total Assets (TD/TA),
- Financial Expenses-to-Operating Expenses (FE/GE)
- Taxes-to-Sales (TAXES/SALES)
- Altman’s Z-Score (Shows the financial risk score)

The independent variables obtained are correlated in the Spathis Model as follows:

$$E(y) = \frac{\exp(b_0 + b_1x_1 + b_2x_2 + \dots\dots\ b_nx_n)}{1 + \exp(b_0 + b_1x_1 + b_2x_2 + \dots\dots\ b_nx_n)}$$

In this equation; dependent variable $E(y)$ is equal to "1" for the companies that falsifying their financial statements and is equal to "0" for control companies. $b_0$ is the intercept term and $b_1, b_2, \dots\dots b_n$ represents the regression coefficients of independent variables. $x_1, x_2, \dots\dots x_n$ shows independent variables above.

As a result, Spathis Model (2002) is presented as (Küçükkocaoğlu et al., 2007, p.7):

$$FFS = b_0 + b_1(D/E) + b_2(SALES/TA) + b_3(NP/SALES) + b_4(REC/SALES) + b_5(NP/TA) + b_6(WC/TA) + b_7(GP/TA) + b_8(INV/SALES) + b_9(TD/TA) + b_{10}(FE/GE) + b_{11}(TAXES/SALES) + b_{12}(\text{Altman's Z Score})$$

**Barton-Simko Model (2002):** The assumptions of the Barton-Simko Model are that the balance sheet reflects the effects of previous accounting policy choices and therefore this effect can be determined partly from net operating assets. Hence, Net Operating Assets was determined as the main variable of the model. "Net Operating Assets/Sales" ratio is employed as an indicator of earnings management; since the balance sheet and the income statement are all interrelated, and any attempt to increase the profit naturally results in higher assets than it is (Tekin & Kabadayı 2011, 151). The claim of the model is that it is difficult for executives to perform earnings management in the future because their past earnings manipulations would be reflected in the balance sheet by reporting assets at a higher value (Barton & Simko, 2002, p. 3).

## 2.3. Alternative Models

Artificial Neural Networks, Regression Model, Decision Tree Model, Genetic Algorithm, Discriminant Analysis, Data Envelopment Analysis, Frequency Distributions are also used in the determination of earnings management. However, since the validity of these models in the literature is not sufficiently proven, alternative models are not included in our study.

## 3. FIRM CHARACTERISTICS

The firm characteristics include the board structure, ownership structure, capital structure, firm size, age, free float rate and main business activities of the companies. While evaluating a company these characteristics contributes to decision making process by providing very significant information about the company. Therefore, a lot of research has been conducted in the literature about the firm characteristics and it is still being done. In this respect, it would be beneficial to explain some firm specific characteristics which constitute an important part of the research.

### 3.1. Board Structure

In today's economic environment, it is indisputable truth that corporations are more transparent and accountable to their investors. In the shed of light of the main principles necessary for the constitution of corporate governance in a company, the structure of the board of directors, which has the greatest responsibility for both the establishment and the proper implementation of corporate governance in a company, becomes extremely important on such issues. Hereof, the variables of CEO duality, board size, and number of independent board members should be explained.

CEO Duality: CEO duality exists when any manager acts as both the general manager or CEO and the chairperson of the board and that all the powers required by both positions are gathered in a single person. This situation is against to the basic principles of corporate governance: fairness, transparency, accountability and responsibility. In addition, the CEO and the chairperson of the board should not be the same person to analyze the performance of the company and its employees soundly (Topaloğlu & Ege, 2017, p. 292).

There are also predictions in the literature that, if the top manager and the chairperson of the board are the same person, the CEO can control the flow of financial information to other board members, thus manipulative transactions in the financial statements cannot be prevented (Persons, 2006, p. 29). In this regard, since earning management practices are more common in companies where CEO duality exist, the CEO duality is included in the study as an independent variable.

Board Size (Number of Board Members): The board size should be large enough to prevent the collection and disruption of the company works in the hands of few people and provide the effective functioning of the work while performing the controlling and monitoring task assigned to it. In this manner, it will be ensured that the decisions taken, and the observation task performed are more realistic and objective (Ruppel, 2006, p. 17). However, there is no consensus on the size of the board in the literature. Some studies suggest that a bureaucratic process will be reduced in a board consisting of fewer people, and financial reports will be more reliable (Xie et al., 2003), while other group studies propounded that the management will give more confidence to the investors due to the greater total experience in crowded boards (Ağca & Önder, 2016, p. 26). However, even though different results were obtained in the literature, since the expectation that the earnings management tendency will decrease due to the anticipation that transparency and accountability increases as the number of members on the board increases, the board size is included in the study as an independent variable with the expectation that the increase in the number of members will prevent earnings management.

Number of Independent Board Members: The board of directors is the highest decision-making, representation and executive body of an enterprise. The board of directors is responsible for protecting and developing the interests of both shareholders and stakeholders in public companies. The effective performance of the Board of Directors is highly depending on its independence. In other words, it is important that the number of independent members in the board, it means members outside the company, is as many as possible. The Capital Markets Board (CMB) has also introduced a regulation on independence due to its importance. Pursuant to Article 4 of the Communiqué on Determination and Application of Corporate Governance Principles, the number of independent board members cannot be fewer than one-third of the total number of board of directors' members and should be at least representing the percentage of shares in actual circulation (Temiz et al., 2017, p. 122). Therefore, it is thought that there is a significant relationship between the structure of the board of directors and the earnings management tendency. As a matter of fact, in the literature, there is a strong belief that the existence of a completely independent executive will give the shareholders the greatest confidence in controlling the management (Beasley 1996; Xie et al., 2003; Davidson et al., 2005; Kim & Yoon, 2008), also expected to minimize the practices that affect the quality of the financial reports and transactions that managers can perform for their own interests (Bainbridge, 2008, p. 190). Moreover, it is assumed that the tendency to engaging in earnings management decreases as the portion of independent members in the board increases (Xie et al., 2003; Zhou & Chen, 2004; Jaggi et al., 2009; Habbash, 2010; Ocak & Arıkboğa, 2017; Temiz et al., 2017). Based on the literature, the portion of independent members in the board of directors is included in the research.

## 3.2. Ownership Structure

The existence of a person who is in the position in management of a company and also has the right to hold the shares of the company directly or indirectly is called the managerial ownership (Ağca & Önder 2016, p. 28). In the literature, there are different opinions about ownership structure as in the structure of the board of directors. According to the opinion of the first group, if there are managers in the board of directors who also have a significant portion of the shares, these managers are expected to protect the rights of investors; therefore, it is also expected that engaging in earnings management practices will be less. According to the other group, the efficiency of management can be monitored more closely if a significant portion of the shares are held by external investors (Alzoubi

& Saleem, 2012, p. 68). Therefore, it is expected that the probability of earnings management practices is lower in both approaches. However, even though there is absence of clear relationship between managerial ownership and earnings management in the literature, a positive relationship was found in some studies (Yeo et al., 2002; Riahi & Ben Arab, 2011) and a negative relationship was discovered in other studies (Rebai, 2011; Alves, 2012).

Shares held by institutional investors which is another characteristic of ownership structure, can be called as institutional ownership. Institutional investor is an organization that brings together the limited savings of small investors towards to highly efficient investments. The best-known institutional investors operating in the capital markets are investment funds, pension funds, insurance companies, hedge funds, private equity firms, portfolio management companies, asset management companies and social security institutions (Kocabıyık, 2006, p. 18). Institutional ownership refers to the share of institutions within the capital of a firm. Agency theory recognizes institutional ownership as an important administrative oversight mechanism. According to individual investors, institutional investors have sufficient resources and skills to efficiently supervise the managers of the company (Aygün & Sayın, 2016, p. 54). Since institutional investors closely monitor the capital markets and have sufficient information, they provide an effective control mechanism to identify transactions that may be performed by managers and may harm the company (Jiambalvo et al., 2002, p. 123). Therefore, earnings management practices are expected to be low in companies with high institutional investor share. However, in the studies examining the relationship between institutional ownership and earnings management; Ali et al. (2008) and Ali Shah et al. (2009) found a negative relationship while Koh (2003), Roodposhti & Chasmi (2011) and Alves (2012) asserted a positive relationship. In this research, there is an expectation that the increase in institutional ownership ratio will cause a decrease in the probability of earnings management. In this respect, in order to examine the ownership of the shares of the companies, the characteristics of the board ownership, foreign ownership and institutional ownership were included in the study.

## 3.3. Size

Company size is another important factor affecting the earnings management. According to Watts and Zimmerman's (1978) political cost hypothesis, managers of large companies may tend to income-reducing practices to overcome political costs (Wuryani, 2013). However, since large companies appeal considerable attention than small ones, it is argued that these companies are less likely to engage in earnings management (Koh 2003). Hereof, in the literature there two directional relationship between size and profit management have been determined. Some researchers (Lobo & Zhou, 2001; Barton & Simko, 2002; Kim et al., 2003; Razzaque et al., 2006) found a positive relationship between company size and earnings management, whereas others (Jaggi et al., 2009) asserted a negative relationship. In this research, the natural logarithm of total assets and the number of employees are used as indicators for the size of the companies.

## 3.4. Other Characteristics

Apart from the aforementioned characteristics, there are also characteristics that do not require to be explained under separate headings but provide important information about the companies. One of these characteristics is the age of the company. The age of the company actually represents the maturity, experience and, in a sense, the success of the company in the industry in which it operates. Honesty is the key reason why companies have been continuing to be in the sector for a long time; therefore, company age is employed as an independent variable in the research by considering that older companies will engage less in earning management practices.

Another important characteristic is the post-IPO (Initial Public Offering) period that refers to the which comprises the duration after a company's initial public offering. Public offering leads companies to be more prescriptive in their activities, more reliable, aware of their responsibilities towards their investors, and obliged to act within the framework of certain laws (Capital Market Law) and to be more transparent. Therefore, post-IPO period and the free float rate which refers to the percentage of shares outstanding that are freely floated in the stock exchange should be evaluated together. Accordingly, as in the literature, a negative relationship between these two variables and earnings management is expected.

The financial statements prepared by the group companies are more important than the financial statements issued by other entities considering the fact that more than one company affiliated with the group has merged the results of the operations and presented them to the related parties (Otlu, 1999, p. 104). Hence, since a company which affiliated a group is not expected to engage in earnings management practices more, being a part of group companies is included to the research as an independent variable.

## 4. DATA AND METHODOLOGY

The main motivation behind the study is extracting probable effects of firm characteristics on earnings management. In this context, the dependent and independent variables to be tested by the end of year 2018 in BIST50 index are given in Table 2.

**Table 2. Dependent and Independent Variables**

| Dependent Variable | Independent Variable | |
|---|---|---|
| Earnings Management Application | Firm Characteristics | |
| • if Zi < %15, then “1” | • Company age | • Board size |
| • if %15 < $Z_i$ < %35, then “2” | • Post-IPO period | • Board ownership |
| • if %35 < $Z_i$ < %82, then “3” | • Free float rate | • CEO duality |
| • if %35 < $Z_i$ < %82, then “3” | • Being a part of Group Companies | • Proportion of independent board members |
| • if %82 < $Z_i$, then “4” | • Number of employees | • Foreign ownership |
| | • Total assets | • Institutional ownership |

In this study, model prepared by Cemal KÜÇÜKSÖZEN that is applied on 126 real sector companies listed in ISE, is employed. The model named as Beneish Turkey model is derived from original Beneish model by both adding several variables and replacing some of them with explanatory variables for accounting manipulation arising from creative accounting practices in Turkey. The ratio of inventories and financing expenses to sales, which are thought to be effective in uncovering accounting manipulations in our country are added into the model of Küçüksözen. Since Beneish's original model is suitable for low inflation countries and sales is not affected by inflation, sales growth index which is in Beneish's original model is not included in the model. Therefore, by considering the high inflation rate in our country, analyses were conducted with the model created by Cemal KÜÇÜKSÖZEN. The ratios added into the model and the original model are as follows (Küçüksözen, 2004, pp. 309-310 & p. 319):

$$\text{Inventory} - \text{to} - \text{Gross Sales Ratio} = \frac{Inventories_t / GrossSales_t}{Inventories_{t-1} / GrossSales_{t-1}}$$

$$\text{Financing Expenses} - \text{to} - \text{Gross Sales Ratio} = \frac{FinancingExpenses_t / GrossSales_t}{FinancingExpenses_{t\text{-}1} / GrossSales_{t\text{-}1}}$$

$$M_i = -1.547 + (1.276 \times DSRI) + (\text{-}1.770 \times GMI) + (0.082 \times AQI) + (0.225 \times DEPI) + (\text{-}0.488 \times SGAI) + (\text{-}0.514 \times TATA) + (\text{-}0.341 \times LVGI) + (0.972 \times ISR) + (0.060 \times FSI)$$

Definition of each item is as follows;

- Days' Sales in Receivables Index (DSRI)
- Gross Profit Margin Index (GMI)
- Asset Quality Index (AQI)
- Depreciation Index (DEPI)
- Sales, General and Administrative Expenses Index (SGAI)
- Leverage Index (LVGI)
- Total Accruals to Total Assets Ratio (TATA)
- Inventory to Sales Ratio (ISR)
- Financing Expenses to Sales Ratio (FSI)

According to the normal distribution function of the "$M_i$" value obtained from this equation; if the probability of earnings management is

- less than 12.17%, it is stated that there is no evidence that the company engages in earnings management practices
- between 12.17% and 27.98%, it means that company probably engages in earnings management
- between 27.98% to 58.50%, it is stated that there are serious findings about the probability that the company engages in earnings management
- higher than 58.50%, it is propounded that there are highly significant findings which figure out that the company engages in earnings management (Küçüksözen, 2004, p. 320).

Company age, post-IPO period and free float rate that reveal the position of companies in their sectors and stock exchanges are among the firm characteristics. Company age is number of years passed since a company's established, and the post-IPO period is the number of years passed since a company became publicly held. According to the characteristic which is whether to be a part of a Group, if the company is within the Group of companies have taken the value of "1", otherwise "0". In addition, number of employees and the natural logarithm of total assets are used as the proxy of firm size in the research.

Board size (the number of members of the board of directors of the company), proportion of independent board members (the ratio of number of independent members of the board to the board directors) and the CEO (Chief Executive Officer) duality characteristics were employed to measure the effect of the board structure on the selection of an independent audit firm. CEO duality is the characteristic where the CEO, in other words general manager, also served as board member. If the CEO is also served as a member of the board, the variable is coded as "1", otherwise "0". Variables of board ownership, foreign ownership and institutional ownership are used as the indicators of ownership structure. Among the characteristics mentioned in the study, board ownership can be evaluated as managerial ownership. In this context, the model constructed in the research is as follows.

FIRM CHARACTERISTICS
EARNINGS MANAGEMENT

*Figure 1. The Model of Relationship between Earnings Management and Firm Characteristics*

As can be seen in Figure 1, the one-way relationship between the characteristics of the firms that make up the independent variables and earnings management practices of the firms which is the dependent variable of the research is examined. The data related to the earnings management practices used in the research were obtained by the implementation of the Beneish Model with the financial data obtained through the Public Disclosure Platform (KAP), while the data on firm characteristics were compiled both from the firms' own web pages and the related tabs in the Public Disclosure Platform which are company management, and capital and shareholder structure. By the end of the year 2018, 44 companies traded in BIST50 which disclosure related data about the firm characteristics such as board structure, free float rate etc. transparently are included to the research.

Multinomial logistic regression analysis is used as a model to explain the relationship between dependent and independent variables. Accordingly, it is tried to be determined which firm characteristics are effective on the firms' engagement to earnings management applications.

## 5. EMPRICAL FINDINGS AND DISCUSSION

$M_i$ values determined by implementing Küçüksözen's model that is an adaptation of Beneish original model, to the firms traded in BIST50 index are given in Table 3.

*Table 3.* $M_i$ *Values and Financial Information of Companies Traded in BIST50*

| Firms | DSRI | GMI | AQI | DEPI | SGAI | LVGI | TATA | ISR | FSI | $M_i$ |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.65 | 0.56 | 0.73 | 0.73 | 1.24 | 1.05 | -0.0000000022856 | 0.67 | 1.14 | -0.44 |
| 2 | 1.04 | 0.91 | 1.08 | 1.01 | 1.35 | 0.98 | 0.0000000002565 | 0.96 | 0.74 | -1.54 |
| 3 | 0.92 | 0.98 | 1.15 | 1.00 | 1.27 | 1.07 | -0.0000000000754 | 1.04 | 1.97 | -1.65 |
| 4 | 1.17 | 1.10 | 1.34 | 0.98 | 1.09 | 0.81 | -0.0000000002763 | 0.97 | 1.34 | -1.47 |
| 5 | 1.01 | 0.97 | 0.42 | 1.56 | 1.31 | 1.05 | 0.0000000000039 | 1.10 | 0.92 | -1.45 |
| 6 | 0.81 | 0.65 | -3.59 | 0.06 | 0.98 | 0.95 | -0.0000000399856 | 1.05 | 2.99 | -1.55 |
| 7 | 0.88 | 1.00 | 2.68 | 0.92 | 1.21 | 0.91 | 0.0000000000208 | 1.13 | 2.15 | -1.44 |
| 8 | 0.52 | 0.78 | 2.56 | 1.78 | 1.24 | 0.53 | 0.0000000001141 | 0.68 | 1.66 | -1.68 |
| 9 | 1.10 | 1.11 | 1.06 | 0.95 | 1.08 | 1.12 | -0.0000000002758 | 1.04 | 2.56 | -1.55 |
| 10 | 0.92 | 1.28 | 1.01 | 0.10 | 1.15 | 1.11 | -0.0000000000574 | 1.12 | 1.02 | -2.31 |
| 11 | 0.99 | 0.98 | 1.23 | 1.03 | 1.22 | 1.06 | -0.0000000002120 | 0.98 | 1.03 | -1.63 |
| 12 | 1.75 | 1.02 | 0.40 | 0.85 | 1.17 | 0.95 | -0.0000000000012 | 1.45 | 2.88 | -0.21 |
| 13 | 1.18 | 0.90 | 1.71 | 0.78 | 1.32 | 0.93 | -0.0000000000480 | 1.22 | 1.22 | -1.02 |
| 14 | 0.71 | 1.00 | -4.63 | 0.95 | 1.03 | 1.02 | 0.0000000000034 | 1.23 | 2.42 | -2.08 |
| 15 | 0.83 | 0.86 | 1.46 | 0.95 | 1.06 | 1.11 | -0.0000000002897 | 0.67 | 1.05 | -1.86 |
| 16 | 0.91 | 1.00 | 3.10 | 0.15 | 1.23 | 0.99 | -0.0000000000018 | 1.08 | 1.39 | -1.67 |
| 17 | 0.19 | 0.89 | 1.96 | 1.01 | 1.26 | 0.92 | -0.0000000002622 | 0.92 | 0.58 | -2.49 |
| 18 | 1.23 | 0.88 | 0.82 | 0.84 | 1.26 | 0.89 | -0.0000000002548 | 1.30 | 0.66 | -0.89 |
| 19 | 0.74 | 0.55 | 1.30 | 1.15 | 1.16 | 0.78 | -0.0000000001334 | 1.55 | 1.77 | -0.43 |
| 20 | 0.79 | 1.05 | 1.01 | 0.95 | 1.25 | 1.06 | 0.0000000000002 | 0.89 | 1.44 | -2.12 |
| 21 | 0.66 | 0.92 | 1.45 | 1.03 | 1.14 | 0.81 | -0.0000000002525 | 0.88 | 1.44 | -1.86 |
| 22 | 0.20 | 0.92 | 1.92 | 1.01 | 1.25 | 0.86 | -0.0000000002354 | 0.92 | 0.45 | -2.53 |
| 23 | 1.13 | 0.99 | 1.07 | 0.87 | 1.28 | 0.97 | -0.0000000007221 | 1.08 | 1.57 | -1.39 |
| 24 | 1.02 | 0.95 | 0.64 | 0.92 | 1.24 | 1.11 | -0.0000000000133 | 0.97 | 3.02 | -1.52 |
| 25 | 0.66 | 1.62 | 2.00 | 1.06 | 1.93 | 0.86 | -0.0000000014886 | 2.59 | 1.71 | -1.78 |
| 26 | 0.81 | 0.95 | 1.25 | 0.90 | 1.21 | 1.05 | -0.0000000001798 | 1.22 | 2.21 | -1.52 |
| 27 | 1.03 | 1.49 | 0.28 | 0.31 | 1.37 | 1.33 | -0.0000000002601 | 1.00 | 3.02 | -2.74 |
| 28 | 0.75 | 1.03 | 0.47 | 0.63 | 0.96 | 1.34 | -0.0000000043792 | 1.09 | 3.77 | -1.87 |
| 29 | 0.92 | 0.89 | 1.66 | 1.57 | 1.31 | 1.12 | -0.0000000007809 | 1.60 | 3.02 | -0.74 |
| 30 | 1.10 | 0.91 | 0.64 | 1.06 | 1.36 | 1.33 | -0.0000000013881 | 0.96 | 1.97 | -1.54 |
| 31 | 0.35 | 0.95 | 0.94 | 0.88 | 1.34 | 0.50 | -0.0000000007543 | 1.01 | 0.53 | -2.30 |
| 32 | 1.11 | 0.86 | 0.86 | 0.83 | 1.67 | 0.99 | -0.0000000001005 | 0.87 | 0.85 | -1.65 |
| 33 | 0.47 | 0.93 | 0.97 | 0.87 | 1.41 | 0.93 | -0.0000000001871 | 0.89 | 1.08 | -2.38 |
| 34 | 1.12 | 0.85 | 0.41 | 0.93 | 1.04 | 0.96 | 0.0000000000102 | 0.96 | 2.17 | -1.15 |
| 35 | 1.02 | 0.99 | 1.14 | 0.91 | 1.36 | 0.96 | -0.0000000001440 | 1.18 | 1.91 | -1.43 |
| 36 | 0.93 | 1.08 | 0.69 | 0.89 | 0.87 | 1.12 | -0.0000000000481 | 1.45 | 2.65 | -1.26 |
| 37 | 0.66 | 1.11 | 0.94 | 0.93 | 1.13 | 1.04 | 0.0000000000319 | 0.78 | 1.90 | -2.41 |
| 38 | 0.85 | 0.91 | 0.93 | 0.85 | 1.45 | 1.01 | -0.0000000000143 | 0.87 | 0.46 | -1.99 |
| 39 | 0.95 | 0.99 | 0.95 | 1.04 | 1.02 | 0.94 | -0.0000000000402 | 1.08 | 2.77 | -1.38 |
| 40 | 1.01 | 0.97 | 0.96 | 0.99 | 1.31 | 1.03 | -0.0000000000692 | 1.02 | 1.43 | -1.58 |
| 41 | 1.98 | 0.99 | 1.49 | 0.98 | 1.22 | 0.94 | -0.0000000000179 | 0.84 | 3.21 | -0.34 |
| 42 | 0.75 | 0.74 | 0.75 | 1.06 | 1.26 | 0.98 | -0.0000000000447 | 0.74 | 1.82 | -1.73 |
| 43 | 1.47 | 0.99 | 0.29 | 0.94 | 1.22 | 1.01 | -0.0000000015548 | 1.02 | 1.43 | -1.05 |
| 44 | 1.09 | 0.75 | 1.33 | 1.13 | 1.25 | 0.94 | -0.0000000000797 | 0.42 | 2.24 | -1.51 |

As result of calculations for $M_i$ value as can be seen in Table 2 there is not any company which has an extreme $M_i$ value.

In the analysis, financial sector companies are excluded since their financial statements have different structure, remaining 44 non-financial sector companies traded in BIST50 index have been tested to determine whether they tend to engage in earnings management.

*Table 4. Descriptive Statistics*

| | | Statistics | Standard Error |
|---|---|---|---|
| $M_i$ | Mean | -1.5714 | .0906 |
| | %95 Confidence Interval for mean<br>lower limit<br>upper limit | <br>-1.7525<br>-1.3955 | |
| | Median | -1.5521 | |
| | Variance | .344 | |
| | Standard Deviation | .58663 | |
| | Minimum | -2.74 | |
| | Maximum | -.21 | |
| | Interval | 2.53 | |
| | Skewness | .361 | .357 |
| | Kurtosis | .203 | .702 |

In Table 4, where descriptive statistics are presented, it is seen that the average of "$M_i$" values is -1.5714 and the standard deviation is 0.58663. To obtain statistically meaningful results and make sound interpretations, it is necessary to test whether the $M_i$ values of the analyzed companies are normally distributed. Normality the data can be understood by conducting Kolmogorov-Smirnov and Shapiro Wilk tests. Therefore, in this research the Shapiro Wilk test, which is more commonly used in normal distribution tests, was used to determine whether the data normally distributed.

*Table 5. Test for Normality*

| | Kolmogorov-Smirnov | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
| | Statistics | df | Sig. | Statistics | df | Sig. |
| $M_i$ | .147 | 44 | .018 | .960 | 44 | .125 |

As it is seen in Table 5 the significance level of the data set consisting of $M_i$ values was 0.125 that greater than 0.05 thus $M_i$ values were normally distributed at 5% level of significance. The $Z_i$ values that obtained after conversion of $M_i$ values to standard normal variables and the probabilities of earnings management are shown in Table 5 as follows.

*Table 6.* $M_i$ *and* $Z_i$ *Values of Companies and Interpretations*

| Firm # | $M_i$ | $Z_i$ | $Z_i$ Group | $M_i$ Interpretation |
|---|---|---|---|---|
| 1 | -0.44 | 1.93 | 4 | There are highly significant findings that engage in earnings management. |
| 2 | -1.54 | 0.06 | 1 | There is no evidence that engage in earnings management. |
| 3 | -1.65 | -0.13 | 1 | There is no evidence that engage in earnings management. |
| 4 | -1.47 | 0.18 | 2 | There is a probability to engage in earnings management. |
| 5 | -1.45 | 0.21 | 2 | There is a probability to engage in earnings management. |
| 6 | -1.55 | 0.03 | 1 | There is no evidence that engage in earnings management. |
| 7 | -1.44 | 0.23 | 2 | There is a probability to engage in earnings management. |
| 8 | -1.68 | -0.19 | 2 | There is a probability to engage in earnings management. |
| 9 | -1.55 | 0.04 | 1 | There is no evidence that engage in earnings management. |
| 10 | -2.31 | -1.26 | 4 | There are highly significant findings that engage in earnings management. |
| 11 | -1.63 | -0.09 | 1 | There is no evidence that engage in earnings management. |
| 12 | -0.21 | 2.32 | 4 | There are highly significant findings that engage in earnings management. |
| 13 | -1.02 | 0.93 | 4 | There are highly significant findings that engage in earnings management. |
| 14 | -2.08 | -0.88 | 4 | There are highly significant findings that engage in earnings management. |
| 15 | -1.86 | -0.49 | 3 | There are serious findings about the probability of engage in earnings management. |
| 16 | -1.67 | -0.17 | 2 | There is a probability to engage in earnings management. |
| 17 | -2.49 | -1.57 | 4 | There are highly significant findings that engage in earnings management. |

| Firm # | $M_i$ | $Z_i$ | $Z_i$ Group | $M_i$ Interpretation |
|---|---|---|---|---|
| 18 | -0.89 | 1.16 | 4 | There are highly significant findings that engage in earnings management. |
| 19 | -0.43 | 1.95 | 4 | There are highly significant findings that engage in earnings management. |
| 20 | -2.12 | -0.94 | 4 | There are highly significant findings that engage in earnings management. |
| 21 | -1.86 | -0.50 | 3 | There are serious findings about the probability of engage in earnings management. |
| 22 | -2.53 | -1.63 | 4 | There are highly significant findings that engage in earnings management. |
| 23 | -1.39 | 0.31 | 2 | There is a probability to engage in earnings management. |
| 24 | -1.52 | 0.09 | 1 | There is no evidence that engage in earnings management. |
| 25 | -1.78 | -0.36 | 3 | There are serious findings about the probability of engage in earnings management. |
| 26 | -1.52 | 0.08 | 1 | There is no evidence that engage in earnings management. |
| 27 | -2.74 | -2.00 | 4 | There are highly significant findings that engage in earnings management. |
| 28 | -1.87 | -0.51 | 3 | There are serious findings about the probability of engage in earnings management. |
| 29 | -0.74 | 1.42 | 4 | There are highly significant findings that engage in earnings management. |
| 30 | -1.54 | 0.06 | 1 | There is no evidence that engage in earnings management. |
| 31 | -2.30 | -1.25 | 4 | There are highly significant findings that engage in earnings management. |
| 32 | -1.65 | -0.14 | 1 | There is no evidence that engage in earnings management. |
| 33 | -2.38 | -1.38 | 4 | There are highly significant findings that engage in earnings management. |
| 34 | -1.15 | 0.72 | 3 | There are serious findings about the probability of engage in earnings management. |
| 35 | -1.43 | 0.24 | 2 | There is a probability to engage in earnings management. |
| 36 | -1.26 | 0.54 | 3 | There are serious findings about the probability of engage in earnings management. |
| 37 | -2.41 | -1.44 | 4 | There are highly significant findings that engage in earnings management. |

| **Firm #** | $M_i$ | $Z_i$ | $Z_i$ **Group** | $M_i$ **Interpretation** |
|---|---|---|---|---|
| 38 | -1.99 | -0.72 | 3 | There are serious findings about the probability of engage in earnings management. |
| 39 | -1.38 | 0.32 | 2 | There is a probability to engage in earnings management. |
| 40 | -1.58 | -0.02 | 1 | There is no evidence that engage in earnings management. |
| 41 | -0.34 | 2.10 | 4 | There are highly significant findings that engage in earnings management. |
| 42 | -1.73 | -0.26 | 2 | There is a probability to engage in earnings management. |
| 43 | -1.05 | 0.88 | 4 | There are highly significant findings that engage in earnings management. |
| 44 | -1.51 | 0.11 | 1 | There is no evidence that engage in earnings management. |

The firms in Table 6 are divided into 4 main groups according to the probability of tendency to engage in earnings management over $Z_i$ values determined by Beneish TR Model as explained in the previous section. As can be seen in Table 6, as a result of the $Z_i$ values obtained by the application of Beneish TR equation on 44 companies traded in BIST50, there is no evidence that 11 out of 44 companies engage in earnings management with creative accounting practices, 9 companies are likely to engage in earnings management, also It is determined that there are significant findings about the probability of performing earnings management 7 companies and there are significant findings that 17 companies engage in earnings management practices.

After classifying the companies into 4 main groups, whether they engage in earnings management or not; in the second stage, Multinomial Logistic Regression Analysis was conducted in order to determine whether the characteristics of the companies have an effect on the engaging in earnings management or not, and if so, the direction and magnitude of this effect.

In Table 7, descriptive statistics of company characteristics according to company's tendency to earnings management are given.

*Table 7. Descriptive Statistics of Firm Characteristics*

| | **Minimum** | **Maximum** | **Mean** | **Std. Deviation** |
|---|---|---|---|---|
| **Level of Earnings Management = 1 (11)** | | | | |
| Company Age | 22 | 84 | 50.73 | 23.728 |
| Post-IPO Period | 1 | 33 | 19.73 | 11.359 |
| Free Float Rate | 15.41 | 44.31 | 29.2509 | 9.32374 |
| Being a Part of Group Companies | 0.00 | 1.00 | 0.636363 | 0.504525 |
| Number of Employees | 47 | 29813 | 11040.45 | 11508.450 |
| Total Assets | 8.525342 | 10.484137 | 9.986922 | 0.569006 |
| Board Size | 6 | 12 | 8.55 | 2.296 |
| Proportion of Independent Board Members | 0.25 | 0.50 | 0.3364 | 0.06185 |
| CEO Duality | 0.00 | 1.00 | 0.272727 | 0.467099 |
| Board Ownership | 0.00 | 0.00 | 0.0000 | 0.00000 |
| Foreign Ownership | 17.27 | 48.82 | 28.9991 | 10.04638 |
| Institutional Ownership | 51.18 | 82.73 | 71.0009 | 10.04638 |
| **Level of Earnings Management = 2 (9)** | | | | |
| Company Age | 24 | 52 | 35.00 | 9.874 |
| Post-IPO Period | 2 | 29 | 19.44 | 9.812 |
| Free Float Rate | 14.94 | 72.58 | 37.9989 | 20.33674 |
| Being a Part of Group Companies | 0.00 | 1.00 | 0.444444 | 0.527046 |
| Number of Employees | 308 | 63518 | 19802.33 | 22199.177 |
| Total Assets | 7.250688 | 11.647391 | 9.921294 | 1.197963 |
| Board Size | 6 | 12 | 8.33 | 2.236 |
| Proportion of Independent Board Members | 0.30 | 0.42 | 0.3400 | 0.03354 |
| CEO Duality | 0.00 | 1.00 | 0.222222 | 0.440958 |
| Board Ownership | 0.00 | 14.15 | 1.5722 | 4.71667 |
| Foreign Ownership | 8.48 | 74.71 | 37.6622 | 27.48013 |
| Institutional Ownership | 14.07 | 91.52 | 60.7656 | 29.96825 |
| **Level of Earnings Management = 3 (7)** | | | | |
| Company Age | 9 | 59 | 31.86 | 17.497 |
| Post-IPO Period | 6 | 29 | 15.14 | 10.090 |
| Free Float Rate | 12.27 | 50.05 | 33.7629 | 13.38998 |
| Being a Part of Group Companies | 0.00 | 1.00 | 0.142857 | 0.377964 |
| Number of Employees | 785 | 33580 | 9699.57 | 12542.828 |

| | **Minimum** | **Maximum** | **Mean** | **Std. Deviation** |
|---|---|---|---|---|
| Total Assets | 9.354823 | 11.089848 | 10.027987 | 0.645743 |
| Board Size | 4 | 10 | 7.29 | 2.138 |
| Proportion of Independent Board Members | 0.00 | 0.50 | 0.2657 | 0.15296 |
| CEO Duality | 0.00 | 1.00 | 0.571428 | 0.534522 |
| Board Ownership | 0.00 | 66.37 | 18.7129 | 31.96228 |
| Foreign Ownership | 24.56 | 50.88 | 34.5600 | 8.91873 |
| Institutional Ownership | 0.00 | 75.44 | 46.7271 | 30.29735 |
| **Level of Earnings Management = 4 (17)** | | | | |
| Company Age | 20 | 60 | 41.18 | 13.607 |
| Post-IPO Period | 1 | 33 | 19.06 | 10.195 |
| Free Float Rate | 5.05 | 62.07 | 36.2771 | 17.29520 |
| Being a Part of Group Companies | 0.00 | 1.00 | 0.411764 | 0.507299 |
| Number of Employees | 370 | 96840 | 12453.94 | 23137.890 |
| Total Assets | 8.142362 | 10.690782 | 9.844898 | 0.724418 |
| Board Size | 4 | 18 | 8.71 | 3.981 |
| Proportion of Independent Board Members | 0.00 | 0.42 | 0.2759 | 0.14543 |
| CEO Duality | 0.00 | 1.00 | 0.352941 | 0.492592 |
| Board Ownership | 0.00 | 15.60 | 2.1365 | 5.09823 |
| Foreign Ownership | 5.13 | 94.91 | 43.9547 | 22.83107 |
| Institutional Ownership | 5.09 | 94.87 | 53.9088 | 25.77129 |

According to the descriptive statistics of firm characteristics in Table 7, it is found that the companies in group (1) have been operating for longer time (50.73 years) than the other companies in group (3 and 4). In other words, older companies do not tend to engage in earnings management as much as younger ones. Also, it is found that being a part of group companies decreases the probability of engaging in earnings management. On the other hand, for the companies in which board ownership (18.73 %) and foreign ownership (43.95 %) are higher than the others, tendency to earnings management practices is most probable than others.

A criterion evaluating the quality of compliance of the Multinomial Logistic Regression model is the testing for goodness-of-fit after grouping the data. According to the goodness-of-fit test that is conducted to determine whether there is a significant difference between the results obtained, the p-value (0.000) is found less than at 0.05 level of significance, hence the model fits well in the data set.

When building more complicated models, it is often required to report an R-square for the model. The R-squared value is a measure of how well the independent variables in a regression equation explain the dependent variable of the model. In this research, pseudo R-squared measures are calculated and presented in Table 8. According to the R-squared values, firm characteristics, which are independent variables of the established model, explain the independent variable of the model that is the probability of engaging in earnings management practices, at the level of 87.4%.

*Table 8. Explanatory Power of the Model*

| **Step** | **McFadden** | **Cox & Snell $R^2$** | **Nagelkerke $R^2$** |
|---|---|---|---|
| 1 | 0.631 | 0.813 | 0.874 |

Table 9 presents the classification and findings obtained by including firm characteristics, which are independent variables of the model, into the model.

*Table 9. Classification of Independent Variables*

| | **Observed** | | **Estimate** | | | | |
|---|---|---|---|---|---|---|---|
| | | | Earnings Management Level | | | | Percentage of Confirmation (%) |
| | | | 1 | 2 | 3 | 4 | |
| **Column 1** | Earnings Management Level | 1 | 8 | 0 | 0 | 3 | 72.7 |
| | | 2 | 1 | 6 | 0 | 2 | 66.7 |
| | | 3 | 0 | 0 | 7 | 0 | 100 |
| | | 4 | 0 | 3 | 0 | 14 | 82.4 |
| | Total (%) | | 20.5 | 20.5 | 15.9 | 43.2 | 79.5 |

According to the findings, the correct estimation rate of the classification is determined as 79.5% by including the firm characteristics to the model. In the next stage, it is required to determine whether the characteristics of the firms included in the model have an impact on the earnings management practices of the companies and if so, the direction of this effect. The results of the tests conducted to measure the impact of firm characteristics on earnings management practices of the companies are revealed in Table 10.

**Table 10. Significance of Coefficients in the Model**[4]

| **Earnings Management** | | **Coefficient** | **Std. Dev.** | **p** | **Exp(B)** |
|---|---|---|---|---|---|
| **2** | Company Age (Age) | -0.279 | 0.106 | 0.008* | -0.1214 |
| | Post-IPO Period (PIPO) | 0.240 | 0.110 | 0.029* | 0.1044 |
| | Free Float Rate (FFR) | 0.546 | 0.318 | 0.086* | 0.2370 |
| | Being a Part of Group Companies (GROUP) | 2.615 | 2.367 | 0.269 | 1.1355 |
| | Number of Employees (EMP) | 0.000 | 0.000 | 0.243 | 0 |
| | Total Assets (TA) | -0.001 | 0.961 | 0.999 | -0.0004 |
| | Board Size (SIZE) | -0.667 | 0.372 | 0.073* | -0.2898 |
| | Proportion of Independent Board Members (PBOD) | -6.516 | 10.827 | 0.547 | -3 |
| | CEO Duality (CEO) | 1.320 | 2.025 | 0.514 | 0.5733 |
| | Board Ownership (BO) | 4.202 | 0.487 | 0.000* | 1.8247 |
| | Foreign Ownership (FO) | -0.433 | 0.274 | 0.114 | -0.1884 |
| **3** | Company Age (Age) | -11.117 | 859.607 | 0.990 | -4.8279 |
| | Post-IPO Period (PIPO) | 13.720 | 957.756 | 0.989 | 5.9583 |
| | Free Float Rate (FFR) | 2.165 | 486.477 | 0.996 | 0.9402 |
| | Being a Part of Group Companies (GROUP) | -108.669 | 9767.107 | 0.991 | -47.1943 |
| | Number of Employees (EMP) | -0.006 | 0.476 | 0.990 | -0.0026 |
| | Total Assets (TA) | 249.418 | 15337.144 | 0.987 | 108.3209 |
| | Board Size (SIZE) | -42.639 | 2529.304 | 0.987 | -18.5179 |
| | Proportion of Independent Board Members (PBOD) | -334.935 | 24211.510 | 0.989 | -145.4605 |
| | CEO Duality (CEO) | 197.016 | 11916.306 | 0.987 | 85.5630 |
| | Board Ownership (BO) | 5.506 | 249.664 | 0.982 | 2.39142 |
| | Foreign Ownership (FO) | -1.567 | 231.430 | 0.995 | -0.67985 |

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[4] In the research Level 1 which is “There is no evidence that a company engage in earnings management.” is taken as basis for the test.

| Earnings Management | | Coefficient | Std. Dev. | p | Exp(B) |
|---|---|---|---|---|---|
| **4** | Company Age (Age) | -0.149 | 0.072 | 0.040* | -0.06449 |
| | Post-IPO Period (PIPO) | 0.220 | 0.117 | 0.060* | 0.09586 |
| | Free Float Rate (FFR) | -0.085 | 0.083 | 0.308 | -0.03668 |
| | Being a Part of Group Companies (GROUP) | -1.689 | 1.520 | 0.266 | -0.73282 |
| | Number of Employees (EMP) | 0.000 | 0.000 | 0.383 | 0 |
| | Total Assets (TA) | 0.043 | 0.934 | 0.963 | 0.01870 |
| | Board Size (SIZE) | -0.308 | 0.324 | 0.342 | -0.13371 |
| | Proportion of Independent Board Members (PBOD) | -15.598 | 9.077 | 0.086* | -6.77417 |
| | CEO Duality (CEO) | 2.314 | 1.739 | 0.183 | 1.00492 |
| | Board Ownership (BO) | 3.350 | 0.000 | - | 1.45481 |
| | Foreign Ownership (FO) | 0.130 | 0.087 | 0.136 | 0.05652 |

According to results of the tests when the Category 1 is taken as basis, as it is seen in Table 10, P-values of each explanatory variable are statistically significant at 10% level of significance.

When the category "There is no evidence that the company engages in earnings management practices" and the category "Company probably engages in earnings management" are compared, it is found that the company age and the board size characteristics have a significantly negative impact on engaging in earnings management practices. Therefore, a 1-year increase in company age reduces the probability of engaging in earnings management practices by 0.1214 times. Likewise, a 1-unit increase in the number of members in the board of directors reduces the probability of engaging in earnings management practices by 0.2898 times. In addition, it is found that the post-IPO period, free float rate and board ownership characteristics have a significantly positive impact on the probability of engaging in earnings management practices. Accordingly, 1-unit increase in the post-IPO period increases the probability engaging in earnings management practices by 0.11044 times. 1-unit increase in the free float rate increases the probability engaging in earnings management practices by 0.2370 times, similarly 1-unit increase in the board ownership increases the probability engaging in earnings management practices by 1.8247 times.

When the category "There is no evidence that the company engages in earnings management practices" and the category "There are serious findings about the probability that the company engages in earnings management" are compared, it is discovered that the company age and the proportion of independent board members characteristics have a significantly negative impact on engaging in earnings management practices. Hence, a 1-year increase in company age reduces the probability of engaging in earnings management practices by 0.06449 times and a 1-unit increase in the proportion of independent board members decreases the probability of engaging in earnings management practices by 6.77417 times. Furthermore, it is discovered that the post-IPO period has a significantly positive impact on the probability of engaging in earnings management practices. Therefore, 1-unit increase in the post-IPO period increases the probability of engaging in earnings management practices by 0.09586 times.

When the category "There is no evidence that the company engages in earnings management practices" and the category "There are highly significant findings which figure out that the company engages in earnings management", it is found that firm characteristics do not have any significant impact on the earnings management practices.

## 6. CONCLUSION

In the study, the impact of the characteristics of 44 non-financial firms traded in BIST 50 index on earnings management practices is examined. The characteristics of the firms are compiled from the financial statements and annual reports published on the Public Disclosure Platform (PDP). Whether the companies engage in earnings management practices is determined by employing Beneish Model with 2017 and 2018 financial statements of these companies. Then, according to the probability level of engaging in earnings management practices, companies are divided into four different categories and the relationship between the characteristics of these companies and the tendency to engage in earnings management practices is investigated.

At the end of the analysis, findings show that based on the category “there is no evidence that the company engages in earnings management practices” post-IPO period, free float rate and board ownership have a positive impact on probability of engaging in earnings management practices; however, company age, board size and proportion of independent board members have negative impact on probability of engaging in earnings management practices. When findings of the research are compared with other studies in the literature, the relationship between the board size and earnings management practices is similar to findings of Ağca and Önder (2016). It is suggested that management will give more confidence to investors and management will not tend to engage in earnings management practices for misleading the investors, due to the greater experience in crowded boards. The proportion of independent board members variable has a negative impact on earnings management practices confirming the findings of Xie et al. (2003), Zhou and Chen (2004), Jaggie et al. (2009), Habbash (2010), Ocak and Arıkboğa (2017) and Temiz et al. (2017). The reason behind this result is that increase in the proportion of independent members prevents managers cannot act with their own interests. In addition, board members who have a significant portion of the shares are expected to respect the rights of the investors and therefore, it is expected to less engage in the earnings management practices. However, this variable has been found to have a positive impact on the probability of engaging in the earnings management practices, just as in the studies of Yeo et al. (2002), Riahi and Ben Arab (2011).

This research is expected to contribute to the literature in terms of to identify the companies engaging in earnings management practices and to determine which characteristics of companies affect the earnings management practices. However, data employed in the research were limited with one year (2018) and within the scope of companies traded in BIST50 index. Subsequent studies will be more comprehensive by developing with Panel Multinomial Logistic Regression Analysis also including more enterprises and longer periods.

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# SECTION IV

# BEHAVIORAL FINANCE, CONSUMPTION, AND STRUCTURAL MODELLING

# 16

# NEW PERSPECTIVES ON FINANCE: THE RISE OF BEHAVIORAL FINANCE

*Tuğberk ÇİTİLCİ*[1]

## Introduction

The classical finance theory assumes homo economicus is a rational actor that minimizes pain and maximizing pleasure under all risk & uncertainty conditions. The decision-making process is well managed and outcomes are perfect under this concept. But rationality of homo economicus becomes more questionable in developing economic theories.

The classical economy thinkers integrated some supportive sciences such as psychology, sociology, and anthropology, etc. into rationality concept. Adam Smith and Hume were the well-known representatives of this era. This progress stopped by the neo-classical approach which ignores incalculability dynamics for rationality.

The neoclassical approach purely focused on mathematical calculations to explain homo economics. Calculations were not enough to catch the exact reasons why the outcomes of decision makings irrational. After World War II literature focused on irrational concept by taking the help of multi-disciplines from psychology, sociology, medical science, etc.

Ongoing changes on rationality and irrational concepts support the birth of behavioral finance which can be defined as finance disciplined with the integration of psychology, sociology, anthropology and other sciences. The main assumption is homo economics is irrational, not rational.

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The rise of behavioral finance started with Kahneman's Nobel memorial prize in economics in 2002 with prospect theory. This theory assumes human beings value losses and gains differently under risk and uncertainty conditions.

Behavioral finance briefly explains the biases that take part during the decision-making process. The biases can be named as origins of irrational outcomes. Book chapter will cover milestones of behavioral finance and detailed explanation of biases such as overconfidence, hindsight, overoptimism, confirmation, cognitive dissonance, illusion of control, illusion of knowledge, conservatism, and self-attribution, etc.

At the end of the chapter, further suggestions and debates about behavioral finance discipline will be discussed to support ongoing process on academic literature.

## The Battle of Finance, Traditional Finance versus Behavioral Finance

Economy science can be defined as, the optimal use and distribution of scarce resources. The theoretical definition sounds perfect by maximizing the utility of homo economicus under the assumption of pure rationality. Homo economicus's nature based on optimal and efficient decision making outputs under risk and certainty conditions. With this assumption, it is very effortless to allocate resources among actor which plays a central role in the economy with a perfect equilibrium of supply and demand. In the theoretical way born of homo economicus backs to classical economy. Rationality was the milestone of theories and very rigid to change or close to debate. Under all of the risk and uncertainty conditions, homo economics assumed as rational and maximizing utility function. Under the classical economy approached all theories based on to define and solve risk and uncertainty factors. To achieve this target supporters sciences for example sociology, psychology, anthropology, mathematics, and physics used. When risk and uncertainty defined exactly all of the problems solved for rational homo economicus. This sounds perfect but is it effective in a practical way the answer is no. Classical economics started the steps but when neo classical economics ignored the indefinable factors based on social sciences all the way turned to numerical calculations based on mathematics. Risk and uncertainty calculations assumed the best solution for homo economicus rationality. Under the rationality concept, decision making process outcomes divergence from rationality arises while ongoing criticism. This started the process of irrationality concept for neo classical economics which understood numerical calculations not only solution but also inefficient. the transformation of the rationality concept to irrationality concept within risk and uncertainty started with Jevons, Knight, Keynes, Hutchison, and Shackle studies. The common approach of these, risk can be named and definite numerically but uncertainty cannot be named or defined for economicus. The development process of the utility function with risk and uncertainty depends on the irrational concept with taking into consideration Brownian motion, water-diamond paradox, St. Petersburg paradox, random walk theory, and efficient market hypothesis. Until now weakness points of classical and neo classical economics mentioned for rationality concept. Old school of economics view briefly showed homo economicus is not rational, but irrational in the decision-making process. With accepting irrationality instead of theoretical unrealistic rationality concept traditional finance has changed its shell (not yet broken!) for risk and uncertainty dynamics. New school deals and examines what is the factors that push homo economicus to take irrational decisions by adding…..

## Behavioral Finance

Behavioral finance can be defined as the multidiscipline of different sciences combining sociology, psychology, physics, medicine, and other social sciences. It is very difficult to exactly name what is behavioral finance due to integration with multi disciplines. In literature scan there is a huge variety of behavioral finance definitions;

Behavioral finance can be named as is implementation of psychology science to finance (Pompian, 2012, p.4). Another view on behavioral finance is a combination of finance with multidiscipline while focusing on the irrationality concept.

Goldberg and Nitzsch (2001) defined behavioral finance as behavior-based financial market theories. According to Sewell (2000), behavioral finance deals with the impact of psychology science on financial actor's behavior and market. All in all, behavioral finance aims to understand and explain why homo economicus acts irrationally. What are the factors that drive homo economicus behavior to deviate from rationality to irrationality? Classical theories or mathematical calculations are not sufficient to explain and solve this paradox of irrationality. Because risk factors can be calculated in numerical ways but uncertainty which is a different concept from risk, cannot be calculated and addressed exactly. The best treatment will be adding psychology science to finance to transform financial actors to behave from irrational to rational basis.

*Behavioral Finance Models,*

**Representative Model (1998):** According to model assumptions investors have conservatism and representative biases which cause to deviate from rationality. Specific points for the model comes from overreaction and underreaction:

**Daniel, Hirshleifer and Subrahmanyam Model (1998)**: model based on investors overconfidence bias that creates overreaction and underreaction to news come to market. Anomaly concept explained within these behavioral finance biases

**Hong and Stein Model (1999):** model categorized investors into three types. The first one is limited rational investors, the second one is news-watchers investors and the last one is momentum traders. There is no pure rationality for model only limited rationality plays a role in assumptions.

All of these 3 models have a superior advantage to explain anomaly findings in one model.

## Market Anomalies

Anomaly can be named as deviation from rational concepts, it is very difficult to briefly put name for definition. History of anomaly terminology started with poet Juvenal in England in the 16th century by saying "a rare bird, like a black swan". Juvenal ignored the possibility of black swans existence which opened a door for further development of anomaly. Nassim Taleb with his well-known book "black swan" anomaly literature scope has transformed rapidly. Taleb defines that events, which happened suddenly, cannot be explained by statistics and probability calculations. Commonly this can be said as "do not wait for expected events wait for unexpected events in a sudden time of periods. The development process of anomaly concepts attracts the attention of finance discipline with the concept of behavioral finance irrationality assumption. Well known behavioral finance actor Richard Thaler, father of behavioral finance, explained five market anomaly as volume, volatility, dividends, the equity premium puzzle and predictability based on stock prices. Thaler opened a door for further development of new unknown anomalies of stock markets. This development is ongoing and crucial progress for the literature of behavioral finance. Share price of stocks trade at stock exchanges deviates from fair value while no exact reasons so what drives this type of anomalies. Rationality concept ignores fair value deviation but the irrationality concept has some word to say and explain by anomaly terminology. If the stock markets and actors in the financial market are purely rational, assumption of efficient market hypothesis, arbitrage possibility will be off and every actor in the market cannot catch the additional edge of return. If the financial markets are irrational and no way to predict the future of stock movements can investors benefit from anomalies. The answer to the question is limited yes by determining the right anomalies in financial markets by not ignoring the irrationality concept. The well-known anomalies that exist in financial markets are; *Firm size* *anomaly, underreaction anomaly, overreaction anomaly, Standard & Poor's index effect, initial public offering anomaly, secondary public offering anomaly, neglected firm anomaly, price to book value (P/BV), price to earnings (P/E) multiple anomaly, weather conditions anomaly, daylight savings time changes, calendar anomalies, January barometer and sell in May and go away anomaly*. These are not the only anomalies that exist in financial markets with the development of behavioral finance literature brand new anomalies come to investors and this ongoing progress cannot be stopped until the near future.

*Details of mentioned anomalies;*

**Firm size Anomaly:** In the financial markets perspective it is assumed too small to midcap sized firms underperform big sized firms. Investors more focus on big-sized firm's portfolio allocation to catch the additional edge of financial markets. The theoretical way it sounds it is possible to benefit from big sized firm's investments but with the anomaly concept, the reality is different from what expected. Studied done by Banz and Alber & Strebel showed small to mid-cap sized firms based portfolio return is greater than big sized based portfolio returns. After this studied this anomaly cased named as firm size anomaly which plays a crucial role in stock price returns.

**Underreaction Anomaly:** Investors focus on last up to date news about firms while ignoring the basket of information as a whole. This irrationality can be caused by conservatism bias with the concept of investors not focus on familiar stock. Under conservatism bias investor anchors to first information and this written to behavior heavily. Strategy cannot be adapted to new up to date information and investor insists on ignoring new changes to conservatism bias.

**Overreaction Anomaly:** Under the concept of representative bias, investors' weight more heavily on up-to-date news related to the firm. When firms announce important news investors react to extreme levels which can be named as overreaction anomaly. Overreaction response goes on insane while holding information level stabile. Under overreaction anomaly, positive or negative returns can be got by investors for a short term period.

**Standard & Poor's Index Effect:** The stock market index is a combination of a basket of stocks that trades at related stock exchange. Index can be viewed as a benchmark for the firm's credibility if there is an addition or deletion from index members this effect firm's stock return. Adding to the index can be positive while the deletion of members negative. Studies done by Harris & Gurel (1986) and Andrei (1986) gave parallel results to assumptions.

**Initial Public Offering Anomaly:** Initial public offering is the best source for firms want to trade at the stock exchange. At the first stage of IPO attention triggers momentum of share prices in the short term generally. But when it compared on behalf of returns long term performance of stock worse than short-time performance which can be named as IPO anomaly. This case studied by Ritter in 1991.

**Secondary Public Offering Anomaly:** As initial public offering anomaly, firms that use secondary initial public offering hit by anomaly in the long term. Investors skeptical about why firms need to deal with an extra offering and this doubt play a crucial role in returns of long terms.

**Neglected Firm Anomaly:** Actors in financial markets focus heavily rely on big-sized firms while ignoring small to mid-sized firms. In some parts, it can be meaningful to ignore these types of firms but cannot be known what is going to be announced by these firms. For example, merger & acquisition, dividend or forward guidance announcement may have a huge impact on related share price. One of the most important studies about this topic done by Banz in 1981. Banz showed the inverse relationship between stock return and firm size factor. This also is combined with the underreaction bias of investors for small to mid-sized firms, investors generally ignore to read or be informed about announcement while missing meaningful returns.

**Price to book value (P/BV) Anomaly:** Financial ratios can be seen as an x-ray of the firm's financial position. In finance terminology financial ratios named as multiples (x) such as Price to earnings, price to sales, Capex to sales, EV/EBITDA and price to book value. In general theory firms with have high price to book value multiples outperform firms with low price to book multiples but this stays in theoretical view. Rouwenhorst (1999) ran an analysis for the 1987 – 1997 period which showed the low price to book value multiple stocks performance was better than high price to book value multiples. The multiples anomaly can be expanded with adding a new balance sheet or income statement items to denominator of price divided by x equation.

**Price to earnings (P/E) Anomaly:** Price to earnings multiple is the most well-known popular multiple which commends on firm profitability. In general assumption companies with high price to earnings multiple will generate better performance when compared to low price to earnings multiple. The debate about multiples continues as which one is better for firm, having a high multiple or low multiple. Basu (1977) answered this question in 1977 with scanning the 1957-1977 period of firms with the result of low price to earnings multiple firms return performance was much better than firms with high price to earnings multiple. From view of practical use of price to earnings multiple for stock markets works like that, low price to earnings multiple is a good signal for cheap valuation or high price to earning signals expensive valuation.

**Weather Conditions Anomaly:** Financial analysis of firms depends on the balance sheet or income statement analysis and investors take into consideration stock markets. These are traditional methods for an investor but how about the financial decision-making process of investors. Only numerical signals push to hit the buy or sell buttons on stock markets. With the ongoing development of anomaly literature, some interesting factors take into consideration such as weather conditions, rain, snow, sunny or cloudy. Also, moon and geomagnetic storms affect investors which is a new and unknown anomalies. Hirsleifer and Shumway

(2003) studied weather conditions and stock returns relations for the 1982 – 1997 period with the result of significant relation between sunny days and stock returns.

**Daylight Savings Time Changes:** Daylight saving time changes anomaly based on timeframes with the concept of time differences among the World. Kamstra and others (2000) showed that the inverse relation between daylight saving time changes period in the following period for stock returns.

**Calendar Anomalies:** Seasonality is an important concept for finance and macroeconomics because of its definition as a noise in series. Stock market returns or important macroeconomic variables such as GDP, industrial production or inflation have seasonality effect some periods is better than the other periods for some specific related reasons. Subgroup of calendar anomalies are day effect and month effect. Popular anomalies of day effect arises on Monday with negative returns and on Friday with positive returns

**January Month Anomaly:** The January barometer is an anomaly for month effect under calendar anomalies. Stock returns generally better in January months when compared to another month in the year. Rozeff and Kinney (1976) found that the January months return of the New York Stock Exchange for the 1904 – 1974 period was better when compared to the rest of the year.

**January Barometer:** January barometer anomaly is the same as the January month effect concept. Performance of stock returns (negative or positive) done in January month is a good indicator for the rest of the year's performance. This type of anomaly firstly mentioned by Hirsch (1986).

**Sell in May and Go Away Anomaly :** Sell in May and Go Away anomaly or differently named as Halloween indicator scans monthly based anomalies for stock returns for May – October and November – April period.

Bouman and Jacobsen (2002) showed return for the May – October period was low when compared to November – April period.

To sum up, financial market anomalies ongoing and inexorably development process opens new doors for literature as mentioned above is only the tip of the iceberg. Economics science and finance discipline integration on this topic can be further developed by experimental economics momentum and support from behavioral finance new techniques. The process is open-ended with the collaboration of different disciplines under the artificial intelligence era. For the development of financial market anomalies literature, Trump tweet anomaly may be taken into consideration. A brief key point behind the idea is based on speed. Rational and irrational investors want to address what is the factor behind insane price movements of financial markets during recent years. When it comes to explain related reasons for these, President of USA Donald Trump is a good and exact answer. Starting with 2016 as Trump has become President of USA financial market anomalies raised due to Trump's social media tweets. Before Trump's period, the USA president does not use twitter frequently and efficiently this has changed with Donald Trump's frequent tweets. With his tweets trade war era has opened with China, also USA based companies hit by harsh criticism, every important and crucial announcement served via twitter which is not a usual way as people familiar with. After 2016 until now financial market actor has adapted to Trump and created some financial techniques to benefit from Trump's unexpected tweets. Adaptation based on machine learning, big data analysis, algorithmic trades, artificial intelligence and sentiment analysis which also supported the development of academic literature of finance and behavioral finance. Methodology behind this type of action based on the speed of future markets. When Trump tweets impact on share price or currency rate in milliseconds and for a financial actor or investor to understand and analyze what Trump said is very complex and difficult. This process aims to send order of buy or sell according to Trump tweets within milliseconds without system investors lose the game against to milliseconds. All in all, the author thinks that Trump tweet effect on stock markets and exchange rates can be named as Trump tweet anomaly and can be written to literature ongoing process.

## What Drives Irrational Homo Economicus: Heuristics and Bias

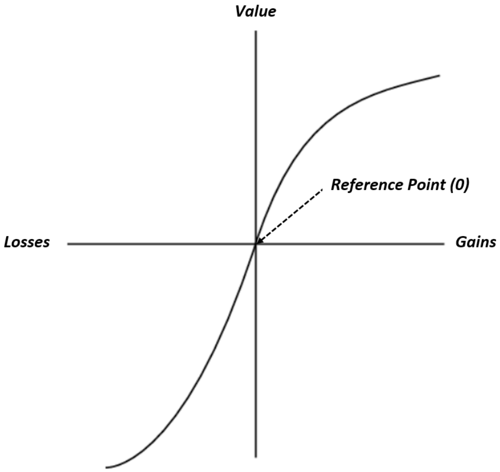
Until now chapter briefly explains the reasons for ignorance of the rationality concept and acceptance of irrationality on behalf of the behavioral finance concept such as models and anomalies. From now on milestones of behavioral finance will be discussed through prospect theory, heuristics and biases while focusing on biases especially.

### *The Prospect Theory*

Kahneman and Tversky well know actors of behavioral finance development process with the contributor of "The Prospect Theory" which awarded the Nobel Memorial Prize in Economics in 2002. Their background goes back to military psychometric tests for fighter pilots and analysis of these test results. With the knowledge of psychology, prospect theory formation was more easily continued. The first study published in Econometrica by Kahneman and Tversky (1979) with the support of behavior under uncertainty conditions. Under prospect theory utility function assumed as value function and hypothetical value function showed people intend to be risk-taker during losses and be risk-averse during gains. Function zero (0) points accepted as a reference point and can be named as a status quo point. Function behaves concave for gains and convex for losses while value function gets steeper when converge to reference point. (Tversky and Kahneman, 1986)

The figure as mentioned below shows hypothetical value function for prospect theory.

*Figure 1. Prospect Theory: The Hypothetical Value Function*



**Adapted from Kahneman and Tversky (1979)*

The idea behind prospect theory is to understand gains and losses response of people which fully accepted as rational. The theory examines the behavior of people in two ways; firstly emotions prevent the rational decision-making process negatively, secondly, cognitive dissonance disturbs the rationality concept. The risk aversion factor is the main reference of theory to catch the behavior of people. Some risk-taking tests applied to people and results showed people were risk-averse for gains while risk-takers for losses. This is the outcome idea of prospect theory to calculate the response conditions to gains and losses.

In conclusion, prospect theory is the father of behavioral finance with a kick-off literature development process.

When getting some clues of irrationality from prospect theory, some parts of the deal has done and not yet finished. Behavioral finance's main focus is to understand the hidden factors that creates irrationality. Heuristics and biases are the best treatment for irrational homo economicus decision-making process. These two factors deal with decision making process outcomes under risk and uncertainty conditions in behavioral finance discipline. Heuristics is the way of sudden thinking and the decision-making process for a very limited time. This type of thinking can be linked to system 1 and system 2 thinking. System 1 thinking comes from the limbic brain system without thinking, for example, everybody escapes when seeing a snake or spider. System 2 thinking mechanism is more based on information comes from the external environment to the brain system and takes time when compared to system 1 thinking way. Bias can be defined as the deviation of behavior from rationality and normality. When it seems from definition bias sound very simple and easy concept but it isn't seen like that with not ignoring the complexity of the concept. A literature scan shows there is no perfect and significant classification of bias. The author scanned whole literature and classified biases started from 1998 to 2001 with important studies such as; Matthew (1998), Kahneman & Riepe (1998), Shefrin (2000), Goldberg & Nitzsch (2001), Hirshleifer (2001) and Barberis & Thaler (2003). This classification of heuristics and biases gives a brief x-ray of literature scan with the knowledge of not limited to this classification. New biases can be added to literature with the ongoing process of behavioral finance in the near future.

Main classification of biases based on the literature scan mentioned below as a whole.

*Figure 2. Bias: The Classification*

| 1998 | 1998 | 2000 | 2001 | 2001 | 2002 |
|---|---|---|---|---|---|
| **Rabin MATTHEW** | **Daniel KAHNEMAN & Mark RIEPE** | **Hersh SHEFRIN** | **Joachim GOLDBERG & Rüdiger von NITZSCH** | **David HIRSHLEIFER** | **Nicholas BARBERIS & Richard THALER** |
| 1. Preferences | 1. Judgement Biases | 1. A Heuristic Driven Bias | 1. Heuristics for Reducing Complexity | 1. Judgment & Decision Biases | 1. Beliefs |
| 1.1. Reference Levels, Adaptation & Losses | 1.1. Overconfidence | 1.1. Representativeness Bias | 1.1. Simplifying the Facts | 1.1. Heuristic Simplification | 1.1. Overconfidence |
| 1.1.1. Loss Aversion | 1.2. Optimism | 1.2. Gambler's Fallacy, the law of small numbers | 1.2. Mental Accounting | 1.1.1. Attention/Memory/ Ease of Processing Effects | 1.2. Optimism & Wishful Thinking |
| 1.1.2. Endowment Effect | 1.3. Hindsight | 1.3. Overconfidence | 1.3. Availability | 1.1.2. Narrow Framing/ Mental Accounting/ Reference Effects | 1.3. Representativeness Bias |
| 1.1.3. Satus quo bias | 1.4. Over-reaction to Chance Events | 1.4. Anchoring&Adjustment, Conservatism | 1.4. Ignoring Information | 1.1.3. Representativeness Bias | 1.4. Conservatism |
| 1.1.4. Diminishing Sensitivity | 2. Errors of Preference | 1.5. Ambiguity Aversion | 1.4.1. Selective Perception | 1.1.4. Belief Updating: Combining Effects | 1.5. Belief Perseverance |
| 1.2. Social Preferences & Fair Allocations | 2.1. Non-Linear Weighting of Probabilities | 1.6. Emotions&Cognition | 1.4.2. Constrast Effects | 2. Self-Deception | 1.6. Anchoring |
| 1.2.1. Equity, Fairness, Status Seeking | 2.2. People Value Changes, not States | 2. Frame Dependence | 1.4.3. Primacy & Priming Effects | 3. Emotions & Self Control | 1.7. Availability |
| 1.2.2. Altruism | 2.3. Value Function | 2.1. Loss Aversion | 2. Quick Judgments | 3.1. Distaste for Ambiguity | 2. Preferences |
| 1.3. Reciprocity & Attribuation | 2.4. The Shape and Attractiveness of Gambles | 2.2. Mental Accounting, Frame Dependence | 2.1. Anchoring | 3.2. Moods & Decisions | 2.1. Prospect Theory |
| 1.3.1. Reciprocal Altruism | 3. The Purchase Price as a Reference Point | 2.3. Hedonic Editing | 2.2. Representativity | 3.3. Time Preference & Self Control | 2.2. Ambiguity Aversion |
| 1.3.2. Volition | 3.1. Narrow Framing | 2.4. Cognitive & Emotional Aspects | 2.2.1. Overestimating Probability | 4. Social Interaction | |
| 2. Biases in Judgement | 3.2. Repeated Gambles and Risk Policies | 2.5. Self Control | 2.2.2. Conjunction Fallacy | | |
| 2.1. Law of Small Numbers | 3.3.Short and Long Views | 2.6. Regret | 2.2.3. Gambler's Fallacy | | |
| 2.2. Belief Perseverance & Confirmation Bias | 4. Living with the Consequences of Decisions | 2.7. Monetary Illusion | 2.2.4. Conditional Probability Fallacy | | |
| 2.3. Hypothesis-based Filtering | 4.1. Regrets of Omission and Commission | 3. Inefficient Markets | 2.2.5. Overestimating Emprical Relationships | | |
| 2.4. Illusory Correlation | 4.2. Regret and Risk Taking | | 2.2.6. Overestimating Casual Relationships | | |
| 3. Other Biases | | | | | |
| 3.1. Hindsight | | | | | |
| 3.2. Availability | | | | | |
| 3.3. Overconfidence | | | | | |

**created by author by literature scan*

Matthew (1998) classified biases into 3 main groups. The first group is Preferences, the second group is Biases in Judgment and the last one is other biases. Kahneman & Riepe (1998) study showed four important groupings such as; Judgment Biases, Errors of Preference, The Purchase Price as a Reference Point and Living with the Consequences of Decisions. Shefrin (2000) focused on A Heuristic Driven Bias, Frame Dependence and Inefficient Markets. Goldberg & Nitzsch (2001) mentioned two main groups; Heuristics for Reducing Complexity and Quick Judgments. Hirshleifer's (2001) classification differs from others by focusing on the Self-Deception group and its subgroups such as; Overoptimisim - Illusion of Control - Illusion of Knowledge, Overconfidence Bias, Self-Attribution Bias, Confirmation Bias, Hindsight Bias, Cognitive Dissonance and Conservatism Bias. The last classification comes from Barberis & Thaler (2002) by adding two biases which are beliefs and preferences.

Chapter focuses on common and well-known biases definitions from now on. Recent studies and the born of behavioral finance show that homo economicus is irrational during the decision-making process under risk and uncertainty condition. This irrationality arises from biases which defined as deviation from rationality. It is very important to exactly define biases that prevent rationality and weights irrationality on homo economicus. The nature of human and brain system generally attempt to refuse that a mistake has done and rigidly ignorance mechanism of brain comes to play. First off all regret dilemma of human is the key problem needed to be entreated by biases guidance. Hirshleifer's important classification depends on self-deception with seven sub-groups which takes an important part in behavioral finance literature. Briefly, self-deception is the worst enemy of human rational decision mechanism from different points of view the only enemy is ourselves. A typical flow chart of self-deception starts with self-deception then overconfidence comes to the floor with rising over optimism and jump to final stages of illusion of control and knowledge biases. Within these biases overconfidence bias is the most and effective bias of behavioral finance discipline and named as reference point of every bias. Psychological factors trigger biases that result in irrational outcomes in the decision-making process under risk and uncertainty. Behavioral finance has knowledge that biases existence but defining these biases is not the solution, it only makes a diagnosis of irrationality.

## Heuristics and Bias

Bias and heuristics mentioned in behavioral finance discipline with high frequency are; *Overconfidence bias, Hindsight bias, Self-attribution bias, Conservatism bias, Cognitive dissonance, Overoptimisim - Illusion of Control - Illusion of Knowledge, Confirmation bias, Representativeness , Anchoring, Mental Accounting, Availability, and Herd Behavior*. The list can be expanded with the ongoing development of behavioral finance literature so this is not means that unmentioned biases are not important for irrational homo economicus.

- **Overconfidence Bias:** Animal spirits of human psychological factors create a vicious circle of confidence. In general, everybody thinks that his or her abilities are better than when compared to others. Social or mathematical skills are overqualified and only specific or given to individuals. When it is asked to drivers that are u better drivers than the average, Svenson (1981) showed that 80 percentages claimed better than average driving skill which is an exact and brief explanation to overconfidence. From a different point of view, overconfidence start point goes to regret error probability because individuals are purely rational under all risk and uncertainty conditions theoretical assumptions. Overconfidence bias creates an illusion that homo economicus knows everything perfectly and knowledge about every topic without knowing that it is only hypothetical belief but outcomes are real. Investors at the stock market with overconfidence bias intend to trade too much and ignore and lose possibility. If the first attempt or trade is successful overconfidence level starts to rise and continues for the next trades. Supplementary biases of overconfidence are; illusion of knowledge and illusion of control which creates the most dangerous bias for irrational homo economicus.

- **Hindsight Bias:** Biased irrational thinking and actions cause that people intend to know events before it's happened which is named hindsight bias. The general view on this bias is I knew that it would happen. After the events, people's hindsight bias reaches the top level with the overconfidence bias. Stock market big movement at bottom or top is a good example of hindsight bias, every investor knows to buy from bottom and sell at the top despite no gains in real world.
- **Self-Attribution Bias:** the main assumption of homo economicus is rationality and learning process from previous errors which is not effective due to irrationality. The ignorance of making a mistake and regret mechanism are the main factors of self-attribution. Generally, good outcomes cause homo economicus performance or knowledge while the bad outcomes come from third parties or external environmental factors. If there is a success this is because of homo economicus but if there is failure homo economicus ignores internal mistakes or missing parts and charge to uncontrollable factors. The common example of this flashback to the education period of us after the exam if there is a good mark it is our success but if it is bad it is a teacher or academic stuff failure with a mention if he or she gave the x mark on the exam.
- **Conservatism Bias:** Conservatism bias, also named as status quo, limits to adopt new changing conditions with knowledge of this. This bias causes underreaction to a new set of information that comes to the market because homo economicus focuses on the first data set with ignoring new ones. A typical example of this in financial markets is conservatism bias prevent optimal portfolio allocation and risk management because of insufficient adaptation of portfolio to new coming data set.
- **Cognitive Dissonance:** Cognitive dissonance can be defined as making consciously errors while knowing that this situation. It is very difficult to explain why homo economicus insists on cognitive dissonance. Psychological and brain-related factors play a role in this bias with the battle of rationality and irrationality. A typical example of cognitive

dissonance is the smoking habit of people which is very hazardous to the health of people

- **Overoptimisim:** Overoptimism starts with self-deception and continues with overconfidence bias under irrationality concept. Every successful outcome raises optimism level of homo economicus with increased risk-taking behavior. Overconfidence and overoptimism are the two sides of coins that cannot be separated from each other.
- **Illusion of Control:** Self-deception bias subgroups are overconfidence and overoptisim with these homo economicus pass through the real world and creates a new world of illusion without reality. After successful outcome decision making mechanism changes to okay I can control the outcomes and take more risk. This type of hypothetical thinking process results in generally failures with irrational animal spirits. The well-known example of this bias is to flip a coin, it is clear that the probability of a head or toss %50 percentages and control the outcomes of the game.
- **Illusion of Knowledge:** Illusion of Knowledge is the final stage of self-deception, overconfidence, and illusion of control. The belief behind this bias is if you have more set of information you can control the outcomes of events with better performances. Question about this having too much information or well-informed people can catch the success of the event such as financial markets or gamble. To sum up, with the consideration of overoptimisim, illusion of control and illusion of knowledge biases system must be thought of as a whole and cannot be separated from each other.
- **Confirmation Bias:** The rational concept of homo economicus sometimes needs to be confirmed by the other agents. This may be the last step of the whole decision-making process for outcomes. Simply decision about something nearly finished by %95 percentages but %5 percentages are missing but this comes from external agents by asking them whether decision right or not.

- **Representativeness:** Representativeness can be viewed as a reference point for the decision making process. In a big raw data set homo economicus attempts to reference small parts of data set to finalize decisions with the divergence of rationality.
- **Anchoring:** Anchoring is similar to representativeness heuristics for forecasting ability by taking some point as a reference level. Guessing or forecasting mechanisms based on anchoring in a short time gives meaningful results according to some situations. Generally, forecasts fluctuate within the range of this reference point set.
- **Mental Accounting:** Mental accounting is very complex to explain because of the closed box brain's mystery. Heuristics work very effectively for mental accounting but no exact explanation of how the brain makes these mathematical calculations in seconds. A sudden decision outcome for different situations with the rationality concept takes part in heuristics mechanism. For example, the question of mental accounting is it more effective to buy furniture when you bought the house or buy furniture later. The result needs to be done by heuristics covering psychical and psychological factors.
- **Availability:** Availability is a type of heuristics which takes into consideration of new attractive data or signal for the decision-making process. Brain functions select the attractive or flashing sign from external environmental factors for heuristics outcomes. In the real-world for example if you see an accident on the road while driving a car, probably you think the chance of an accident is too high for you. Last flash data taken as a reference point for the heuristic decision making process.
- **Herd Behavior** This concept comes from animal nature and adapted to homo economicus irrational actions. The integration of people among a social area with an influence factor of each other play a crucial role in the decision-making process. In financial markets, herd behavior can be named as market momentum which shows the wisdom of the crowd.

## Future of Behavioral Finance

Behavioral finance, defined as the integration of different related disciplines, is a rising star of the finance discipline. The roadmap has started with the 2002 Nobel Economy price with the contribution of Kahneman and Tversky but the ongoing process not finished yet. Psychology and sociology play a crucial role in behavioral finance biases definitions however today's conditions and dynamics cannot be explained by only these two sciences. For further development process, new concepts and biases must be introduced ad applied to the irrational home economicus decision making process. Now a day in behavioral finance nudge becomes more popular with the "Nudge" book of Thaler and Sunstein. The definition of nudge expressed as, a gentle way to push people to do something without any strict obligations or laws. Nudge's main purpose is to shape the behavior of people with supporter psychological factors. Traffic lights can be an example of a nudge, as being a pedestrian sometimes it takes time to see green light for passing so how can the nudge solve the problem? The answer is putting a button on a traffic light and when you press the button you think that green light flashes immediately but in reality no. The button functionality comes from decreasing your waiting time while focusing your attention to button whether traffic light. The shape of the behavior concept as a nudge will be a good contributor for public regulations and its ongoing development process will be beneficiary for smoothing irrational behaviors. Still nudge is based on psychological dynamics for further development behavioral finance must be transformed into a new adaptive way. The brain scan facilities of technological development in medical science will be another pro-active solution. Irrationality of homo economicus explanations based on biases but how about the hidden box named brain. With technological development, brain scanning facilities take huge steps with Electroencephalography (EEG), MRI (magnetic resonance imaging) and Functional Magnetic Resonance Imaging (fMRI), etc. This facility has adapted to experimental economics and behavioral finance under the neuroscience umbrella. The combination of neuroscience and economics creates neuroeconomics and neuroscience with finance creates neurofinance which are new concepts with huge steps. Brain and its hidden areas may answer why homo economics behave irrationally and what are the response areas during the financial decision-making process or from a large universe that drives reward mechanism. These are not simple questions to be answered but neuroscience integration will answer irrationality questions much better than only sociology and psychology-based assumptions. Neuroeconomics or neurofinance can get clues from brain scan facilities but maybe not enough to explain exactly. From this point of views the brain, chemicals, and hormones must be taken into consideration to understand and explain the irrationality of human beings. The well-known brain chemical is dopamine which is related to the brain's reward mechanism but other chemicals such as; GABA, serotonin, glutamate, and norepinephrine, etc. must not be ignored. Also, testosterone is so popular for finance-related research studies that related the men different from women. In recent years a lot of studies done about risk-taking of financial traders based on testosterone hormones level and outcomes show that a high level of Testosterone hormone can be related to risk-taking behavior. The further development process can take support from medical science and brain scanning techniques but this is not enough for behavioral finance in the artificial intelligence era. AI popularity can be integrated into economics science and finance disciplines for behavioral finance to eliminate irrationality factor. In the near future with the support of AI dreams of pure rationality in decision making become true and economic efficiency will increase. Also under the umbrella of AI, machine learning opens a floor for experimental economics and behavioral finance which is supported by complex software developments. To sum up, the cue is hidden in the integration of multiple sciences, technologies and sciences to behavioral finance will be the future of literature.

## Conclusion

Behavioral finance can be viewed as a limited alternative to traditional finance concepts by focusing on rationality and irrationality. Under the assumption of Homo economicus is pure rational has lots of questions marks and must be solved by defining biases. These biases are not the solution but an effective roadmap for the irrationality of homo economicus. For example, overconfidence bias is the most dangerous one for irrationality and can be viewed as the starting point of every bias for behavioral finance. All in all biases and heuristics are the milestones of irrationality explanation rather than numerical calculations which are not rational.

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## 17

# INVESTOR SENTIMENT IN TERMS OF FINANCIAL MARKETS*

*Salim Sercan SARI*[1]*, Şule Yüksel YİĞİTER*[2]

## 1. Investor Sentiment

Some models have been developed using behavioral finance principles to explain over or underreaction behavior in stock markets. When positive news emerges, investors and analysts do not tend to react adequately due to the tendency of conservatism that leads to low weighting of new information as a priority. After positive news, they tend to overreact. At this point, the prejudice of representation makes investors and analysts think that the positive news will continue in the future, thus leading to overreaction (Cornicello, 2004: 38-39).

Investors are unhappy with the combination of excessive confidence and self-attribution bias. In this case, excessive trust leads investors to overreact to their information and analysis compared to basic information and underreact public information. In this way, it causes the prices to return to the momentum effect that creates the right value and the announcement effect on the gain. Publicly held information changes investors' confidence in the original private information asymmetrically. When public information confirms investors 'research, investors' confidence in their research increases. On the contrary, when publicly available information

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does not approve private information, less attention is given to it and investor confidence remains unchanged. Therefore, initial over-reliability leads to momentum formation and a higher over-confidence than the average occurs (Cornicello, 2004: 39).

The sentiment is expressed as when people feel extremely optimistic or pessimistic about a situation for any foreign reason. A large part of the psychology literature reveals that people's current emotions affect their decisions about future events. For example, it is seen that people who read sad newspaper news constantly pay attention to news that includes various causes of death (such as illness) than people who read pleasant newspaper news. The findings show that people with positive emotions generally make optimistic decisions and make choices, whereas people with negative emotions make more pessimistic choices (Antoniou et al., 2013: 2). The discount in closed-ended funds works as a sentiment index. Expansion of premiums indicates optimism of investors and expansion of rebates points to investors' pessimism. However, sometimes a discount at a certain fund may reflect a specific response to the fund rather than investor sentiment (Shefrin, 2002: 181).

Several terms have been used to describe investors whose preferences and beliefs conform to psychological evidence rather than the normative economic model. In Bayesian rationality, rather than intuitive beliefs, it is sometimes called "investor sentiment“. According to the normative model, investors, whose behavior is not rational, are defined as noise traders (Shleifer, 2000: 11-12).

If the theory of efficient markets is based solely on the rationality of investors, the existence of psychological evidence could have caused serious problems for the theory. The theory of efficient markets claims that irrational investors exist, they can make random investments, and their investments neutralize each other. Kahneman and Tversky oppose this argument. Psychological evidence shows that people do not randomly deviate from rationality, but on the contrary, often behave in the same way. In the event of inexperienced investors demanding securities in line with their own beliefs, there is a high correlation between investors in the trading process. Investors cannot make random purchases with each other. On the contrary, many buy the same securities or sell the same securities at the same time. This is reflected in the market as a problem. This problem is exacerbated when noise traders behave socially, listen to gossip or follow each other's mistakes by imitating their neighbors. Investor sentiment reflects common judgment errors made by a significant number of investors rather than unrelated random errors (Shleifer, 2000: 12). Investor sentiment is defined as the tendency of investors to speculate. Within this definition, sentiment drives the relative demand for speculative investments. Therefore, arbitrage forces cause cross-sectional effects even if they are the same among securities. Also, investor sentiment, in general, can be defined as optimism or pessimism about securities. If the arbitrary forces are relatively weak in a subgroup of securities, the random waves of sentiment continue to have cross-sectional effects (Baker and Wurgler, 2006).

Investor sentiment is a belief about future cash flows and investment risks that cannot be verified by the facts at hand. Rational investors or arbitrages do not act aggressively in pushing prices as the standard model suggests. There are limits to arbitrage in modern behavioral finance. In recent years, behavioral finance has strengthened its validity due to the internet bubble and subsequent crashes in the stock market. An extraordinary period of investor sentiment in the late 1990s led speculative stock prices to fall to the lowest levels. This has made financial activities more difficult, rather than providing opportunities for arbitragers who invest in surprise stocks with no return because high prices can be a precursor to a collapse (Baker and Wurgler, 2007: 1).

Investor sentiment in financial markets was first introduced by Black in 1986. In the basic financial market model, the rumor has the opposite meaning with information. Sometimes people exchange information as usual and expect to profit from these transactions. On the other hand, he sometimes trades with rumors, pretending to have access to information.

If the investor enters into the expectation of making a profit with rumor trading, he will have acted wrongly. However, rumor trade is needed for the existence of liquid markets. Although noise seems to be possible in financial markets, it can make markets flawed (Black, 1986: 529).

Two approaches measure investor sentiment: top-down and bottom-up. The top-down approach is macroeconomic. The starting point of the top-down approach stems from the fact that most of the bottom-up models lead to the formation of a similar reduced form in mass psychology over time, and none of these models is considered to be true by itself. Real investors and markets are too complex to be properly summarized with a few selected prejudices and trading disputes. The top-down approach monitors the impact on market returns and individual stocks by focusing on measuring the reduced form and on total sentiment. New guidelines in the top-down approach set the limits of sentiment and arbitrage to explain which stocks will be more affected by sentiment. Both bottom-up and top-down approaches to investor sentiment have advantages and disadvantages. The advantage of the top-down approach is that it is simple, intuitive and comprehensive, and includes daily models of stock prices, balloons, rumors and more. The advantage of the bottom-up approach is that the top-down approach explains the external change to provide micro-foundations (Baker and Wurgler, 2007: 2).

Investor sentiment plays an important role in economic activity levels such as real output and consumption expenditures. Therefore, it is natural to expect investor sentiment to have a significant impact on stocks. Investors fear that if they think the economy will get worse, their stock values will fall and they will lose money. As a result of this situation, investors are selling stocks which they expect to see a decline (Chen, 2010: 225).

When the effect of sentiment on financial asset prices is considered, investor sentiment is divided into two. These are expressed as the anticipated sentiment that can predict the price of the new asset and the unexpected sentiment that can only predict the information that will arise during the investment period. There are four conditions for unexpected sentiment to affect prices. (Avery and Chevalier, 1999: 496):

- The total demand from rumor investors is nonzero at a price equal to the expected value of an asset.

- Some transaction costs are available for arbitrage. There is a cost to enter the market as an investor or to obtain information.

- Private information held by investors with information eliminates the uncertainty in the value of the asset.

- Investors with knowledge avoid risk.

The earnings notifications indicated that the initial stock price reaction was rapid. However, it was questioned whether this initial rapid price reaction was too large or too small. It was seen that stock prices reacted low to earnings notifications, followed by the uncertainty of post-earnings notifications in stock prices. On the other hand, it is stated that the overreaction is compatible with the gains and correcting the overreaction will reverse the price change of stocks in the long term. Abnormal stock price behavior in under and overreaction earnings notifications leads to deviations between market players' current earnings and future earnings forecasts. (Abarbanell and Bernard, 1992: 1181-1182).

### 1.1. Overreaction and Underreaction

Overreaction and underreaction are behavioral trends indicating that investor actors may be irrational. The underreaction occurs when stock market news reacts not only in the period immediately after it is reflected, but also in subsequent periods. The overreaction occurs in the opposite case. The reaction of the stock price followed immediately after the news is compensated by one or more changes in the opposite direction in the following periods (Prast, 2004: 13).

### 1.1.1. Overreaction

The overreaction indicates that over the long term, consistent and consistent news responds to behavioral tendencies more than the stock prices should. In other words, securities with long-term positive news tend to over-pricing, followed by a decline in average return. The value of securities with positive performance is overestimated and after long-term evaluations return to the average. In general, it is assumed that investors evaluate the outlook of positive investments extremely high, while the outlook of negative investments is considered lower. It is thought that positive or negative developments that have taken place recently will be encountered in the future. This leads to excessive premiums or discounts on stock prices. (Döm, 2003: 122).

De Bondt and Thaler (1985) stated that investors' reactions to new news do not always comply with Bayes' rule. The authors argue that investors overreact to unexpected and dramatic news. The overreaction makes an implicit comparison with the reaction to a degree that is considered appropriate. The appropriate reaction is the possibility of adaptation problems which, according to Bayesian rule, provide a correct reaction to new news. When people review their beliefs, they over-weight the latest news, and under-weight the previous news or basic rate information. The authors found that the portfolios of previous losers performed better than the previous winners' portfolios, consistent with the estimates of the overreaction hypothesis. Stocks that lost after portfolio formation were significantly riskier, but earned more than winning stocks.

The effect of the overreaction is felt more strongly among small firms supported by individual investors. Among the large firms supported by institutions, the effect of overreaction is felt weak. This is explained by the fact that while individual investors may tend to overreact, institutions stay away from overreaction (Chopra et. al., 1993: 238).

Barberis et al. (1998) reported that stock prices showed underreactions to news reports such as earnings statements and overreacted against several positive or negative news reports. Versatile investors can achieve superior returns by taking advantage of overreaction and low reaction without taking extra risk in different markets. Conservatism (low reaction) is associated with the representation heuristic (overreaction). Conservatism emerges in the face of highly weighted and low importance events. People react slightly because they cannot be repressed against low-importance events. On the other hand, when the events are low weighted and of high importance, the overreaction occurs with the representative heuristic.

In the overreaction, investors are overreacting and overly optimistic with the expectation that future news reports will be positive after positive news reports. If subsequent news conflicts with optimism, a low return occurs. In case of investment with past information, high returns can be achieved with positive or negative news (Shleifer, 2000: 102-121).

### 1.1.2. Underreaction

The underreaction is said to result from a tendency to conservatism. Individuals, who are exposed to conservatism, can ignore all the information content of a gain or other public announcement. The reason for this is that investors believe that the disclosed figures contain temporary components and that they rely partly on the accuracy of past earnings forecasts. Therefore, conservative investors partially respond to the disclosures regarding the values of the shares and make changes (Barberis et al., 1998: 315).

Analysts who suffer from conservatism due to basing and correction cannot adequately react to the new information contained in the earnings announcements. Subsequent earnings announcements are confused. The unexpected result is a distinctive feature of excessive trust. In earnings estimates, conservatism indicates that unexpected positive returns are followed by positive returns and unexpected negative returns are followed by negative returns (Shefrin, 2002: 35).

The combination of baseline and correction, as well as excessive trust, causes investors and analysts to not respond adequately to new information accessed and consequently to conservatism. Permanent changes in conditions are confused with temporary ones, at least to some extent. Here attention plays an important role. In particular, if previous information draws attention, information on the last change will be under-weighted. If recent information on recent changes becomes more pronounced, the information will be over-weighted.

Barberis et al. (1998) describe the fact that the return on the period after the publication of the good news is higher than the return on the period after the publication of the bad news as a low reaction. In an efficient market, the information received immediately after the news release will affect prices fully. Therefore, in subsequent periods, stock prices will be independent of the news released in the first period. If prices continue to rise after positive news, there should be a low reaction in the period following the news (Prast, 2004: 14).

In summary, overreaction and underreaction trends offer highly reliable arrangements. These regulations cannot be fully aligned with the efficient market hypothesis. It is stated that in case of overreaction the basic risk statement is inconsistent and there is no direct evidence to support it. In the event of an underreaction, not even an effective market disclosure has been proposed (Shleifer, 2000: 127).

## 2. Result

Investors want to be informed about the factors that affect the stock prices they are interested in or traded in the financial markets and they want to make accurate predictions for stock returns. Estimates of stock returns are among the topics that all financial actors focus on. Therefore, many theories have been proposed to estimate stock returns. The first one is the traditional finance theory based on the assumption that stock prices are determined rationally, and the second is the behavioral finance theory based on the assumption that stock prices are not always rationally determined and taken into account in psychological factors.

Kahneman and Tversky's (1979) theory of expectation put forward for the first time in the financial literature behavioral finance, investor psychology plays an important role in the formation of stock prices. According to behavioral finance, investors systematically hear psychological misconceptions and make wrong decisions due to these misconceptions.

Following the theory of expectations, three basic theories have been developed that investigate the impact of investor behavior on financial markets. These are mental accounting theory, herd behavior theory, and investor sentiment theory. Emotional tendencies resulting from mental accounting and herd behavior can be systematized and an additional risk source. The resulting risk is considered to be caused by investor sentiment.

In the studies dealing with the effect of investor sentiment on the stock market, there is a problem that investor sentiment cannot be observed directly. For this reason, indirect and direct variables considered as investor sentiment representatives are included in the studies. Direct variables are the criterions calculated from the survey results such as consumer confidence index and sub-indices of consumer confidence index prepared for our country. Indirect variables are criteria that are considered as investors' sentiment representatives based on certain assumptions such as transaction rate, transaction volume, the discount of investment trusts. When investor sentiment studies are examined, it is generally seen that there is evidence that both variable groups affect stock returns.

Investors' sentiment to stock investors is expected to achieve more successful results. Because transactions in financial markets are not always carried out according to rational expectations and the rumor element is taken into consideration. The rumor element is taken into account by monitoring investor sentiment. Taking into account the rumor element makes the investors more efficient.

It is considered that selecting the most accurate one of the investor sentiment representatives and using it in the return estimations will contribute to the investment decisions of individual and institutional investors.

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# 18

# SUSTAINABLE CONSUMPTION MODEL: EXPLORING THE EFFECTS OF ENVIRONMENTAL CHARACTERISTICS OF CONSUMERS ON SUSTAINABLE CONSUMPTION BEHAVIOR

*H. Nur BAŞYAZICIOĞLU*[1]

## Introduction

Marketing is generally seen as activities that persuade consumers to buy more and to focus on their individual happiness and well- being (Gordon, Carrigan & Hastings, 2011: 144; Paavola, 2001:230). On the other hand, sustainability relates to consume less and to care about social well- being. In this point of view, people can easily claim that marketing and sustainability are totally different things like white and black (Jones, Clarke-Hill, Comfort & Hillier, 2008:123). Even if this proposal was valid for a short time in the past, after environmental disasters such as Minimata Disease in 1959, Bhopal in 1984, Chernobyl in 1986 and Kuwaiti oil fires in 1991, people witnessed the fatal consequences of short-term profit-oriented corporate strategies. Since then, environmental issues have become important for marketing strategy (Mitchell, Wooliscroft & Higham, 2010: 161) and a new marketing concept was born as sustainable marketing.

Main purpose of sustainable marketing is to meet basic needs of consumers without endangering the quality of life of future generations. Organizations have updated their marketing mix in order to achieve sustainability purpose. They have replaced their product strategy with different applications such as providing services rather than goods, promoting sustainable products, using environmental-friendly packages and labels (Murphy, 2005: 178). They have updated their price strategy in terms of sustainability so that they have tried to provide affordable prices for sustainable products (Murphy,2005: 180). They have reorganized their distribution strategy in order to decrease fuel consumption and they have focused on promoting sustainable consumption behavior.

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Sustainable marketing literature has generally focused on how organizations should integrate sustainability into their production and marketing strategies and how governments should foster organizations to adopt sustainability. Despite all preventive actions taken by organizations and governments, the destruction speed of ecological system continues to increase (Mont, Neuvonen &Lähteenoja, 2014:24). Thus, it necessitates additional implementations. Since production process is not the only factor which results in environmental problems and consumers themselves are co-creator of environmental destruction, it is thought that consumers should attend in activities in terms of environmental protection (Paavola, 2001:228). Marketing plays a vital role in encouraging consumers to be sensitive for nature. Consumers are acknowledged about environment-friendly product preferences by marketing communication so that marketing activities reshape consumer behaviors in the way of sustainable consumption (Murphy, 2005:182).

Thus, the aim of this study is to emphasize the role of environmental characteristics of consumers on their sustainable consumption behavior by analyzing this relationship this study tries to propose a model for sustainable consumption behavior in order to understand consumer behavior toward environmental aspects. Therefore, this study points out the importance of consumption on environmental sustainability.

The findings of this study are essential in the explanation of sustainable consumption behavior of consumers. So far, the concept of sustainability has been investigated in terms of policymakers and production facility owners. This study fills the gap in sustainability by analyzing the sustainable consumption behavior of consumers thus it is believed that it makes important contribution into literature. Consequently, this study provides significant implications for business policies and future studies.

## Literature Review

Rational consumption model supposes that consumer have different product alternatives and they have capability to acquire necessary information about all products in the market (Paavola, 2001:229). Therefore, consumers give purchase decision in this wholly acknowledged framework. Based on rational consumption model, consumers exhibit egocentric shopping behavior so that consumers tend to maximize their own well-being within their budget (Murphy, 2012:5).

Consumption cannot only be explained with rational model. Psychology also plays an essential role in consumption. Especially marketing has been criticized for promoting a lifestyle in which happiness relies on consumption (Jackson, 2005:19). Thus, consumers are inclined to purchase more with the aim of satisfaction. Moreover, consumption has been used a tool for self-expressions so that people have tried to establish their identity and status by consumption behavior. As a result of conspicuous consumption, new identities like stylish, trend-setter and avant-gardist began to gain importance.

The fact that consumption behavior occurs with rational or emotional impulses does not change the self-centered consumption behavior of consumers. In both conditions, consumers care only about their personal welfare. However, consumption behavior has changed in time. People have noticed that more consumption does not always bring happiness (Vergragt, Akenji & Dewick, 2014:3) and they have realized that their continuous self-oriented consumption behaviors affect environment atrociously so that they have started to worry about the future of the planet. Consequently, people have become aware of the importance of sustainable consumption.

Sustainable consumption was firstly defined in the Oslo Symposium in 1994 as "the use of goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardize the needs of future generations" (The Oslo Symposium, 1994). Thenceforward, governments and organizations have given more importance to sustainable consumption. Also, sustainable consumption has been examined in the literature with different aspects.

Young, Hwang, McDonald and Oates (2010) studied on micro purchase process of green consumers. They pointed out the importance of green values and knowledge, green criteria, barriers and facilitators in terms of sustainable consumption. Prothero, Dobscha, Freund, Kilbourne, Luchs, Ozanne, Thøgersen (2011) analyzed the importance of sustainable attitudes, consumer citizenship and managerial change in adaptation of sustainable consumption. Although sustainable attitudes are correlated with sustainable consumption, they declared the existence of attitude-behavior gap in terms of sustainable consumption. This means that positive sustainable attitudes cannot always result with sustainable consumption. 40% of individuals state they prefer to purchase environmental products, but only 4% of them consume sustainable products. Therefore, inconsistency between attitude and behavior existed. Liu and Qin (2011) explained sustainable consumption with perception of behavior control, environmental knowledge, environmental responsibility. Liu, Wang, Shishime and Fujitsuka (2012) founded that green purchasing behaviors can be explained by behavioral intention, goal intention, perception of information, evaluation of social norm, perception of responsibility and perception of effectiveness. Sun, Song D. and Song J. (2012) analyzed the factors influencing environmental purchasing behavior as environmental sensitivity, behavior constraint and communal norms. Wang, Liu and Qi (2014) tried to examine the factors affecting sustainable consumption behavior. They found that environmental knowledge, perception of consequence, environmental responsibility, environmental value, perceived behavioral control and response efficacy affected both behavioral intention and sustainable consumption behavior. In addition, there was a relationship between behavioral intention and sustainable consumption behavior. Sharma and Jha (2017) studied on the values related with sustainable consumption behavior. They identified that values such as compassion, self-evolution, uprightness, self-enrichment, conformity, courtesy, benevolence, acceptance, self-direction and stimulation were related with sustainable consumption behavior. Trudel (2019) pointed out the impacts of cognitive barriers, self-issues, product categories and social effects on sustainable consumption.

As it is seen, sustainable consumption behavior is examined from different perspectives in the literature. There are number of studies which tried to reveal the factors influencing sustainable consumption behavior, but the factors differ in each study. This means that although sustainable consumption is not a new phenomenon, it does not have an established model which identifies factors affecting sustainable consumption so that it requires additional research in order to explain sustainable consumption. Furthermore, it is supposed that significant relationships among factors can exist. However, interrelationships between factors was not examined in the literature. With the aim of filling this gap in the literature, the purpose of this study is to analyze interrelationships between environmental characteristics and their mutual impacts on sustainable consumption behavior. Thus, it is believed to make a significant contribution to the literature.

## Conceptual Framework and Hypothesis Development

If previous studies are tried to summarize, it can be understood that the common environmental characteristics of people affecting sustainable consumption are environmental awareness, environmental sensitivity, environmental concern and environmental responsibility. Environmental awareness is associated with the level of environmental information consumers have (Aman, Harun & Hussein, 2012: 148). Especially education plays an important role in order to train consumers. Besides, D'Souza, Taghian and Lamb (2006) stated that consumers can learn environmental information by reading labels, signs and symbols. Since knowledge shape consumer behavior, it takes a significant place in environmental consumption behavior (Murphy, 2012:7).

Environmentally sensitive people have intrinsic value of environment. They are willing to learn about nature. Environmental sensitivity is a tendency to take care about environmental issues. It was found that environmental sensitivity level of people has increased as their awareness about nature has increased (Cheng & Wu, 2015: 557) so that it is supposed that there is a strong relationship between environmental awareness and environmental sensitivity and the below hypothesis is tested in this study.

$H_1$: There is positive relationship between environmental awareness and environmental sensitivity.

Environmental concern has been defined in the literature in different ways. Kim and Choi (2005) explained environmental concern as consumers' general orientation to the environment. Chan and Lau (2000) identified environmental concern as the personal level of emotionality associated with environmental issues. In addition, environmental concern is related with anxiety of people in the future of environment. People want to live in stable conditions, and they are not pleased with big changes. They avoid from uncertainty and they want to feel sure about future. However, people are worry about environmental problems and their future consequences on the security and welfare of their families (Vergragt et. al. 2014:3). Environmental concern is closely related with environmental awareness (Mat Said, Ahmadun, Hj Paim & Masud, 2003: 312). If people educated properly in terms of environment, they will show the tendency to worry more about it. For this reason, the below hypothesis is tested in this study.

$H_2$: There is positive relationship between environmental awareness and environmental concern.

Environmental responsibility is related with precautionary and remedial actions in order to protect environment. In the literature, it was asserted that the tendency of people to environmental issues stimulates them to take responsible actions (Wang et.al. 2014:156). Therefore, it is supposed that there is a relationship between environmental sensitivity and environmental responsibility so that below hypothesis is developed to test the relationship between environmental sensitivity and responsibility.

$H_3$: There is positive relationship between environmental sensitivity and environmental responsibility.

Environmental responsibility can be interpreted as accepting the importance of pluralism in terms of environmental protection. Since individual welfare is influenced by the choices of other people, it can be said that consumer choices are interdependent (Paavola, 2001:236). If people become aware that the harmful consequences of their self-centered consumption on environment, they will cease to consume only with the rational motivation, and they will start to take care of the actual or possible results of their behavior. Therefore, the below hypothesis is developed and tested in this study.

$H_4$: There is positive relationship between environmental concern and environmental responsibility.

Environmental responsibility is also a key determinant of sustainable consumption behavior. The increase in the perception of environmental responsibility is associated with the increase in preferences of environmental consumption. Thus, the below hypothesis is developed in order to evaluate the relationship between environmental responsibility and sustainable consumption behavior.

$H_5$: There is positive relationship between environmental responsibility and sustainable consumption behavior.

As a result, a research model is developed in order to examine sustainable consumption behavior of consumers. Research model shown in Figure 1 consists of all relationships between environmental characteristics of consumers and sustainable consumption behavior.

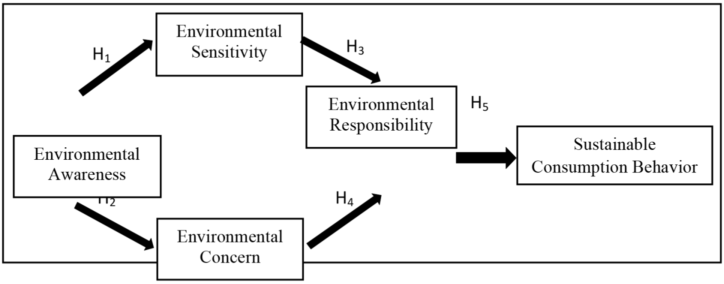
Environmental Sensitivity
H1
H3
Environmental Responsibility
H5
Sustainable Consumption Behavior
Environmental Awareness
H2
H4
Environmental Concern

*Figure 1. Research Model*

## Methodology

It is necessary to collect primary data in order to test research hypothesis. Therefore, a survey was prepared based on previous studies of Karaca in 2013, Kim and Choi in 2005, Jain and Kaur in 2004, Straughan and Roberts in 1999 and Laroche and his friends in 2002. In the first part of the survey, 30 Likert Type Scale items were used to evaluate environmental awareness, environmental sensitivity, environmental anxiety, environmental responsibility and environmental consumption behavior of consumers. In the second part of the survey demographical questions existed.

Since in this research it was impossible to conduct survey for whole population and there was not precise information about target population, using probability sampling was out of choice. In addition, time and financial limitations of research led researcher to use convenience sampling which is one of the cheapest and the least time-consuming non-probability sampling techniques (Malhotra et.al., 2017:421). Thus, face to face survey method was used to collect primary data from 185 selected participants.

The data collected from sample was primarily used to identify the factors affecting environmental consumption behavior of consumers. It is thought that the sample size which is 5 times larger than the number of items in the scale is enough to perform factor analysis (Nakip,2013:516). Thus, the sample size was thought to be sufficient. The demographic composition of the sample is given below at the Table 1.

*Table 1. The Demographic Composition of the Sample (N=185)*

| ***Variables*** | ***Options*** | ***Frequency*** | ***%*** |
|---|---|---|---|
| ***Gender*** | Male | 114 | 61,6 |
| | Female | 71 | 38.4 |
| ***Age*** | 18-25 | 34 | 18,4 |
| | 26-35 | 92 | 49,7 |
| | 36-45 | 29 | 15,7 |
| | 46 and above | 30 | 16,2 |
| ***Education*** | High school and less | 31 | 16,7 |
| | Bachelor's degree | 79 | 42,7 |
| | Post-graduate degree | 75 | 40,5 |
| ***Marital Status*** | Married | 121 | 65,4 |
| | Single | 64 | 34,6 |
| ***Occupation*** | Government officer | 83 | 44,9 |
| | Employee | 34 | 18,4 |
| | Freelancer | 44 | 23,8 |
| | Student | 14 | 7,6 |
| | Unemployed | 10 | 5,4 |
| ***Income*** | 1499 TL and less | 12 | 6,5 |
| | 1500- 3000 TL | 31 | 16,8 |
| | 3001-4500TL | 73 | 39,5 |
| | 4501-7000 TL | 40 | 21,6 |
| | 7001 TL and above | 29 | 15,7 |

As shown in the Table 1, the sample comprises of 61.6% male and 38.4% female. The participants with the age between 18-25 are 18.4%, the participants with the age between 26-35 are 49.7%, the participants with the age between 36-45 are 15.7% and the participants with the age 46 and above are 16.2%. In this survey 16.7% of participants are less educated however 83.2% of participants are graduated from university.65.4% of participants are married. 34.6% of participants are single. 44.9% of participants are government officer, 18.4% of participants are employees, 23.8% of participants are freelancer. Income level of participants varies.

The compliance of the items in the scale to statistical analysis was examined with reliability analysis and Hotelling $T^2$ Test. These analyzes show that Cronbach's Alpha Coefficient is 0.96 and Hotelling $T^2$ test is statistically significant. These results can be interpreted as that internal consistency of scale is excellent and the data gathering from sample can be proper for further statistical analyzes (Sharma, 2016: 273). In the light of these results in order to test research hypotheses firstly 30 expressions in the survey used to assess the environmental interest of consumers are divided into groups by confirmatory factor analysis. Finally, the relationships between environmental interest and sustainable consumption behavior of consumers were analyzed using structural equation modeling.

## Data Analysis

The data collected from sample was analyzed with structural equation modeling in two steps. Firstly, the expressions were divided into factors with confirmatory factor analysis. After determination of factors, the relationships among factors were evaluated with path analysis.

## Confirmatory Factor Analysis

Confirmatory factor analysis is a hypothesis-driven dimension reduction technique which is generally used in structural equation modeling (Brown, 2006:1). In this study, five factors including environmental awareness, environmental sensitivity, environmental concern, environmental responsibility and sustainable consumption behavior are identified based on confirmatory factor analysis. Table 2 shows the items distribution to factors.

*Table 2. Confirmatory Factor Analysis*

| ***Factors*** | ***Items*** | ***Loading*** | ***Cronbach Alpha*** |
|---|---|---|---|
| ***Environmental Awareness*** | | | 0.895 |
| | I care about environmentally friendly feature of products in my shopping | 0.69 | |
| | It is important to buy products made from recycled paper to help protect our forests | 0.83 | |
| | I can understand whether a product is environmentally friendly or not by looking at the signs and symbols on the package. | 0.74 | |
| | I can understand whether a product is environmentally friendly or not by reading information about product content on the package. | 0.74 | |
| | I always act with the awareness of purchasing products that will pollute the environment less. | 0.76 | |
| | I prefer the product that is less harmful to the environment when I am between two equivalent products | 0.77 | |
| | I do not buy products that I have learned to their potential to harm the environment. | 0.69 | |
| | I do not buy products from companies that do not respect the environment | 0.69 | |
| ***Environmental Sensitivity*** | | | 0.872 |
| | Environmental issues are important for me. | 0.81 | |

| *Factors* | *Items* | *Loading* | *Cronbach Alpha* |
|---|---|---|---|
| | When buying a product, I pay attention to how this product will affect my environment and other consumers. | 0.77 | |
| | I see myself as environmentalist | 0.79 | |
| | I believe to protect environment by purchasing environmental-friendly products | 0.77 | |
| | I am interested in organic, ecological and natural products | 0.68 | |
| ***Environmental Concern*** | | | 0.791 |
| | I am concerned about the harmful effects of environmental pollution on me and my family | 0.84 | |
| | I do not believe that people in my country make adequate effort to protect the environment | 0.73 | |
| | My country faces a serious waste problem | 0.76 | |
| | Despite all warnings, we do nothing to protect the environment | 0.46 | |
| ***Environmental Responsibility*** | | | 0.74 |
| | I am willing to pay more for environmentally friendly products | 0.42 | |
| | I would like to use waste to make new things | 0.62 | |
| | I try to convince my family and friends not to buy products that damage environment. | 0.61 | |

| ***Factors*** | ***Items*** | ***Loading*** | ***Cronbach Alpha*** |
|---|---|---|---|
| | Behaviors of consumers who buy products from environmentally responsible firms can have a positive impact on environmental sensitivity of society. | 0.70 | |
| | Organizations should encourage consumers to recycle | 0.69 | |
| ***Sustainable Consumption Behavior*** | | | 0.87 |
| | I take care to use electrical appliances in low electricity consumption time period such as after 10 pm. | 0.57 | |
| | I strive to reduce my electric consumption | 0.75 | |
| | I choose household bulbs from low-voltage types that consume less energy | 0.80 | |
| | My home appliances consume less electricity and water | 0.73 | |
| | I prefer to buy products which have re-usable packages. | 0.60 | |
| | I prefer to buy recycled products | 0.76 | |
| | I throw my waste away after accumulating glass, paper and plastics waste in different places in order to make contribution to recycle. | 0.67 | |

Confirmatory factor analysis is analyzed by Chi-square test. Chi-square test result is 955.98 in 367 degree of freedom (DF). This result is statistically significant at 0.0001 significance level. In addition, Cronbach's Alpha Coefficients are given in Table 2 for each factor. Because these coefficients are higher than 0.7, it can be understood that internal consistencies of each scale are acceptable (Sharma, 2016: 273). Furthermore, there are different statistical validity measures of confirmatory factor analysis. Chi-Square test/ DF ratio is 2.6. This ratio should be lower than 5 in order to be a good fit. NFI is 0.94. NNFI is 0.96. CFI is 0.96. These ratios evaluate the goodness of fitness of confirmatory factor analysis and these ratios should be close to 1 in a good model. RMSEA is 0.09 and SRMR is 0.063. These statistics measures the ratio of error in the model so that these ratios should be close to zero (Hair, Black, Babin & Anderson, 2010). By considering goodness of fit statistics, it can be concluded that confirmatory factor analysis is statistically significant.

## Path Analysis

The research hypotheses are analyzed with structural equation modeling. The statistically validity and reliability of structural equation modeling is tested with Chi-Square Test. The result of this test is 981.88 in 372 degree of freedom and this result is statistically meaningful in 0.0001 significance level. Thus, the research model is statistically significant. The goodness of fitness of the model is tested with various statistics. Chi-Square/ DF ratio is 2.64. This ratio indicates the excellence fit of model. NFI is 0.94. NNFI is 0.96. CFI is 0.96. Since these values are close to 1, it can be said that model shows good fit. RMSEA is 0.091 and SRMR is 0.065. Since these values are close to 0, it can be interpreted as model has low error level and the factors in model are successful in explaining sustainable consumption behavior of consumers. Although goodness of fit indices and Chi-Square test results claim that model is statistically acceptable, the relationships between factors should be evaluated by path analysis in order to test hypotheses.

The relationships between factors in structural equation model are tested with path analysis. Table 3 provides a summary of path coefficient results.

*Table 3. Path Coefficient Results*

| **Structural Equations in Model** | **$R^2$** | **Std. ß** | **t-value** | **Hypotheses Results** |
|---|---|---|---|---|
| Environmental Sensitivity = Environmental Awareness+ Ɛ | 0.86 | | | |
| Environmental Awareness | | 0.93 | 11.93 | $H_1$ is accepted |
| Environmental Concern = Environmental Awareness+ Ɛ | 0.82 | | | |
| Environmental Awareness | | 0.9 | 12.13 | $H_2$ is accepted |
| Environmental Responsibility = Environmental Sensitivity + Environmental Concern + Ɛ | 0.71 | | | |
| Environmental Sensitivity | | 0.25 | 2.24 | $H_3$ is accepted |
| Environmental Concern | | 0.79 | 4.76 | $H_4$ is accepted |
| Sustainable Consumption Behavior = Environmental Responsibility+ Ɛ | 0.77 | | | |
| Environmental Responsibility | | 0.88 | 5.13 | $H_5$ is accepted |

Table 3 shows the structural equations in the research model and their results. The relationships between factors are examined by t Test. As seen in the Table 3, all t-values are statistically significant at 0.0001 significance level. Thus, all hypotheses examined in this study are accepted. Standardized β coefficients show the correlation between factors. Table 3 shows that there are strong positive correlations between factors. In addition, Table 3 indicates that 77% of sustainable consumption behavior of consumers can be explained by this model. This means that sustainable consumption behavior of consumers can be explained widely with environmental responsibility. Environmental responsibility is explained by environmental sensitivity and environmental concern at the rate of 71%. Standardized β coefficients indicate that both environmental sensitivity and environmental concern relate positively with the environmental responsibility. However, environmental concern can be interpreted as more important in terms of environmental responsibility. It can be understood that there are also strong positive relationships among environmental awareness, environmental sensitivity and environmental concern. Environmental awareness directly affects environmental sensitivity and environmental concern.

## Conclusion

This study aims to investigate the effects of environmental characteristics of consumers on their sustainable consumption behavior. With the developed research model, sustainable consumption behavior was explained at a rate of 77%. Wang and friends (2014) clarified sustainable consumption behavior at a rate of 20%. Thus, it can be said that this research model is more successful in explaining sustainable consumption behavior.

In addition, the relationships among environmental characteristics were examined in this study. Findings showed that the level of environmental sensitivity increases as the level of environmental awareness increases. This result supports previous studies (Cheng & Wu, 2015). It was found that not only environmental sensitivity, but also environmental concern was closely related with environmental awareness. This result complied with previous studies (Mat Said et al.2003). It was examined the effects of environmental concerns and sensitivity on environmental responsibility. environmental sensitivity and environmental concern explained environmental responsibility at a rate of 71%. Both had positive impacts on environmental responsibility and these findings were in harmony with previous studies (Cheng &Wu, 2015) however it was noticed that the power of impact of environmental concern is higher. Therefore, it can be concluded that fear about future problems motivates people to act responsibly more. Finally, the relationship between environmental responsibility and sustainable consumption behavior was evaluated. It was proved that environmental responsibility is a key determinant of sustainable consumption. If people feel they are responsible to save the planet, they will protect environment. This result supported the literature (Liu et.al 2012, Wang et. al. 2014).

Although it was believed that this study made a significant contribution to the literature, since the data was collected with convenience sampling, it was impossible to generalize the findings. However, the findings of this research were valuable and both findings and the research model developed in this study were supposed to be beneficial for further studies. In addition, this research showed the importance of environmental awareness. Environmental awareness can be increased with education. Therefore, governments and policymakers will take education on environment onto their agenda. Sustainable consumption is necessary for sustainability. Thus, policymaker should try to develop environmental characteristics of consumers in order to encourage sustainable consumption because there is no Earth more and environmental destruction cannot be compensated.

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# 19

# THE EFFECT OF ILLIQUIDITY ON THE EXPECTED RETURN: EVIDENCE FROM SENTIMENT INDEX[1]

*Ozkan HAYKIR*[2]

## 1. Introduction

The impact of stock liquidity on expected stock return at the firm and the aggregate market level has been at the centre of liquidity research for a long time. Many empirical papers argue that when a stock becomes illiquid the expected stock return should rise. The reason for this phenomenon is straightforward: investors require a higher risk premium to hold illiquid stocks in their portfolio (Amihud and Mendelson, 1986; Brennan and Subrahmanyam, 1996; Amihud, 2002). Moreover, earlier studies have documented that stock liquidity varies over time (Chordia et al., 2001; Hasbrouck and Seppi, 2001), and a recent paper written by Liu (2015) looks for the reason for this variation and shows that the sentiment index plays a significant role on stock liquidity. She finds that there is a positive relation between the sentiment index and market liquidity and that investor sentiment Granger-causes market liquidity. However, there is still a research gap on whether illiquidity premium exists in different states of the economy, which is determined by the investor sentiment index.

Figure 1 illustrates a time-series overview of stock illiquidity, constructed by Amihud (2002) measure and investor sentiment index as well as National Bureau of Economic Research (NBER) recession periods (shaded areas). Equal-weighted market liquidity is calculated in each month and this measure is standardised. It can be clearly seen that sentiment index is decreasing in the beginning of NBER recession period until the end of the recession period, which is expected. And, illiquidity increases when the sentiment index is low. This supports the idea of stock liquidity dries up during the bad times and investors are willing to get higher risk premium during the crisis periods.[3]

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[1] This research paper is retrieved from the PhD thesis of the author.

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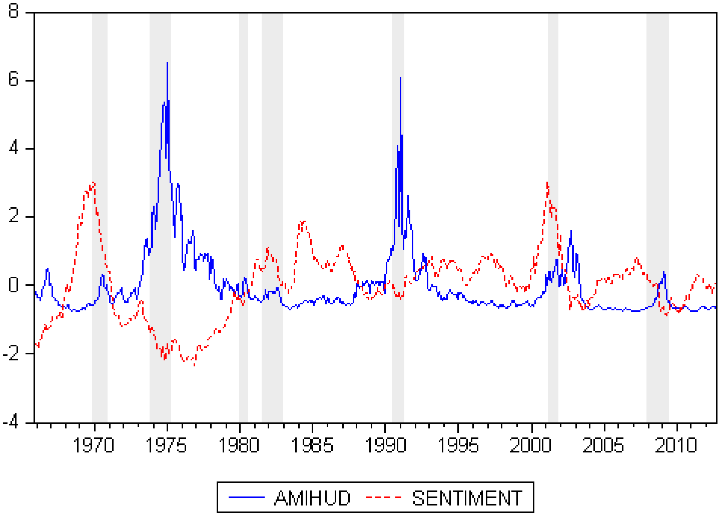
*Figure 1: Investor Sentiment and Market Illiquidity*



In this paper, I investigate whether stock's illiquidity is priced differently in different sentiment periods, which are determined using the investor sentiment index constructed by Baker and Wurgler (2006). The authors proposed an index to capture investors' view about future of the stock market. If investors are optimistic about the future then the sentiment index is high, and if investors are pessimistic about the future the sentiment index is low. Results show that firm-level stock's illiquidity is positively priced only following a low sentiment period. This result holds for small-sized companies, controlling for idiosyncratic volatility and controlling for January effect.

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[3] The correlation coefficient between market liquidity and investor sentiment index is 0.35.

Even though there are several liquidity proxies have been used in the literature, the primary focus on this paper is to understand the pricing ability of the Amihud measure only. The reason of this is that Amihud measure is well-accepted proxy of stock liquidity among the low-frequency proxies of stock liquidity which is empirically proven by the recent study written by Goyenko et al. (2009). They investigate which liquidity proxy (using daily data) gives the best result as intraday proxies. They find that the Amihud measure won the horserace in terms of capturing price impact. Another reason of focusing on Amihud measure is that intraday proxies of stock liquidity, namely, quoted and effective spread, are not easily accessible due to their high cost and the implications on the long-time horizon.

The theoretical link between sentiment index and stock market liquidity is well defined in the literature. There are two channels through which the sentiment index may affect stock market liquidity. The first channel is the irrational investor during the high sentiment period. Baker and Stein (2004) show that there are more irrational investors on the market following a high sentiment period. These irrational investors will reduce the order flow due to overconfidence and this will lead to an increase in market liquidity. De Long et al. (1990) and Kyle (1985) explain the second channel. They suggest that during the high sentiment period there is greater "noise"[4] trading on the market and this causes market liquidity goes up.

There has been no attempt (to my knowledge) to show how stock's illiquidity is priced following the high and low sentiment periods. This paper aims to fill this gap in the literature by conducting univariate and the cross-sectional analyses. The main cross-sectional analysis shows that a one standard deviation increase in the logarithm of Amihud illiquidity measure (3.29 in my sample period) is associated with a monthly return of 0.30 per cent in the entire estimation period, and more importantly a one standard deviation increase in the logarithm of Amihud illiquidity (3.30 in a low sentiment period) is associated with a monthly return of 0.39 per cent, which gives a 4.68 per cent return premium following a low sentiment period. This result is economically and statistically significant and supported by univariate analysis. Not surprisingly, after the high sentiment period, there is no risk premium for holding illiquid stock.

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[4] Stock market activity caused by programme trading, dividend payments or other phenomena that is not reflective of overall market sentiment (Black, 1986).

The rest of this paper is organised as follows. Section 2 summarises earlier related research. Section 3 describes the empirical setting and data. Section 4 presents the empirical results. Section 5 reports the results of several robustness tests and Section 6 concludes the paper.

## 2. Related Literature

Stock liquidity is one of the main indicators of market quality (Chordia, Sarkar and Subrahmanyam, 2005) and its impact on expected return is well established in the finance literature (Amihud and Mendelson, 1986; Brennan and Subrahmanyam, 1996; Amihud, 2002). Researchers look at the importance of liquidity from two different theoretical perspectives. Amihud and Mendelson (1986) and Brennan et al. (1998) use the term transaction costs to determine the link between stock illiquidity and the expected return. They suggest that there is an illiquidity premium because the transaction costs of the trading illiquid asset are higher than liquid stocks, so an investor should demand a higher risk premium. Pastor and Stambaugh (2003) and Acharya and Pedersen (2005) consider stock liquidity as a risk factor and explain the stock liquidity in terms of liquidity beta. They suggest that liquidity beta is positively related to the expected returns.

This study contributes to the literature by examining whether illiquidity premium is different in certain conditions. Recent papers begin by determining whether illiquidity premium is stronger in certain periods or conditions. Ben-Rephael, Kadan, and Wohl (2015) investigate how illiquidity premium has changed in recent times. They claim that stock liquidity has improved dramatically during the last two decades. Based on this increase, illiquidity premium has significantly declined. They conclude that the illiquidity premium that most papers claim, comes from an earlier time period, including 1960s and 1970s. Moreover, Naes, Skjeltorp and Odegaard (2011) search for a link between stock market liquidity and the business cycle. They show that liquidity declines when there is a recession in the economy.

In this paper, I use the investor sentiment index to distinguish the time periods. There are several papers that try to link investor sentiment index and stock market liquidity. Baker and Stein (2004) study the theoretical link between market liquidity and the sentiment index. They conclude that irrational investors are important players in high sentiment periods where liquidity of the market is high so, they use stock liquidity as an indication of the sentiment of the market. Baker and Wurgler (2006) construct an investor sentiment index and investigate its power to predict expected returns. Antoniou et al. (2015) also examine sentiment index by exploiting the relation between sentiment index and CAPM. They find that during the high sentiment period (optimistic periods) security market line exhibits upward slope curve and during the low sentiment period it exhibits downward sloping curve. They relate this finding with unsophisticated investors. They claim that during the high sentiment period unsophisticated investors play a significant role in the market but during the low sentiment period only the sophisticated investors' trade on the market. We could also think their results in the context of stock liquidity as Baker and Stein (2004) claim in their paper. This index has become one of the most popular indicators of investor sentiment and many researchers use this index. Empirical papers have been written to explain the theoretical link using real data. Liu (2015) uses this index and the institutional sentiment index to estimate the link between market illiquidity and investor sentiment. She empirically shows that when the investor sentiment rises, stock market liquidity increases as well. She also shows that investor sentiment Granger-causes market liquidity. Her paper focuses on the relationship between market liquidity and sentiment index. She tries to identify which one Granger-causes the other. On the other hand, this paper mainly focuses on the relation between firm level stock liquidity and investor sentiment index and identify whether the pricing ability of Amihud (2002) measure is different during the different level of investor sentiment.

To capture the impact of the stock illiquidity, several proxies are used in the literature. There are high-frequency proxies – effective and realised spread – and low-frequency price impact proxies – including, as outlined in the introductory paper, Amihud (Amihud, 2002), Pastor and Stambaugh's gamma (Pastor and Stambaugh, 2003), Roll's Impact (Chordia et al., 2001), Amivest and Corwin-Schultz (2012). In this study, I only use Amihud's (2002) price impact proxy, since it is highly correlated with intraday data (Goyenko et al., 2009) and it produces a closer capture of the price impact as intraday data. Amihud (2002) captures the illiquidity of stocks: high Amihud proxy value is considered as low liquidity. The measure determines the price change per dollar of volume unit of trade.

## 3. Data and Variable Construction

The sample includes only common stocks (share codes 10 and 11) that are traded on NYSE and AMEX. The sample period is from January 1966 to December 2012. Daily and monthly return, price, share outstanding and volume data are downloaded from the Center for Research in Security Prices (CRSP). Compustat is used to obtain variables to construct book-to-market ratios. The monthly investor sentiment index is downloaded from Jeffrey Wurgler's website.[5] Daily and monthly Fama-French (2006) three-factors – market premium (MKT), small-minus-big (SMB) and high-minus-low (HML) – as well as momentum factor (winner-minus-loser, UMD) data are acquired from Kenneth French's personal website.[6]

The Amihud (2002) measure is used as a proxy for illiquidity in this paper. In the literature it is extensively used to capture price impact. Lou and Shu (2016) state that between 2009 and 2013 more than 100 papers in the leading finance journals use the Amihud (2002) measure as a proxy for illiquidity in their papers.

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[5] http://people.stern.nyu.edu/jwurgler/.

[6] http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/.

The Amihud (2002) measure is formulated as follows;

$$\text{Amihud}_{im} = \frac{1}{D_{im}} \sum_{t=1}^{D_{im}} \frac{\left|\text{Return}_{id}\right|}{\text{Dvol}_{id}} \qquad (1)$$

where $D_{im}$ denotes the number of days in which stock has a valid ratio in month *m* for stock *i*. $\text{Return}_{id}$ is daily return in stock *i* on day *d*. $\text{Dvol}_{id}$ is the dollar value of trading volume on day *d* for stocks *i*. The measure captures the price impact since it is defined as the monthly average of the ratio of the absolute return of a stock divided by its volume traded in dollars and determined the price change per dollar of volume unit of trades. To clarify, the Amihud measure is interpreted as an illiquidity measure of a stock (a high number is considered as low liquidity). I follow earlier papers and calculate the Amihud measure if the stock has a valid daily return and volume observation at least 10 days in a month. The Amihud measure is winsorised at the one per cent and 99 per cent levels each month to eliminate the effect of outliers in my sample. Following the earlier literature (e.g. Brennan, Huh and Subrahmanyam, 2013; Lou and Shu, 2016), I match illiquidity proxy in month *m-2* with a stock return in month *m*.

In terms of investor sentiment index, I use one of the most commonly used indexes: the Baker and Wurgler (2006) investor sentiment index. The index captures investors' view of future stock market movements. When the investor sentiment index is high, investors are considered optimistic about future stock market performance. The measure is constructed using six proxies[7] and each proxy is orthogonalized with respect to common macroeconomic variables.[8] To be consistent with illiquidity measures sentiment index in month *m-2* matches with a stock market return in month *m*.

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[7] After revision, they use only five proxies which are the closed-end fund discount, the number and average first day returns on IPOs, the equity share in new issues, and the dividend premium.

[8] Macro variables are industrial production index, nominal durables and nondurables consumption, nominal services consumption, NBER recession indicator, and employment.

In the cross-sectional analysis, I also control for common firm characteristics, such as book-to-market ratio, size, Return [-12 -2] and Return [-1]. The book-to-market ratio is defined as the book value of equity divided by market value of equity, where the book value of equity is defined by following Lou and Shu (2016)[9] and the market value is market capitalisation of equity. The book value of each stock is calculated at the end of the fiscal year *t* and its market value is obtained at the end of the calendar year *t*. The book-to-market of stock *i* in year *t* is matched with the monthly return of stock *i* from July of year *t+1* to June of year *t+2*. The book-to-market ratio is winsorised at the one per cent and 99 per cent levels at the end of each year. Return [-12 -2] is defined as the cumulative return for stock *i* from month *m-12* to *m-2*, and the Return [-1] is defined as the return of stock *i* in month *m-1*.

## 3.1 Summary Statistics

To give an overview of the relation between stock illiquidity and investor sentiment index, I present descriptive statistics in Table 1, which reports the descriptive statistics for three different sample periods. Panel A presents the relation in the entire period and Panel B and C cover only low and high sentiment period, respectively. I identify low and high sentiment periods based on the median of the index during the entire sample period. If the sentiment index of month $m$ is lower than the median and the period is identified as low sentiment and if the index of month $m$ has higher sentiment index than the median, the period is identified as high sentiment. Overall, I have 564 months in my sample period, where 282 months were used for the analysis of low and high sentiment periods separately.

In the entire sample period, I include 1,194,537 firm-month observations for the Amihud illiquidity measure and the number of firm-month observations is 601,000 and 593,537 for the low and high sentiment periods, respectively. At first glance, we can see that illiquidity increases during the low sentiment period compare with the high sentiment period, 5.640 and 2.254 respectively. This difference is more pronounced in the high quintiles of each period. When we compare the above median average for low and high sentiment period Amihud measures, in the low sentiment period stocks become more illiquid. This suggests that liquid stocks, in general, are not affected by the sentiment index but illiquid stocks become more illiquid in the low sentiment period. The result is in line with the theoretical explanation of the relation between stock illiquidity and investor sentiment index. During the low sentiment index, the investor becomes more sceptical and the demand for illiquid stock decreases more than the demand for liquid stocks. On the other hand, during the high sentiment period, overall optimism affects the investor's behaviour and they are not as afraid of the demand for illiquid stocks. Thus, stock liquidity dries up during the low sentiment period compare with the high sentiment period.

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[9] Book value of equity defined as stockholders' equity plus balance sheet deferred taxes plus investment tax credit minus the book value of preferred stock.

In addition to the Amihud measure, Table 1 reports other firm characteristics such as idiosyncratic volatility, book-to-market, size, price, return and Return [-12 -2] for the entire period as well as low and high sentiment period. Average raw return follows the same pattern as the Amihud measure. There is almost no difference below the median quintiles but higher quintiles show that average return is higher during the low sentiment period than during the high sentiment period. Since the demand of illiquid stock is lower in the low sentiment period, the investor who is willing to take the risk and hold illiquid stocks in his or her portfolio also demands a higher return to compensate for his or her risk of holding riskier stocks during the low sentiment period.

Idiosyncratic volatility which is defined as the unsystematic risk and estimated based on the residuals from Fama-French three factor models. It is almost the same in the low and the high sentiment periods. Thus, we can say that idiosyncratic volatility does not play a significant role in getting different risk premium in different sentiment periods.

*Table 1: Summary Statistics*

Panel A: Entire Period (November 1965 - October 2012)

| | N | Mean | Std. Dev | Skewness | Kurtosis | Q10 | Q25 | Q50 | Q75 | Q90 |
|---|---|---|---|---|---|---|---|---|---|---|
| Amihud | 1194537 | 3.958 | 21.660 | 18.344 | 650.465 | 0.001 | 0.007 | 0.101 | 0.928 | 5.596 |
| Idiosyncratic Volatility | 1194679 | 0.023 | 0.022 | 13.746 | 1195.55 | 0.009 | 0.012 | 0.018 | 0.028 | 0.042 |
| Size | 99458 | 5.189 | 2.285 | 0.160 | -0.422 | 2.246 | 3.458 | 5.127 | 6.831 | 8.175 |
| Book-to-Market | 83694 | 0.996 | 0.940 | 3.724 | 25.453 | 0.252 | 0.441 | 0.751 | 1.232 | 1.934 |
| Price | 1193265 | 39.116 | 1167.30 | 86.163 | 7925.57 | 3.500 | 8.310 | 18.000 | 31.500 | 47.860 |
| Return | 1189412 | 0.012 | 0.146 | 4.872 | 241.183 | -0.129 | -0.059 | 0.001 | 0.069 | 0.154 |
| Return [-12 -2] | 1107730 | 0.135 | 0.550 | 6.233 | 160.627 | -0.379 | -0.157 | 0.069 | 0.322 | 0.656 |

Panel B: Low Sentiment Period

| | N | Mean | Std. Dev | Skewness | Kurtosis | Q10 | Q25 | Q50 | Q75 | Q90 |
|---|---|---|---|---|---|---|---|---|---|---|
| Amihud | 601000 | 5.640 | 27.482 | 15.745 | 467.619 | 0.001 | 0.016 | 0.187 | 1.547 | 8.975 |
| Idiosyncratic Volatility | 601151 | 0.024 | 0.022 | 18.958 | 1944.37 | 0.009 | 0.012 | 0.019 | 0.029 | 0.044 |
| Price | 599990 | 36.241 | 1163.97 | 90.220 | 8511.05 | 3.152 | 7.500 | 16.500 | 29.500 | 45.500 |
| Return | 598451 | 0.015 | 0.151 | 5.223 | 285.899 | -0.128 | -0.058 | 0.001 | 0.073 | 0.163 |
| Return [-12 -2] | 561353 | 0.130 | 0.569 | 5.598 | 120.146 | -0.395 | -0.172 | 0.054 | 0.317 | 0.676 |

Panel C: High Sentiment Period

| | N | Mean | Std. Dev | Skewness | Kurtosis | Q10 | Q25 | Q50 | Q75 | Q90 |
|---|---|---|---|---|---|---|---|---|---|---|
| Amihud | 593537 | 2.254 | 13.178 | 18.036 | 516.625 | 0.001 | 0.004 | 0.052 | 0.515 | 3.048 |
| Idiosyncratic Volatility | 593528 | 0.023 | 0.021 | 7.057 | 150.701 | 0.008 | 0.012 | 0.017 | 0.027 | 0.041 |
| Price | 593275 | 42.023 | 1170.65 | 82.128 | 7346.65 | 3.813 | 9.350 | 19.750 | 33.500 | 50.000 |
| Return | 590961 | 0.009 | 0.141 | 4.422 | 180.656 | -0.130 | -0.059 | 0.001 | 0.067 | 0.146 |
| Return [-12 -2] | 546377 | 0.140 | 0.529 | 7.023 | 214.334 | -0.362 | -0.141 | 0.084 | 0.326 | 0.636 |

## 4. Empirical Results

The theoretical paper written by Baker and Stein (2004) proposes that investor sentiment and stock liquidity should be positively related. When sentiment goes up, liquidity of the stock market should increase as well, or to clarify with respect to my proxy of illiquidity, the Amihud measure should decrease due to decline in the price impact. Baker and Stein's explanation is that when investor sentiment is low, only highly trained people will trade on the market, so illiquidity will be high. On the other hand, when investor sentiment is high, irrational people play a significant role in the market, while trained or "smart" people do not actually trade that much. In this situation, irrational investors drive the illiquidity down, so that the market becomes liquid. Liu's (2015) recent paper investigates how market liquidity reacts when investor sentiment changes and finds that when the sentiment index goes up, stock market liquidity increases, which is in line with theoretical models proposed earlier.

The aim of this paper is to present the link between investor sentiment and firm-level stock liquidity and to discover whether illiquidity premium is higher during the low sentiment period compared with the high sentiment period. The illiquidity premium is derived from holding an illiquid asset in a portfolio, which should lead to higher expected returns (higher yields). To test my hypothesis, I conduct univariate and cross-sectional analyses.

## 4.1 Univariate Analysis

First, I conduct sorting analysis. Stocks are sorted into quintiles in each month *m* based on their Amihud illiquidity measure at month *m-2* and the equal-weighted portfolio return is calculated in each month and time series average of the portfolio returns are reported. In Table 2, I report the results using raw return and four-factor alphas. Fama-French's three-factors (MKT, SMB and HML) and momentum factor (UMD) are used to calculate four-factor alphas. The first group has the most liquid stocks and the last group has the most illiquid stocks. Column (6) shows the difference between the most illiquid stocks portfolio return and the most liquid stocks portfolio return and the last column shows t-statistics of this difference. I use Newey-West (1987) robust standard errors with six lags. Panel A presents the results from January 1966 to December 2012. This is to show that the illiquidity premium is observed in the period in which I have chosen to investigate my hypothesis. Panels B and C report the separate sorting analysis for the period where investor sentiment is low and high, respectively. Low and high sentiment periods are designated using the median of investor sentiment index following Stambaugh, Yu and Yuan (2012). If the sentiment index in month *m* is higher than the median of the index, I consider this month the high sentiment period and if the sentiment index in month *m* is lower than the median of the index, I consider this month as the low sentiment period.

As prior papers also establish, the raw return goes up when the illiquidity increases. The difference between illiquid and liquid portfolios is statistically significant associated t-statistics is 2.21. We see the same pattern when I use four-factor alphas. Panel B presents the same sorting analysis but using only the low sentiment periods. We see that liquid stock portfolio return does not change much when we compare the result with entire period returns; however, illiquid stock portfolio return becomes larger and leads a larger difference between illiquid portfolios and liquid portfolios in the low sentiment period. This difference is statistically significant associated t-statistics is 2.48 for raw return and 2.06 for four-factor alphas. On the other hand, Panel C which shows the result of high sentiment period indicates that there is no illiquidity premium.

Liquid portfolio return is no different from during the low sentiment period but there is a large difference when we compare the return in the illiquid stocks portfolios. This is what we expected from the summary statistics. Smart investors play a role during the low sentiment period and require higher premiums for holding illiquid stocks. Unlike the low sentiment period, irrational investors join the market and increase the overall liquidity of the stock market, which leads to a decline in the return of holding illiquid stocks in the high sentiment period.

*Table 2: Sorting Analysis*

| | Panel A: Entire Period (January 1966 - December 2012) | | | | | | |
|---|---|---|---|---|---|---|---|
| | Liquid | 2 | 3 | 4 | Illiquid | Illiquid-Liquid | T-stat |
| Raw Ret | 0.951 | 1.117 | 1.216 | 1.228 | 1.482 | 0.531 | 2.21 |
| Four-Factor Alpha | -0.007 | 0.043 | 0.062 | 0.089 | 0.364 | 0.371 | 2.35 |
| | Panel B: Low Sentiment Period | | | | | | |
| | Liquid | 2 | 3 | 4 | Illiquid | Illiquid-Liquid | T-stat |
| Raw Ret | 0.908 | 1.193 | 1.342 | 1.549 | 1.882 | 0.973 | 2.48 |
| Four-Factor Alpha | -0.055 | 0.040 | 0.064 | 0.226 | 0.444 | 0.499 | 2.06 |
| | Panel C: High Sentiment Period | | | | | | |
| | Liquid | 2 | 3 | 4 | Illiquid | Illiquid-Liquid | T-stat |
| Raw Ret | 0.994 | 1.042 | 1.090 | 0.907 | 1.082 | 0.088 | 0.31 |
| Four-Factor Alpha | -0.031 | -0.059 | -0.002 | -0.097 | 0.221 | 0.252 | 1.24 |

## 4.2 The Cross-Sectional Regression Analysis

As a second analysis, I use Fama-MacBeth (1973) methodology to investigate the pricing ability of the Amihud measure in different sentiment periods. First, I run the cross-sectional regression to obtain estimated coefficients in each month. I then calculate the time-series average of the coefficients. T-statistics are calculated using Newey-West (1987) robust standard errors with six lags. Following the previous literature (e.g. Amihud, 2002; Brennan et al., 2013; Lou and Shu, 2016), I use the natural logarithm of the Amihud measure. I also use control variables, such as book-to-market, size, lagged return and cumulative past return.

Fama-French three-factor adjusted return is used as a dependent variable. Following Brennan et al. (1998) and Lou and Shu (2016), I construct Fama-French three-factor adjusted return as follows;

$$\text{FF-3 Adjusted Return}_{it} = (r_{it} - rf_t) - (\hat{a}_{it}^{MKT} * MKT_t + \hat{a}_{it}^{SMB} * SMB_t + \hat{a}_{it}^{HML} * HML_t) \qquad (2)$$

where $\hat{a}_{it}^{MKT}$, $\hat{a}_{it}^{SMB}$, $\hat{a}_{it}^{HML}$ are estimated factors. I firstly regress the monthly excess returns and Fama-French three factors using prior information from *t-60* to *t-1*. At least 24 valid observations are required to estimate the factors.

Table 3 reports the results of the Fama-MacBeth (1973) regression for the entire period from January 1966 to December 2012, low sentiment and high sentiment periods. Column (1) shows that the coefficient of the Amihud measure is 0.090 and it is statistically significant. Positive coefficient confirms the theory that higher illiquidity is associated with higher expected returns (Amihud, 2002). One standard deviation increase (standard deviation of ln (Amihud) is 3.29 in entire period) in the ln (Amihud) is associated with a 0.30 per cent expected return per month. Column (2) reports the result for the low sentiment period. The coefficient of the Amihud measure is 0.118 and it is statistically significant and has higher magnitude compared with entire period analysis. This means the illiquidity premium is more pronounced in the low sentiment period. One standard deviation increase (standard deviation of ln (Amihud) is 3.30 during low sentiment period) in the Log(Amihud) measure is associated with a 0.39 per cent expected return per month, which is consistent with four-factor alphas in the sorting analysis. The annual premium of holding illiquid stocks is around 4.68 per cent in the low sentiment period.

The result is consistent with my hypothesis that during the low sentiment period, illiquidity premium is higher than in other periods. This happens because the liquidity of the stock market dries up during the low sentiment period. Thus, the investor sells the most liquid stock and requires more premium for holding the illiquid stocks during the low sentiment period. Column (3) shows the high sentiment period analysis. Not surprisingly, there is no illiquidity premium in this period. The coefficient of interest is lower and statistically insignificant. The ln (Amihud) measure is 0.062. It is still positive, which means there is still a illiquidity premium but it is statistically insignificant. The reason for this result is straightforward: the market is very liquid and the investor can sell any asset in their portfolio, therefore, holding illiquid stock does not require a high premium. Return [-1], which is defined as lagged return, is negative and statistically significant in the entire period, low sentiment and high sentiment periods. On the other hand, Return [-12 -2], which is defined as cumulative return, is positive and statistically significant in the entire period and only the high sentiment period, but in the low sentiment period, it is positive but statistically insignificant.

*Table 3: Fama Macbeth Regressions (NYSE & AMEX Only)*

| Dependent Variable: FF-3 Adjusted Return | | | |
|---|---|---|---|
| | Entire Period (1966-2012) | Low Sentiment Period | High Sentiment Period |
| Log (Amihud) | 0.090**<br>(2.46) | 0.118**<br>(2.00) | 0.062<br>(1.49) |
| Size | 0.061<br>(1.57) | 0.048<br>(0.81) | 0.074<br>(1.54) |
| Book-to-Market | 0.080*<br>(1.91) | 0.102*<br>(1.75) | 0.058<br>(0.99) |
| Return [-12 -2] | 0.616***<br>(3.30) | 0.328<br>(0.98) | 0.905***<br>(5.50) |
| Return [-1] | -5.788***<br>(-12.25) | -7.154***<br>(-10.52) | -4.422***<br>(-7.61) |
| Adjusted R-Square | 0.030 | 0.034 | 0.027 |
| # of Observation | 1654 | 1651 | 1658 |
| # of Months | 564 | 282 | 282 |

**Newey-West (1987) robust standard errors are used to calculate t-statistics.*
**, **, *** represent statistical significance at the 10, 5, and 1 per cent levels, respectively.*

Overall, the results show that investors require an illiquidity premium during my sample period from January 1966 to December 2012. In the low sentiment period, this premium is more pronounced, and in the high sentiment period, the coefficient of interest is statistically insignificant even though the coefficient of the Amihud measure is positive. The results are in line with theoretical explanations of the link between investor sentiment index and stock liquidity. As mentioned before, this paper uses only Amihud (2002) measure as a proxy for stock liquidity, but using other low-frequency price impact measures would give the similar results since the correlation between price impact measures is high. The results might be different if we use low-frequency spread measures as a proxy of stock liquidity, but this paper only investigates the pricing ability of Amihud measure and does not examine low-frequency spread measures as a proxy of stock liquidity.

## 5. Robustness Analysis

### 5.1 Size Analysis

Amihud (2002) demonstrates that market illiquidity is related to small firms more strongly than to large firms. Baker and Wurgler (2006) also show that small firms earn more expected return in the low sentiment period compared to the large firms. Thus, it is important to analyse small and large-size firms separately. I use market capitalisation at the end of each month to distinguish small and large-sized firms. Market capitalisation is defined as price multiplied by share outstanding for each firm *i*. I construct quintile portfolios in each month *m* based on the market capitalisation calculated on month *m-1*. I then use the first quintile as the smallest-size firms and the fifth quintile as the largest-size firms.

Table 4 presents the results of the size analysis using the Fama-MacBeth (1973) procedure with control variables. I drop the size variable from the regression since I control size by splitting the companies based on their market capitalisation. Panel A shows the small-size stocks, which include firms in the lowest market capitalisation quintile. The coefficient of the Amihud measure is positive and statistically significant, 0.284, and associated t-statistic is 4.57 in the entire period. We can see that the magnitude of the illiquidity coefficient increases greatly compared to earlier tables. This confirms the existing literature and shows that the effect of the Amihud measure is stronger for small capitalisation (small-cap) firms. Columns (2) and (3) show that results hold in both periods – in the low sentiment and the high sentiment periods for small-cap firms, even though the magnitude of the Amihud coefficient is slightly higher in the low sentiment periods relative to the high sentiment periods. Panel B shows the large-size stocks, which include firms in the highest market capitalisation quintile. The results show that the Amihud measure is not priced for large-cap stocks in any time periods. The coefficient of the Amihud measure is insignificant neither in the low sentiment period nor in the high sentiment period. This confirms that the effect of small-cap firms has a strong power to explain the results of this study. The results are consistent with the literature that small-cap stocks are more illiquid and when there is a down period in the economy these stocks suffer more.

*Table 4: Size Analysis*

| Panel A: Small Size Companies | | | |
|---|---|---|---|
| | Dependent Variable: FF-3 Adjusted Return | | |
| | Entire Period (1966-2012) | Low Sentiment Period | High Sentiment Period |
| Log (Amihud) | 0.284***<br>(4.57) | 0.298***<br>(2.85) | 0.269***<br>(4.48) |
| Book-to-Market | 0.175***<br>(2.70) | 0.117<br>(1.25) | 0.233***<br>(2.61) |
| Return [-12 -2] | 0.473*<br>(1.77) | -0.039<br>(-0.08) | 0.985***<br>(4.66) |
| Return [-1] | -8.923***<br>(-11.79) | -11.143***<br>(-9.48) | -6.702***<br>(-8.06) |
| Adjusted R-Square | 0.035 | 0.041 | 0.029 |
| # of Observation | 330 | 330 | 331 |
| # of Months | 564 | 282 | 282 |

| Panel B: Large Size Companies | | | |
|---|---|---|---|
| | Dependent Variable: FF-3 Adjusted Return | | |
| | Entire Period (1966-2012) | Low Sentiment Period | High Sentiment Period |
| Log (Amihud) | 0.010<br>(0.39) | 0.027<br>(0.72) | -0.007<br>(-0.20) |
| Book-to-Market | -0.162**<br>(-2.50) | -0.105<br>(-1.25) | -0.215**<br>(-2.21) |
| Return [-12 -2] | 0.443**<br>(2.11) | 0.073<br>(0.21) | 0.798***<br>(3.28) |
| Return [-1] | -4.553***<br>(-8.03) | -4.829***<br>(-6.99) | -4.289***<br>(-4.83) |
| Adjusted R-Square | 0.051 | 0.053 | 0.048 |
| # of Observation | 330 | 330 | 330 |
| # of Months | 564 | 276 | 288 |

**Newey-West (1987) robust standard errors are used to calculate t-statistics.*
**, **, *** represent statistical significance at the 10, 5, and 1 per cent levels, respectively.*

## 5.2 Controlling for Idiosyncratic Volatility

Recent literature shows that not only does systematic risk have the power to explain variation in expected returns but that also unsystematic risk plays a role in explaining the expected returns (Goyal and Santa-Clara, 2003; Ang et al., 2006, 2009; Xu and Malkiel, 2006). Ang et al. (2006) is a cornerstone research paper on the impact of idiosyncratic volatility on expected returns. They show that there is a negative relation between idiosyncratic volatility and expected returns. Also, the correlation between illiquidity and idiosyncratic volatility is positive since both variables are driven by the same component in portfolio construction – absolute return. Therefore, controlling for the effect of idiosyncratic volatility on expected returns is important.

I follow the Ang et al. (2006) and estimate the following there-factor modes for returns:

$$R_{it} - rf_t = b_0 + b_1 * Mrktprem_t + b_2 * SMB_t + b_3 * HML_t + e_{it} \tag{3}$$

where $R_{it} - rf_t$ is the daily excess return of stock *i* in time *t*, $Mrktprem_t$ is the daily market risk premium in time *t*, $SMB_t$ is the daily return difference between small and big sized companies based on market capitalization in time *t*, and $HML_t$ is the daily return difference between high and low book-to-market in time *t*. I estimate the three-factor model by OLS and use the standard deviation of the residuals as my estimate of idiosyncratic volatility within a month: $IdiosyncraticVolatility_{im} = \sqrt{Var(e_{it})}$.

Idiosyncratic Volatility of stock *i* in month *m-1* is matched with the monthly Fama-French three-factor adjusted return of stock *i* in month *m*.

Table 5 presents the results of Fama-MacBeth regression analysis including idiosyncratic volatility as an additional control variable. Column (1) shows that idiosyncratic volatility is negatively related to expected return, as previous literature suggests, and it does not affect the coefficient of interest, Amihud measure, significantly. The Amihud measure is still positive and statistically significant in the entire period. In column (2), I confirm that my result is consistent after controlling for idiosyncratic volatility. The coefficient of the Amihud measure is the same as in earlier results, 0.119, and associated t-statistic is 2.05 in the low sentiment period. Surprisingly, the inclusion of idiosyncratic volatility changes the magnitude of the Amihud measure in the high sentiment period. The coefficient of the Amihud is 0.076, which is higher than earlier tables and it is statistically significant at the 1 per cent level. Also, the magnitude of idiosyncratic volatility is higher in the high sentiment period than in the low sentiment period. This increase in the idiosyncratic volatility also drives the coefficient of the Amihud measure up in the high sentiment period. The reason for this might be the impact of idiosyncratic volatility is stronger than liquidity during the high sentiment period and the relation between idiosyncratic volatility and stock liquidity may drive the coefficient of stock liquidity become statistically significant at the 10 per cent level.

*Table 5: Include Idiosyncratic Volatility*

| Dependent Variable: FF-3 Adjusted Return | | | |
|---|---|---|---|
| | Entire Period (1966-2012) | Low Sentiment Period | High Sentiment Period |
| Log (Amihud) | 0.097*** | 0.119** | 0.076* |
| | (2.72) | (2.05) | (1.88) |
| Size | 0.028 | 0.016 | 0.041 |
| | (0.81) | (0.30) | (0.93) |
| Book-to-Market | 0.053 | 0.093 | 0.014 |
| | (1.27) | (1.64) | (0.23) |
| Return [-12 -2] | 0.584*** | 0.374 | 0.792*** |
| | (3.36) | (1.20) | (5.15) |
| Return [-1] | -5.725*** | -7.150*** | -4.299*** |
| | (-11.65) | (-9.99) | (-7.19) |
| Idiosyncratic Volatility | -15.763***<br>(-4.96) | -11.874**<br>(-2.51) | -19.654***<br>(-4.35) |
| Adjusted R-Square | 0.037 | 0.039 | 0.034 |
| # of Observation | 1654 | 1651 | 1658 |
| # of Months | 564 | 282 | 282 |

**Newey-West (1987) robust standard errors are used to calculate t-statistics.*
**, **, *** represent statistical significance at the 10, 5, and 1 per cent levels, respectively.*

## 5.3 January Effect

The effect of seasonality on stock prices, called the "January effect", on the concept of illiquidity premium is well established in the literature. Eleswarapu and Reinganum (1993) investigate this phenomenon and find that the illiquidity premium is significant only in January. Hasbrouck (2009) also supports this result. Market efficiency papers agree on the January effect, particularly on small-cap firms. The reason of this is the price of the stocks increases in January since investors typically sell their assets due to taxation which leads a decline in price due to taxation. I include this phenomenon in two ways. First (Panel A of Table 6) I exclude January from my sample period. Second, (Panel B) I use only January in my sample period.

Table 6 shows the Fama-MacBeth regression results to establish a January effect in my sample period. Panel A reports the results from excluding January for each year from my sample. Column (1) shows that the coefficient of the Amihud measure, 0.069, is lower than the main analysis in Table 3 (0.090), but it is still statistically significant. On the other hand, columns (2) and (3) show the positive relation between illiquidity and the expected return but they are statistically insignificant. Panel B presents the analysis of using only January of each year in my sample period. Overall, we can see that the magnitude of the coefficient of the Amihud measure is higher compared to Panel A. Columns (1) and (2) show that the illiquidity premium is positive and statistically significant – the coefficient of Amihud measure is 0.322 and 0.551, respectively. However, column (3) shows that pricing ability of the Amihud measure does not present in the high sentiment period. Results confirm the effect of January on illiquidity premium. When I exclude January, I do not find any significant premium in the low and high sentiment periods, but I find a significant premium in the low sentiment period when I only use January of each year.[10]

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[10] Even though the paper captures the January effect, the size effect outperforms the January effects. When I run a regression for only January and small-cap firms the coefficient is very strong and statistically significant for entire, low and high

*Table 6: January Effect*

Panel A: January Excluded

Dependent Variable: FF-3 Adjusted Return

| | Entire Period (1966-2012) | Low Sentiment Period | High Sentiment Period |
|---|---|---|---|
| Log (Amihud) | 0.069**<br>(1.97) | 0.080<br>(1.41) | 0.058<br>(1.55) |
| Size | 0.097***<br>(2.71) | 0.065<br>(1.15) | 0.128***<br>(3.21) |
| Book-to-Market | 0.044<br>(1.05) | 0.072<br>(1.24) | 0.017<br>(0.29) |
| Return [-12 -2] | 0.857***<br>(4.59) | 0.552*<br>(1.68) | 1.163***<br>(7.18) |
| Return [-1] | -5.091***<br>(-10.82) | -6.397***<br>(-9.67) | -3.781***<br>(-6.36) |
| Adjusted R-Square | 0.027 | 0.031 | 0.024 |
| # of Observation | 1654 | 1650 | 1658 |
| # of Months | 517 | 259 | 258 |

Panel B: Only January Used

Dependent Variable: FF-3 Adjusted Return

| | Entire Period (1966-2012) | Low Sentiment Period | High Sentiment Period |
|---|---|---|---|
| Log (Amihud) | 0.322**<br>(2.15) | 0.551***<br>(3.23) | 0.102<br>(0.58) |
| Size | -0.334<br>(-1.67) | -0.148<br>(-0.75) | -0.512<br>(-1.68) |
| Book-to-Market | 0.469**<br>(2.36) | 0.439***<br>(3.14) | 0.497<br>(1.48) |
| Return [-12 -2] | -2.032***<br>(-4.23) | -2.200***<br>(-4.17) | -1.871***<br>(-4.31) |
| Return [-1] | -13.450***<br>(-8.98) | -15.672***<br>(-5.93) | -11.320***<br>(-8.51) |
| Adjusted R-Square | 0.0642 | 0.072 | 0.057 |
| # of Observation | 1659 | 1661 | 1657 |
| # of Months | 47 | 23 | 24 |

**Newey-West (1987) robust standard errors are used to calculate t-statistics.*
**, **, *** represent statistical significance at the 10, 5, and 1 per cent levels, respectively.*

sentiment period; however, the coefficient is insignificant when I use large-cap companies.

## 6. Conclusion

The aim of this paper is to present new evidence of the impact of illiquidity on the expected returns in different time periods using the investor sentiment index created by Baker and Wurgler (2006). Theoretical and empirical papers suggest that sentiment index and stock market liquidity should be positively related. When investor sentiment index is low, the stock market illiquidity is high. This can be explained by the demand of the liquid stock during the bad times. As illustrated in Figure 1, the low sentiment period generally coincides with the NBER recession periods, and we know that during crisis periods the demand for the liquid stocks goes up, so that holding an illiquid asset in the portfolio becomes costlier for investors. Thus, investors require a higher premium for holding illiquid stocks in their portfolio during bad times.

Univariate and cross-sectional analyses show that there is an illiquidity premium associated with my choice of illiquidity proxy, Amihud (2002), in the sample period used. This result is consistent with earlier findings. More importantly, the illiquidity premium is significant in the low sentiment period but is insignificant in the high sentiment period. The result is robust, excluding financial and utility companies, considering January and small-cap anomalies, and controlling for idiosyncratic volatility.

This paper contributes to the literature by exploring Novy-Marx's (2004) claims that it is not an illiquidity premium that investors earn; it is actually a premium from being exposed to the underlying risk of the stocks or periods. He suggests that illiquidity can be a good proxy for capturing this underlying risk factor resulting in what we call "illiquidity premium". This idea confirmed in this paper in that illiquidity premium is only significant in the low sentiment period since underlying risk factors are strong in the low sentiment periods relative to the high sentiment periods where there is no illiquidity premium.

There are several ways in which this paper could be extended. First, investor sentiment is a market-wide index that may not apply to each sector or individual firm. It would be useful therefore to use investor sentiment for each sector and see whether results change or not. Second, the choice of illiquidity proxy may play a role in explaining illiquidity premium. I only use Amihud (2002) as a proxy for illiquidity as it is widely used measure and is highly correlated with intraday data. However, it would be useful to use other illiquidity measures to study the same relation between sentiment index and illiquidity of stocks, since the results may be due to a particular feature of the Amihud. Last but not least, we should admit the problem of endogeneity in this analysis. Since earlier papers also show that low sentiment periods coincide with a recession period, we cannot easily explain the relation between liquidity and sentiment index. There might be other factors that drive this illiquidity premium during low sentiment periods. One way of solving this problem is to find an exogenous shock to the sentiment index; however, this is not easy. One suggestion might be to use a political event as a shock to sentiment such as Trump's election or the Brexit referendum. But, the problem is we that cannot use low-frequency data in this setting since the effect lasts only days.

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# 20

# STRUCTURAL EQUATION MODELLING

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## 1. Definition and properties of SEM

Structural Equation Models (SEM) is a statistical approach based on the definition of measurable variables and latent variables as causal and relational (correlation-based). In the SEM, there is the analysis that by hypothesis testing for the theoretically constructed structural models. Causal links are defined in the form of regression equations. Also, causality equations could be made more understandable and conceptual with schematic representations.

The reason for the widespread use of SEM can be defined as the fact that researchers need more information to illuminate their research with multiple observed variables. Contrary to the basic statistical methods, the inclusion of concepts that cannot be measured in the SEM model has increased the attractiveness of the method. SEM is a multivariate statistical method used by many disciplines, especially social sciences, behavioural sciences, educational sciences, economics, marketing and health sciences (Raykov and Marcoulides, 2000: p.1). SEM is a multivariate statistical method based on the definition of observable and unobservable variables in a causal and relational model based on a specific theory (Bryne, 2010: p.3). The most important reason for the popular use of SEM today is that the direct and indirect effects between observable and unobservable variables can be tested in a single model. That is, SEM can also

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be considered as multiple regression analyses. For this reason, SEM is also called causal modelling, causal analysis, simultaneous structural modelling, covariance structure analysis, path analysis or confirmatory factor analysis by some authors (Tabachinc and Fidell, 2001). However, the way it is applied today, we see path analysis and confirmatory factor analysis as the specific application types of SEM.

SEM provides two major advantages. The model contains a number of structural equations (e.g. regression equations), the structural equations generated are expressed in a visual drawing to make the hypotheses easier to understand. It is possible to list some of the SEMs as follows (Ayyıldız ve Cengiz, 2006: p.66):

- It enables the measurement of regression coefficients in the theoretical model by controlling the effects of measurement errors arising from the relationships in hypotheses.
- It is possible to test the suitability of the theoretical model as a whole with the data obtained from the experiment.
- It allows for testing different estimates of measurement errors.
- It can test different factor structures and compare with different groups. In this way, it gives the opportunity to try with different theoretical models and to determine which of these is more appropriate to the data obtained.
- It can combine too many regression analyses under one roof, which other methods cannot do.
- It allows the testing of non-standard models. It can test by allowing auto-correlation of measurement errors as in time-series analysis.
- It allows determining the relationships between unobservable variables.
- It indicates the indirect and direct effects between variables and the total effect.

- It assigns more than one observed variables to each unobservable variable, tests reliability and minimizes measurement error using confirmatory factor analysis.
- The model includes a path diagram for better understanding.
- Not only it does test the model by coefficients, but also it is equipped to test the model as a whole.
- It has a property to explain mediator variables among relationships of reason-result.

SEM is a powerful statistical analysis that simultaneously tested more than one and a mutual relationship. There are two main features that distinguish this analysis from other multivariate analyses. These (Hair et al., 1998: p.584):

- SEM allows multiple and mutually dependent relationships to be tested in a single analysis.
- In other words, this analysis simultaneously tests all relationships. SEM recognizes that no indicator variable can be measured perfectly, also counts in the error variances of the indicators for calculations.

## 2. Cases where SEM is used

SEM can be used to describe hypothetical or meaningful information about a situation being studied through a model. Models are usually based on existing or hypothetical theories. These theories explain and describe the situations in the research (Raykov & Marcoulides, 2000: p.6-7). SEM has a unique property because of providing clear modeling of measurement errors. After the theory has been developed about the research situation, the theory can be tested with experimental data by using SEM. This testing process is called validation format in SEM applications. A similar use of structural models has also constructed validity. In these applications, researchers evaluate the size of an unobservable variable that basically measured by a measuring tool that provides its assumptions (Bollen, 1989; Fox, 2006; Raykov & Marcoulides, 2000: p.6-8).

SEM is also used to develop theory. In theory development, repeated applications of SEM data with the same data set to explain possible relationships between variables of interest (Timm, 2002; Raykov & Marcoulides, 2000: p.8).

## 3. Structure of SEM

Structural Equation Model is a collection of methods that use Multiple Regression, Path and Confirmatory Factor methods as a chain. These methods are briefly described below.

### 3.1. Multiple regression models

Regression analysis is used to estimate a variable with the help of one or more variables. The model used for regression analysis is defined as regression models. Regression models include the amount of explanation of the dependent variable that independent variables estimate. Multiple regression models are used to model a large number of observed variables. Multiple regression, which is a linear modeling approach in the analysis of data, has been applied as a method to close the gap between analysis of variance and correlation in research hypotheses (McNeil et al., 1975: p.17).

The simple regression equation is in the standard score format (z values) as follows:

$$\hat{z}_{y\,=}\,\boldsymbol{\beta} \mathbf{z}_x$$

Here; β is the standardized regression coefficient. The purpose of using the standard values is to ask for that the variables have the same measurement scale (z scale). The regression coefficient (b) chain and the standardized regression coefficient (β) are as follows:

$$\boldsymbol{b} = \frac{s_y}{s_x} \boldsymbol{r}_{xy} \quad ; \quad \boldsymbol{\beta} = \frac{\Sigma z_X z_Y}{\Sigma z_X^2}$$

In the formula; $S_x$ and $S_y$ are the standard deviation values of the variables x and y, respectively. Multiple regression equation which is formed with standard scores for two independent variables can be written as

$$\mathbf{Z}_{y} = \beta_1 \mathbf{Z}_1 + \beta_2 \mathbf{Z}_2$$

and standardized partial regression coefficients ($\beta_1$) and ($\beta_2$) are calculated from the following equations:

$$\beta_1 = \frac{r_{y1} - r_{y2} r_{12}}{1 - r_{12}^2} \text{ ve } \beta_2 = \frac{r_{y2} - r_{y1} r_{12}}{1 - r_{12}^2}$$

Correlation between dependent observed variable (Y) and predicted ($\widehat{Y}$) values are given as a multiple correlation coefficient and is calculated as

$$\mathbf{R}_{y\hat{y}} = \mathbf{R}_{y,12}$$

The $\mathbf{R}_{y,12}$ is the correlation value of the Y dependent variable calculated using the independent variables ($X_1$ and $X_2$). The square of the multiple correlation coefficient is calculated as follows:

$$R_{y\hat{y}}^2 = R_{y,12}^2 = \beta_1 r_{Y1} + \beta_2 r_{Y2}$$

The square of the multiple correlation coefficient is an indicator of the variance generated by the described, predicted, or predictors independent variables. The value of $R^2$ is used as a model fit criterion in multiple regression analyses (Schumacker & Lomax, 2004: p.124-125).

## 3.2. Path

The structural equation model combines factor analysis and path diagram. Path diagrams, which can also be used as a visual presentation of the model, have been included in the literature as Wright's invention. The relationships among the variables are shown depending on the model parameters presented in the path diagram. At the same time, the path diagram shows how the model equations can be used to calculate the direct, indirect and total effects.

### 3.2.1. Symbols and diagrams of path

When defining the model, the following must be determined: 1) parameters of relationships between unobservable variables, 2) all variables in the model and the error variances of these variables. Unobservable (latent) variables are represented by ellipses. The observed variables are represented by square or rectangles. The parameters can be identified by unidirectional and bidirectional arrows among unobservable variables. Also, parameters identified by unidirectional and bidirectional arrows from unobserved variables towards observed variables explain themselves. These parameters are values corresponding to the factor weights in factor analysis. In SEM terminology, observed variables do not affect unobservable variables. In contrast, unobserved variables affect the observed variables that explain themselves, so a one-way arrow is extended from an unobservable variable to the observed variable.

In the path diagram, the unidirectional arrows extending from the outside to the observed variables indicate the error variance of these measurements that they themselves could not explain. There are also unidirectional arrows in the model that extending from the outside to the unobservable variables that define the error variance that is not affected by the independent variable. (You can see from **Figure 1**).

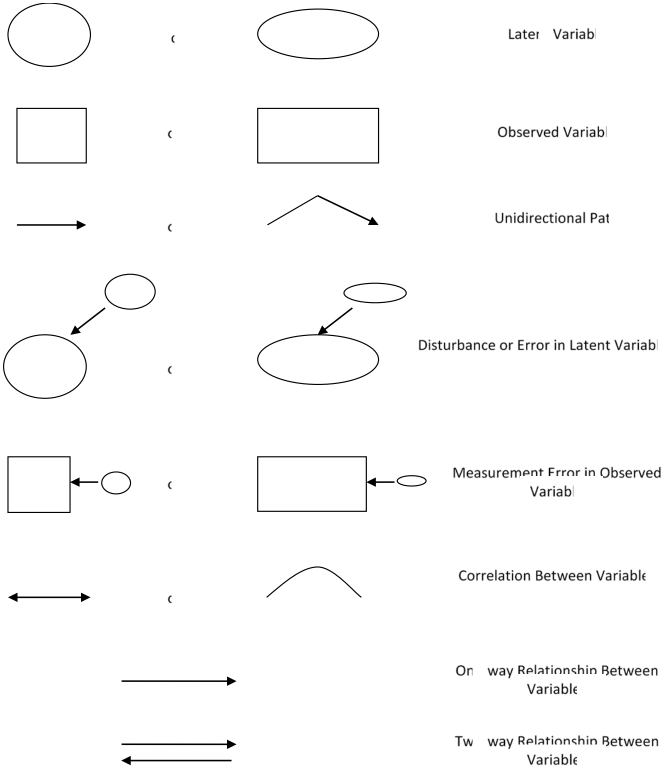
Later Variabl
Observed Variabl
Unidirectional Pat
Disturbance or Error in Latent Variabl
Measurement Error in Observed Variabl
Correlation Between Variable
On way Relationship Between Variable
Tw way Relationship Between Variable

**Figure 1.** *The Symbols of Path (Schumacker ve Lomax, 2004: p.153).*

### 3.2.2. Path analysis

Path analysis can be defined as an extension of regression models, that is used to test the suitability of the correlation matrix of two or more causal models encountered by the researchers. Although the method uses models with a large number of observed variables, it can include the desired number of dependent-independent variables and equations. Thus, it can be concluded that path analysis requires a large number of multiple regression analyses using observed variables.

Path analysis is not only a method revealing causalities, but also a means of revealing the theoretical relationships between variables, which is also called causality modeling. In the following cases, a defined path analysis reveals causal relationships between the two variables: When the variables are temporarily sorted, when covariance and correlations between variables are obtained, when other causalities have been checked (Schumacker ve Lomax, 2004: p.150).

## 3.3. Confirmatory factor analysis (CFA)

Factor analysis is a type of multivariate statistical analysis which is widely used in reducing the number of variables in marketing research, developing scale and data transformation (Kinnear & Taylor, 1996). In factor analysis, it is possible to create general variables called factors by the method of bringing together a set of variables with a high correlation between them. These objectives are: reducing the number of variables and to classify variables by discovering the structure in the relationships between variables (Kalaycı, 2010: p.321). Factor analysis is a method that converts related data structures to a smaller number of new and independent data structures. It is a method used to reveal common factors by grouping the variables that are assumed to explain an occurrence or cause (Exploratory factor analysis). Factor analysis is a method used to group variables that affect a formation. It is one of the most widely used methods to test the structural validity of a scale (Confirmatory factor analysis) (Özdamar, 2002).

In the confirmatory factor analysis (CFA), the researcher identifies a number of related factors, each of which is a criterion for each factor, and the researcher has a pre-defined theoretical model. In exploratory factor analysis (EFA), the researcher attempts to find out how many factors are present, whether the factors are related and which observed variable is the best criterion for each factor. The researcher does not have a model before applying the method (Comrey ve Lee, 1992; Gorsuch, 1983; Schumacker ve Lomax, 2004: p.168-169).

Although SEM and CFA are basically based on the same logic and calculation technique, they represent different concepts in use. SEM is generally purposed to test one model and other alternative models and to determine the model that best describes the data by comparing a large number of models. From this perspective, SEM is an extension of traditional regression models. However, CFA is mostly used in social sciences for scale development or validity analysis, and it aims to verify a predetermined or constructed structure and is based on general factor analysis (Çınar, 2019: p.198).

## 4. Modelling

In this title, the methodology of SEM, determination of the model, analysis stages of the model, and estimation methods are explained.

### 4.1. Methodology

The process of traditional structural equation modeling, which is frequently used in social and behavioral sciences, can be shown as in **Figure 2.**

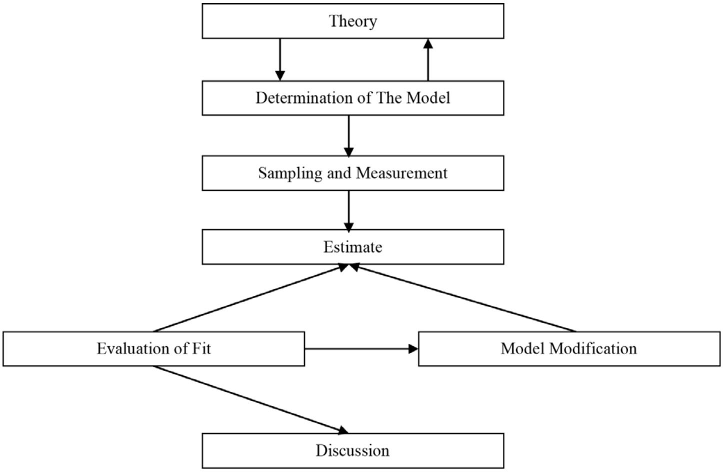
Theory
Determination of The Model
Sampling and Measurement
Estimate
Evaluation of Fit
Model Modification
Discussion

**Figure 2.** *Stages of SEM (Kaplan, 2000: p.8)*

The theory is firstly presented in the SEM process. In the next stage, the structural equations shown in the path diagram are constructed in a way that reflects the theory one by one, then a sample selection is made and measurements are obtained. After this stage, the model parameters are estimated. After the evaluation of the fit indices of the estimated model, adjustments and changes are made in the model if necessary. After reaching a conclusion about the final version of the model, the results are obtained and interpreted (Çınar, 2019: p.201).

## 4.2. Determination of the model

The first step in structural equation models starts with the model definition. The modeling process is considered as the starting point of the step of defining complex relationships between variables, which is the basis of SEM. These variables are defined as unobservable variables (endogenic, factor, size, unobservable variable, latent variable) and observed variables (exogenic, explicit variable, indicator, measurable variable, item).

The observed variables are defined as the variables that the researcher can directly measure or observe. On the other hand, unobservable variables were defined as abstract concepts where no measurements or observations could be made. One unobservable variable can be defined by at least two observed variables. The modelling process is explained as the relationship between these latent variables and observed variables and the process of defining the relations. According to Cooley (1978: p.10), the most difficult step in SEM is this process.

## 4.3. Analysis stages of the model

In the analysis of structural equation models, the process of estimating the parameters in SEM and testing the significance of the model consists of five steps. These steps are given below, respectively (Cooley, 1978: p.10-11):

***Stage 1:*** *Theoretical development of the model:*

In this stage, a conceptual SEM is developed with the knowledge and experience of the researcher and the experts. Variables to be included in the model and their relationships are theoretically defined. The definition of the relationships between the variables is necessary for the hypothetical definition of the model.

***Stage 2:*** *To show the relationships between the variables in the SEM in the path diagram:*

The relations, developed in the first stage and included in the SEM, between the unobserved variables and the observed variables and the relationships between the unobserved variables are shown in a path diagram.

***Stage 3:*** *Definition of the measurement model and structural model:*

It is the stage of expressing the relations shown in the path diagram with mathematical equations and defining the measurement model and structural model with the help of these equations.

***Stage 4:*** *Determination of input matrix' type (variance / covariance):*

Unlike other multivariate techniques, SEM prefers one of the variance/covariance or correlation matrices in parameter estimation instead of raw data. In this stage, before starting parameter estimation, which matrix is used in the model is determined.

***Stage 5:*** *Assessment of results for best fit (good fit indices):*

After estimating the parameters of SEM, the estimated fit statistics are an assessment to test the suitability of the model.

## 4.4. Estimation methods

Structural coefficients could be calculated by many methods. There are many estimation methods used in SEM. The most commonly used estimation technique is maximum likelihood (ML). Regardless of which estimation method is used, the calculation in SEM is usually similar. The aim in SEM is to minimize the difference (residual matrix) between the estimated covariance matrix for the model and the covariance matrix for actual data. Iteration logic exists during these processes. The difference becomes smaller with each iteration. However, after a few iterations, the reduction in this difference is negligible. When this situation happens, the program (LISREL, AMOS, et al.) stops the iteration process and proceeds to the result reporting stage.

### 4.4.1. Maximum likelihood (ML)

The maximum likelihood method is a widely preferred method in SEM. In the ML estimation, it is assumed that the observed values of the variables in the model show a multivariate normal distribution. In addition, the covariance matrix of the population and the covariance matrix of the sample are assumed to be positively defined.

The reason why ML is preferred, if the observation values obtained from the sample show normal distribution, they give the results that best represent the population parameters compared to the others. Another reason is that the results obtained by ML have *scale in variant* and *scale free*. What is meant by the property of the *scale in variant* is that the transformations of the variables in the analysis into lower or upper units do not affect the results of the analysis. The property of *scale free* is that if the variables meet the assumption of normality, linear transformations to be applied to the observation values do not change the analysis results. Different standardization values of the analyzed variables do not change the results (Bollen, 1989).

### 4.4.2. Unweighted least square (ULS)

Unweighted least squares method is the function that minimizes the values of the diagonal values of the residual values matrix. The residual values matrix is the difference between the covariance matrix of the model from the observed variables of the matrix (Bollen, 1989).

### 4.4.3. Weighted least square (WLS)

It is the function that minimizes the difference between the covariance matrix obtained from the population and the covariance matrix obtained from the sample. It is similar to UWLS. However, if the variances are not homogeneous or there is autocorrelation in the errors, the results deviate from the observed situation in the population and the model is evaluated incorrectly. In this case, it is recommended to use the results of the WLS method. Another advantage of the method is that the variables do not need to be continuous. The asymptotic covariance matrix in the method related function is obtained from the covariance matrix of the sample (Bollen, 1989; Schermelleh-Engel et al., 2003).

### 4.4.4. Generalized least square (GLS)

The generalized least squares method, a special form of the UWLS method, uses the covariance matrix of the sample that it is a weight matrix (Bollen, 1989).

## 4.5. Test of the model

The next step after the model definition in SEM is parameter calculations based on the obtained data. In this calculation process, iterative methods are applied similar to factor analysis. In SEM, the difference between the data and the model is called error or residual.

**Data = Model + Error (Residual)**

Data are measured values for observed variables obtained from selected samples from the population. The model shows the structure used for the assumption that observed variables are dependent on unobservable variables. Latent variables can be linked to other latent variables. The error refers to the distinction between the observed data and the assumed model.

In SEM, the prediction method is usually ML. However, the least square (LS) estimation method can also be selected according to the purpose. Regardless of the estimation method, the main criterion of fit in the model test is the extent to which the data presented corresponds to the proposed model. In other words, the criterion of fit shows how much similar the observed covariance matrix (S) between the measured variables and the model covariance matrix (S). Here, the covariance matrix of the model is formed by including the parameters fixed and released as a result of the model definition into structural equation. As in factor analysis, the difference between the observed and implied matrix in each iteration is calculated. The matrix consisted of these differences is called residual covariance matrix. The iteration continues until the residual covariance matrix is minimized to the maximum level and finally the solution is obtained where minimization is not possible. The value obtained as a result of this solution shows how much fit the observed and model covariance matrices. If there is a fit, this value should be "0", which is a sign of perfect fit.

The primary task in testing the model is to determine the degree of conformity between the model and sample data. Accordingly, the researcher arranges the structure of the model that is assumed on the sample data and then tests the observed data with this limited structure model.

In the model identification process, all relationships in the model are assumed to be linear. Linear relations are two types. The first is the causal relationships and indicated by a one-way arrow. Causal relationships have a regression structure that expresses the effect of one variable on the other. This effect may be a direct effect or an indirect effect through other variables. The second type of relationship is non-causal and non-directional. These relationships correspond to the correlation between unobservable variables. Since there is no effect, they are defined as correlational relationships.

In a structural equation model, there are directional (regressional) relationships between dependent variables and independent variables and non-directional (correlational) relationships between independent variables. Each of the relationships in the model has a numerical value. Modelling process in SEM means defining all parameters of the variables in the model. These parameters are defined as fixed and free parameters (rely on predict) and are used to determine the *measurement model* and *structural model* which are the two components of SEM. The measurement model is the one in which unobservable variables and all non-directional (correlational) relationships are calculated. In this model all parameters are free. The measurement model should be the starting point of SEM analysis (Anderson & Gerbing, 1988). The structural equation model is defined as a model in which is defined the direction of the relationship between unobserved variables and the relationships between observed variables that are unrelated unobserved variables. SEM is also defined as the model in which some parameters are fixed.

Sharma (1996) defined a basic structural equation model as in **Figure 3**. In this figure, the unobservable variables are divided into two as dependent and independent.

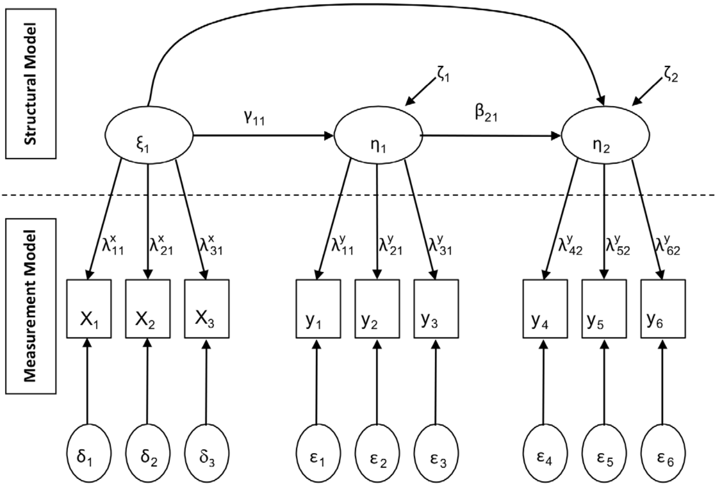
Structural Model
Measurement Model
ξ1
η1
η2
γ11
β21
ζ1
ζ2
λx11
λx21
λx31
λy11
λy21
λy31
λy42
λy52
λy62
X1
X2
X3
y1
y2
y3
y4
y5
y6
δ1
δ2
δ3
ε1
ε2
ε3
ε4
ε5
ε6

**Figure 3.** *Basic Structural Equation Model (Sharma, 1996; Yılmaz et al., 2009: p.12)*

There are three unobservable variables in Figure 3: ξ1 is determined as independent (exogenic), η1 and η2 as dependent (endogenic) unobservable variables. Observed variables of the dependent variable are indicated by x and observed variables of independent variables are indicated by y. Observation errors of the independent variables were defined by δ. Observation errors of observed variables that belong to the dependent variable are defined by ε. Factor loads between latent variables and observed variables are indicated by λx and λy. In addition, regression coefficients between dependent variables and independent variables are defined by γ and regression coefficients between dependent variables are defined by β. Finally, the ζ values indicated by arrows extending from the space to the dependent variables represent error variances that are not affected by the independent variables that precede those dependent variables. In the model definition process, the sequence of subindex writing is opposite to the direction of the arrow.

## 5. Fit indices

In the SEM, the fit indices which test the suitability of the model should be examined before analysis. In Cengiz's (2009) research, this issue is as follows: Before entering the SEM, the scales used in the model must be known and the reliability of the scales needs to be measured. The process that evaluates the structure between the latent variables and the observed variables to which these latent variables are related is called *the measurement model*. Firstly, the fit indices showing the suitability of the whole measurement model should need to be examined. If the fit indices of the measurement model are below a certain critical value, some changes are made in the measurement model. If it's fit indices exceed the threshold, the measurement model proceeds to the next stage. At this stage, confirmatory factor analysis (CFA) is used for construct validity. Explained variance estimates of factors and reliability coefficients of factors are used for reliability. In confirmatory factor analysis, the accuracy rate of latent variables to be used in the model is investigated. That is, it is measured whether the variables of each latent variable explain the latent variable to which they are actually bound. As a result of CFA, the standardized factor loads on the variables of the latent variables should be higher than 0.70 and t-value should be also meaningful. For reliability, the reliability coefficients of the latent variables are expected to be over 70% and the explained variance estimation values to be above 50%.

Suitability of SEM fit indices can be determined by analysis results. The definition of fit indices is as follows: In the structural equation model, how well the pre-determined model (theoretical) explains the data obtained is determined by the fit indices. Fit indices is the stage in which the decision is accepted or rejected by the model. If the whole model is rejected at the end of a result of fit indices, the coefficients or parameters in the model do not matter and are not evaluated. In order to examine the significance of coefficients, whole model needs to be accepted at first. The subject of fit indices is an area that is still developing. Each fit index has certain critical limit points. However, these are not certain but generally accepted values. It is normal that the fit index values of a model studied in a newly developing field remain below the critical limits. Although there are a large number of fit indices, only a few of them are used in one application (Cengiz ve Kırkbir, 2007).

Most popular fit indices are these: Chi-Square (especially, Chi-Square/ degree of freedom), Goodness of fit index (GFI), Adjusted goodness of fit index (AGFI), Solid fit index (PGFI), Mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), Normed fit index (NFI), Non-normed fit index (NNFI), Comparative fit index (CFI), Increased fit index (IFI), Expected cross-validity index (ECVI), Akaike information criterion (AIC) and Fixed AKAIKE information criterion (CAIC).

Critical values for good fit indices used to test SEM are given in **Table 1**:

**Table 1.** *Standardized Fit Indices (Hair et al., 1998; Jöreskog & Sörbom, 1993; Schermelleh – Engel et.al., 2003, p.34; Raykov & Marcoulides, 2006; Yılmaz et al., 2009: p.47)*

| Fit indices | Goodness of fit indices | Acceptable goodness of fit indices |
|---|---|---|
| $\chi^2$/df | $\chi^2$/df < 2 | $\chi^2$/df < 3 |
| RMSEA | 0 < RMSEA ≤ 0,05 | 0,05 < RMSEA < 0,10 |
| SRMR | 0 < SRMR < 0,05 | 0,05 < SRMR < 0,10 |
| NFI | 0,95 < NFI < 1 | 0,90 < NFI < 0,95 |
| NNFI | 0,97 < NNFI < 1 | 0,95 < NNFI < 0,97 |
| CFI | 0,97 < CFI < 1 | 0,95 < CFI < 0,97 |
| GFI | 0,95 < GFI < 1 | 0,90 < GFI < 0,95 |
| AGFI | 0,90 < AGFI < 1 | 0,85 < AGFI < 0,90 |

**Notes: 1***: Especially in small samples, even if the specified model is correct, NFI ≠ 1.00.*
**2***: Unless NNFI is not normed, values may sometimes be outside the range of 0 - 1.*

## 6. Model modification

In a confirmatory factor analysis model; if the fit indices do not meet acceptable levels, the model may be difficult to redefine. In this situation, there are general alternative model or models. In this case, it may be useful to examine the modification suggestions as a result of the analysis. The reasons for the modification in a confirmatory factor analysis model shows a large number of varieties. Many situations, such as the number of structures in the models, the relationship of structures to indicators, and the existence of un-analyzed relationships between measurement error terms, may reveal the need for modification. Given all possibilities, the process of redefining the model should be supported by as robust ideas as possible rather than merely experimental studies. On the contrary, it would not be possible for the researcher to reach the aims or objectives, as there might be no road map in front of the researcher (Kline, 2005).

By looking at covariance between the indicator and unobservable variables, modifications in the model provide detailed modification proposes for the researcher. These modifications are usually based on error matrices, and represent the $\chi^2$ value to be gained in the model if they are not originally foreseen in the model, by means of adding or subtracting. Modifications cover many parameters, from proposed new links between indicators or unobservable variables to suggested error covariances between these variables. However, one should be cautious while using modification indices. The cases where these indices are used as a guide to further develop the model alone or to increase the index of fit are contrary to the basic objectives of the structural equation model. When applying the proposed modifications, it must necessarily be based on a theoretical justification or an acceptable conceptual logic. Otherwise, testing the model has no meaning. Specifically, if a change proposed by the modification indices corresponds to a very large decrease in the $\chi^2$ value of the model, this proposed modification is a very critical change for the model (Sümer, 2000).

The problems encountered in the rearrangement of CFA models can be handled in two dimensions. The first of them is related to indicators. In some cases, the indicators that the researcher defines theoretically under a particular structure may not carry on a sufficiently large burden within the structure (eg. 0,10). In such a case, one of the possible solutions is to define the indicator under a different factor load. Examining residual correlations can help identify another factor that the indicator load can change. For instance, given that an indicator is theoretically defined to measure factor A, but residual correlations between the indicators of that indicator and factor B are large, it can be said that this indicator can measure factor B better than factor A. It is also should be noticed that an indicator in a factor may show a relatively high load, in addition to, it should be noticed that also the residual correlations between loads of that indicator and another factor may also be high (Çokluk et al., 2010: p.273).

Another possibility that should be considered within the same structure with the residual correlation is that the indicators share another situation that cannot be observed because of the associated measurement errors. In the result of the modifications, indicators whose factor loadings do not rise reasonably (for example, when the absolute standardized value is less than 0.50) may be measuring a feature that other indicators do not measure. In the model editing process, the second problem is related to the factors. The researcher's incorrect determination of the number of unobservable variables may be an example of this situation. When very high correlations between factors are obtained, low discriminant validity as evidence may indicate that the model has a large number of factors. On the other hand, the low convergent validity between the indicators of some factors may also suggest that the model has very few factors. For example, some specific factors may need to be divided into more homogeneous sub-factors. In such a case, it can be said that these factors are multi-dimensional. As a result, researchers have to make a logical choice among these potential modifications (Kline, 2005).

## 7. Assumptions of SEM

As with all statistical methods, certain assumptions must be provided for SEM to provide consistent estimates. These assumptions consist of data and the assumptions of the estimation method. Multivariate normality, sufficiently large sample size and the correct model definition assumptions are the fundamental assumptions of SEM.

### 7.1. Sampling and sampling assumptions

SEM is a parametric statistical method and the aim is to make meaningful deductions about a large and generally finite population with estimates from obtained from a sample drawn from the population. A very important point for the purpose of estimation and interpretation is the sampling mechanism. In the absence of a clear definition, estimation methods such as ML assume that the data is collected by simple random sampling. In studies conducted with data from complex samples, the assumptions of simple random sampling and independence of observations lead to large deviations on the estimates. In addition, there are deviations also in the estimates made with samples obtained from mixtures of different populations. Utilizing the sampling weights advocated by Kaplan and Ferguson (1999) may lead to a reduction in the effects of the problem.

A fundamental assumption underlying the ordinary use of structural equation models is that observations are drawn from a population that provides assumptions of continuous and multivariate normality. This assumption is particularly important for the ML estimation method because the ML estimator is derived from the multivariate normal distribution. If the data shows continuity and multivariate normal distribution characteristics, the estimates obtained with the ML estimator are normal, unbiased and effective.

It is known that the data deviating from normal distribution has effects on the estimates, standard errors and model fit. The current literature from the mid-1980s to the 1990s states that normality does not affect parameter estimates. However, standard errors are estimated to be lower than those due to the observed standard deviation of the estimates. Considering the goodness of fit, the current literature indicates that the likelihood ratio of non-normality is estimated to be greater than that of the chi-square statistics. The redundancy is resulted from the number of degrees of freedom of the model (Boomsma, 1983; Muthén & Kaplan, 1985, 1992; Olsson, 1979).

Alternative estimation methods are encountered in studies involving abnormal data, in the mid-1980s. Studies involving the continuous data of Browne (1982, 1984) and studies containing categorical data of Muthén (1978, 1984) have a key position in the literature. In both categorical and continuous data cases, the estimation approach uses different functions based on GLS under the circumstance of non-normal. Weighted difference function (WDF) is an example of these different functions (Kaplan, 2000: p.81). In addition to the non-normal data problem, another problem is the missing data problem frequently encountered in social and behavioral researches (Kaplan, 2000: p.87).

## 7.2. Determination error

SEMs have the assumption of zero determination error in addition to normality and negligible loss data. According to Kaplan (2000: p.96), the determination error is presented as the lack of related variables in the equations in the model defined by SEM. This includes the structural equation models as well as the equations in the measurement model.

Studies were conducted on the effects of determination error in SEMs in the mid-1980s. The general finding is that the determination errors in the structure of the missing variables largely cause parameter estimation bias. A consistent finding from studies on the determination error is that the determination error in one part of the model spreads to other parts of the model. This error separation in the context of SEM was first noticed by Kaplan (1988). This situation is examined more clearly by the article prepared by Kaplan and Wenger (Kaplan, 2000: p.97).

It is explained by Aitchison (1962) that the error of determination depends on the notion of separable hypotheses and asymptotic independence in the estimate of limited ML. Then, Kaplan and Wenger (1993) reviewed the issue that researchers would prefer to restrict two parameters at the same time based on the Wald test. The Wald test is a test that checks the validity of restrictive parameters.

Although the two parameters were asymptotically independent, they were related to the other parameters and it was concluded that the limitation of one of the parameters from the model would affect the other parameter. As a result of Kaplan and Wenger's (1993) studies, it is determined that how the error of determination will spread in the covariance matrix of the estimates depends on the current determined shape of the model. After that, changes in the covariance matrix of the estimates were observed each time the parameters were subtracted or added. and thus, the determination errors give knowledge that a variety from model to model (Kaplan, 2000: p.98).

## 8. Conclusion

Structural equation models, which is a multivariate statistical analysis method, contain the logic of path analysis in its substructure. In this sense, structural equation analysis allows evaluating many variables together. In other words, SEM provides detailed information about the modeling of causal relationships between variables, provides detailed information about the collective evaluation of the effects of the privatized models on each other. In addition, SEM provides detailed information to the researcher by evaluating the relationship between variables in the established models with the calculated partial parameters of the model. By assigning latent variables to the measurement models, SEM allows the combined effects of the observed variables to be represented in a single variable within the model. In addition, SEM provides the opportunity of performing a comprehensive analysis of the variables by interpreting the partial parameters of the observed variables in the measurement model. In multi-sample structural equation models, it is possible to test the customized structural equation model for more than one group if the variables to be analyzed and interpreted are collected from more than one group with different characteristics. In this way, the validity of the model established in different samples can be tested and the reliability of the model increases. In multi-sample structural equality models, similarities and differences between groups regarding the privatized model can be interpreted by testing with equality constraints between groups. In this framework, the extent to which the relationships between variables defined in the privatized model are influenced by the group characteristics can also be evaluated. Along with all these features, structural equality models are a statistical method that is open to development and presents innovations in order to meet the needs of researchers day by day.

Thanks to its advantages, SEM is a multivariate analysis method that has gained increasing interest in many areas with advances in mathematics and computer technology. Today, SEM is used in many fields such as econometrics, psychology, sociology, social anthropology, and genetic research. In the process of privatization of SEM and parameter estimation, too many special softwares are used for structural analysis such as EQS, LISREL, AMOS, MX, SmartPLS.

In this study, which is a theoretical study, it is stated that statistics, especially structural equation models, is a crucial and key tool to interpret indicators obtained from events. Firstly, the definition and properties of SEM are presented. Regression analysis, path, and confirmatory factor analysis in SEM were explained. Information is provided about the analysis stages of the model, estimation methods and test of the model. The measurement model and structural model are tabulated in Figure 3. Fit indices of the studied model are explained. Brief information is given about the proposed modifications for the model. Finally, sampling assumptions and determination errors, which are one of the assumptions of SEM, are presented. It is hoped that this study would be a useful resource for researchers and academicians.

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# SECTION V

# OCCUPATIONAL ETHICAL SENSITIVITY, MARKET EFFICIENCY, AND INNOVATION STRATEGIES

# 21

# COMPARISON OF THE ETHICAL SENSITIVITY LEVELS OF PROFESSIONAL ACCOUNTANTS AND ACCOUNTING ACADEMICIANS

*Utku ŞENDURUR*[1]

## 1. Introduction

This study investigates and compares the ethical sensitivity levels of professional accountants and accounting academicians regarding earnings management. Ethical sensitivity is one's realization that an ethical argument exists. In this respect, an ethical argument exists when an individual's behaviors, when freely executed, may harm or benefit others (Jones, 1991). There are ethical rules in accounting profession as in other professions. Some of these rules have been enacted within the legal framework, and some of them have been converted into written rules by professional organizations.

Professional accountants and accounting academicians are both people who have taken accounting education before. But then, professional accountants choose accounting as a profession; accounting academicians choose to provide accounting education. There is a big difference between these two actors. Professional accountants must be bound up with both the firm and ethical codes while doing their professions. On the contrary, because accounting academicians do not work in a firm, they do not have obligations such as commitment to the firm while doing their

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professions. They are only bound to ethical codes. It would be wrong to expect that anyone who knows, accepts and values ethical rules will always follow these rules. During the implementation of the code of ethics, the psychological and economic factors which brought about by the loyalty to the firm can sometimes outweigh the violations of these rules. For example, it is possible that an accountant may ignore or experience a dilemma with the concern of losing the client, even though she/he knows that the documents submitted to her/him by the client do not reflect the truth. Hence, it is very substantial to evaluate the ethical sensitivity levels of professional accountants.

There are plenty of researches on how people make ethical decisions and judgments in accounting ethics literature like Ponemon (1992), Lampe and Finn (1992), Shaub and Lawrence (1996), Cohen et al. (1996) and Thorne (2000). Fiolleau and Kaplan (2017) add up to literature by investigating ethical sensitivity in the context of earnings management. Merchant and Rockness (1994) identify earnings management as one of the most crucial ethical arguments that professional accountants face. Prior researches have not investigated ethical sensitivity regarding earnings management up to Fiolleau and Kaplan (2017) and still there is no study similar to Fiolleau and Kaplan (2017) in Turkey. Therefore, this study contributes to the literature by providing proof of one's ability to realize ethical arguments regarding earnings management in Turkey. This study is designed with inspiration from Fiolleau and Kaplan's (2017) study. I have changed one of the independent variables ( variable students to variable academicians) since academicians experience and their accounting knowledge is better than students in terms of comprehending earnings management cases which are asked to evaluate ethical sensitivity levels in this study.

## 2. Theoretical Background and Hypothesis Development

Earnings management is the activity of manipulating accounting numbers to change the firm performance to meet organizational goals (Mulford &

Comiskey, 1996). Some of the firm managers accept that they use earnings management to attain earnings expectations (Graham, Harvey, & Rajgopal, 2005). These manipulation activities in earnings management raise ethical concerns. Prior studies provide certain proofs to these concerns like Merchant and Rockness (1994), Kaplan (2001), Elias (2002), Shafer and Wang (2011) and Johnson et al. (2012) but none of them have investigated ethical sensitivity (Fiolleau & Kaplan, 2017).

Ethical sensitivity is the awareness of moral values or one's own roles and responsibilities in a situation that is full of contradictions (Kahriman & Çalık Yeşilçiçek, 2017). Studies on ethical sensitivity in accounting are limited (Fiolleau & Kaplan, 2017). Shaub et al. (1993) and Jones et al. (2003) have studies on auditors' ethical sensitivity. Butterfield et al (2000) focus on ethical sensitivity of practitioners and Fleming et al (2009) focus on ethical sensitivity of accounting students in their studies. In recent years some researchers like Jordan (2009), Hannah et al. (2011), Palazzo et al. (2012) and Sparks (2015) have studies about identifying ethical arguments (Fiolleau & Kaplan, 2017).

Professional accountants are trained on ethical rules during their education. But they must also meet the firm's business expectations when they begin their professional career. On the contrary, accounting academicians do not have obligations such as commitment to the firm's commercial expectations. Also accounting academicians' knowledge is up to date and reinforced. These arguments bring about the following hypothesis (Fiolleau & Kaplan, 2017).

*"**H1:** Accounting academicians'ethical sensitivity will be higher than the professional accountants"*

Firm's award structure is playing a very crucial role in ethical decision making (Jones T. M., 1991; Fiolleau & Kaplan, 2017; Ferrell, Gresham, & Fraedrich, 1989; Trevino, Butterfield, & McCabe, 1998). The award structure of the firms can be in a variety of dimensions. But in this study, I limit this to a narrow award structure that focuses on only the financial performance of the firms and broad award structure which focuses on the both financial and non-financial performance of the firms as Fiolleau and Kaplan (2017) did. Individuals focusing only on financial performance, in firms with a narrow award structure, can ignore ethical codes to achieve their and firm's commercial goals. These arguments bring about the next hypothesis (Fiolleau & Kaplan, 2017).

*"**H2:** Ethical sensitivity will be higher for those whose firms have broad award structure than it will be for those whose firms have narrow award structure"*

Higher ethical sensitivity is expected while a firm has a broad award structure. I expect the difference to be higher for professional accountants than for accounting academicians. As mentioned above, accounting academicians do not have obligations such as commitment to the firm while doing their professions. They are only bound to ethical codes. Therefore, it is likely that accounting academicians will remain indifferent to the award structure and will tend to have a comparatively broad focus of consideration when making an accounting decision. This argument leads to the last hypothesis (Fiolleau & Kaplan, 2017).

*"**H3:** The difference in ethical sensitivity between those whose company reward structure is based on broad goals and those whose company reward structure is based on narrow goals will be greater for the professional accountants than it will be for the accounting academicians"*

## 3. Methodology

Following Fiolleau and Kaplan's (2017), I have changed one of the independent variables ( variable students to variable academicians), because the earning management cases in this study is hard to understand for students and academicians experience and accounting knowledge is better than students to perceive earnings management cases which are asked to evaluate ethical sensitivity levels in this study.

## Data and Variables

The sample of this study consists of 146 Turkish professional accountants and accounting academicians which were chosen randomly from Turkey's seven regions. An experiment is conducted in which participants are presented with a case about a firm finalizing year-end financial statements. Participants are asked to evaluate 4 different scenarios that could be used to meet the firms' earnings targets. Also firms are divided into two groups in terms of their award strategies such as narrow and broad award structure.

There are two independent variables and a dependent variable in this study. The first independent variable is *participant type*. One of the participant types is professional accountants and the other is accounting academicians. Professional accountants are accountants who choose accounting as a profession. Accounting academicians are also accountants but they choose to provide accounting education. The second independent variable is the firm's *award structure*. There is a narrow award structure that focuses only financial performance of the firms and a broad award structure that focuses both financial and non-financial performance of the firms. The dependent variable of this study is *ethical sensitivity* measured by a score analysis.

## Research Design and Task Description

In this study, a case study was given to participants to measure ethical sensitivity. The scenario of the case study is as follows:

*"Earnings per share (EPS) estimated at the beginning of the accounting period is 5 Turkish Liras (TL). The firm is closed to its year-end and the managers of the firm want to meet this forecast at the end of the year"*

Participants are asked to evaluate four EPS scenarios that could be used to achieve the firm's forecasted EPS (Cohen, Pant, & Sharp, 2000; Moehrle & Reynolds, 2005; Merchant & Rockness, 1994; Fiolleau & Kaplan, 2017). The four different scenarios are shown below:

1. Resuming a project that was canceled because it was so close to the break-even point but increased earnings per share by 5 TL.
2. Making a new pension fund estimation that increases expected earnings per share by 5 TL.
3. Increasing earnings per share by 5 TL by selling current year production assets to be leased back in the next year.
4. Shifting a sale from next year to the current year by reducing the price to increase the earnings per share by 5 TL

The case was pilot tested by five professional accountants and accounting students at first, but the feedback from accounting students was negative. That is, students could not understand the case properly and found it difficult. Because of that I have changed one of the participant types, accounting students to accounting academicians. Pilot test participants who score the sample case find the case as understandable, realistic and not difficult. Table 1 shows the results of how comprehensible, difficult and realistic the participants evaluate the case.

**Table-1:** *Participants Rates to Case Study*

| | **Professional Accountants** | **Accounting Academicians** |
|---|---|---|
| The understandability of the case study (0-100) | 78 | 82 |
| The difficulty level of the case study (0-100) | 53 | 47 |
| The reality level of the case study (0-100) | 83 | 87 |

Participants are asked a considerable amount of questions about their decisions regarding EPS scenarios. In this study, three levels of questions are used to get more extensive answers from participants to examine their decisions about EPS scenarios (Fiolleau & Kaplan, 2017). Participants are asked to list crucial issues they took into consideration before making their decisions *(1st level question).* Then, participants are asked to list positive and negative factors related to their decisions *(2nd level question).* Finally, participants are asked to list ethical factors related to their decisions. *(3rd level question)*. The first level of questions contain no ethical arguments. The second level of questions contain ethical arguments but not asked directly. The third level of questions are directly related to ethical arguments.

The ethical sensitivity scores are calculated according to a number of issues that participants mentioned per level. Issues mentioned by participants in the first level of questions are multiplied by 3, second level of questions are by 2 and third level of questions by 1. The ethical sensitivity score is the sum of the weighted scores (Fiolleau & Kaplan, 2017).

## 4. Analysis and Results

Descriptive statistics are detailed in Table-2

**Table-2:** *Descriptive Statistics*

| *Variables* | **Broad award structure** | | **Narrow award structure** | |
|---|---|---|---|---|
| | Professional accountants | Accounting academicians | Professional accountants | Accounting academicians |
| *Number of observations* | 34 | 40 | 33 | 39 |
| *Male* | 27 | 23 | 26 | 21 |
| *Female* | 7 | 17 | 7 | 17 |
| *Mean of accounting experience (years)* | 11 | 12 | 15 | 17 |

As shown in Table-2, there are 146 participants including 67 professional accountants and 79 accounting academicians. Unfortunately, the number of female participants is low. In this study, all participants have more than 10 years of accounting experience which shows us that their accounting knowledge is adequate.

Table-3 reports the ethical sensitivity scores of participants. As shown, mean ethical sensitivity scores are higher for accounting academicians (m=8.86) compared to professional accountants (m=6.59); broad award structure (m=8.63) compared to narrow award structure (m=6.99). Also, the range in ethical sensitivity scores between award structures is bigger for professional accountants (mean change of professional accountants=7.71-5.45=2.26, mean change of accounting academicians=9.42-8.30=1.12, 2.26>1.12).

**Table-3:** *Ethical Sensitivity Scores*

| **Firm award structure** | **Participant type** | **Number** | **Mean** |
|---|---|---|---|
| Broad | Professional accountants | 34 | 7.71 |
|  | Accounting academicians | 40 | 9.42 |
|  | Total | 64 | 8.63 |
| Narrow | Professional accountants | 33 | 5.45 |
|  | Accounting academicians | 39 | 8.30 |
|  | Total | 62 | 6.99 |
| Total | Professional accountants | 67 | 6.59 |
|  | Accounting academicians | 79 | 8.86 |
|  | Total | 146 | 7.81 |

I use a t-test if there is significant difference between the groups of variables which are participant type (professional accountants versus accounting academician), award structure (broad versus narrow) and firm award structure versus participant type regarding ethical sensitivity scores. Table-4 reports the t-test results.

**Table-4:** *T-test Results*

| **Variables** | **T-test (p-value)** |
|---|---|
| Participant type | 0.00* |
| Firm award structure | 0.03* |
| Firm award structure versus participant type | 0.27** |

*Note: The test was conducted at the 0.05 significance level. The values shown in the table are significance levels. "*" means there is a significant difference between groups and "**" means there is no significant difference between groups*

As shown in Table-4, there is a significant difference between ethical sensitivity scores for professional accountants and accounting academicians.

Thus **H1** is accepted. Also, there is a significant difference between ethical sensitivity scores for firms' broad and narrow award structure. **H2** is also accepted. On the contrary, there is no significant difference between ethical sensitivity scores for firm award structure versus participant type. Thus **H3** is rejected.

## 5. Discussion And Limitations

This study is conducted to test 3 hypotheses. The first hypothesis estimates that the ethical sensitivity of accounting academicians will be higher for professional accountants. When establishing this hypothesis, I assumed that professional accountants must be bound up with both the firm and ethical codes while doing their professions. On the contrary, because accounting academicians do not work in a firm, they do not have obligations such as commitment to the firm while doing their professions. Thus, when a professional accountant encountering an earnings management scenario, I expect her/him to not to be sensitive to ethical issues due to his/her commitment to the firm. Opposite to Fiolleau and Kaplan (2017), results provide support for **H1.**

The second hypothesis estimates that ethical sensitivity will be higher for those whose firm award structure is broad rather than narrow. Individuals focusing only on financial performance, in firms with a narrow award structure, can ignore ethical codes to achieve their and firm's commercial goals. Results support **H2**, in line with Fiolleau and Kaplan (2017).

The third hypothesis estimates that the difference in ethical sensitivity scores for broad and narrow award structures is lower for accounting academicians than it is for professional accountants. Although the difference which is mentioned above is large for professional accountants than accounting academicians, it is not statistically significant. Results do not provide support for **H3** in line with Fiolleau and Kaplan (2017).

Prior researches have not investigated ethical sensitivity regarding to earnings management up to Fiolleau and Kaplan (2017) and still there is no study similar to Fiolleau and Kaplan (2017) in Turkey. Therefore, this study's contribution is to provide proof for one's ability to realize ethical arguments regarding earnings management in Turkey.

The first limitation of the study is the time constraint. Because this study should be completed in a certain time period, no more detailed analysis could be implemented. Due to the time limit of the study, only a t-test is applied. In further studies, additional methods like regression might be conducted. The second limitation of the study is the type of variables. In line with the literature, 3 variables are used including one contextual variable firm award structure in the study. Other contextual variables may also play a role to describe ethical arguments. In further studies, additional contextual variables might be used to describe ethical arguments. Third, this study focuses on only earnings management. Further studies may investigate other ethically related firm decisions. Finally, according to Dhaliwal et al. (2011) and Taneja et al. (2011) corporate social responsibility is becoming main goal of the firms. Hence, I use corporate social responsibility in broad award structure following Fiolleau and Kaplan (2017. Further studies might benefit from other non-financial goals together with corporate social responsibility.

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# 22

# MARKET POWER AND IMPLICATIONS FOR COFFEE MARKET IN TURKEY

*Onur DEMİREL[1] Selim Adem HATIRLI[2]*

## Coffee as a Global Commodity

As a preferable beverage, the major source of caffeine and a daily routine, coffee is world's second most traded commodity after crude oil with an export value of nearly 20 billion USD. As a whole coffee market creates a retail market of 100 billion USD and employment opportunities for 125 million people (Menke, 2018). Almost all of the coffee producers live in equatorial developing countries and 67-80% of the coffee producing farms are small-sized (Voora, Bermudez & Larrea, 2019, p. 1). When the global coffee production is examined it can be seen that it has an upward trend for over 50 years and accomplished a 70% increase between 1990 and 2017. Brazil has been the leading country in terms of coffee production for over 150 years and as of 2018 its production is almost 63 million bags of 60 kg (almost 3.8 million tons). Vietnam, Colombia and Indonesia follow Brazil with outputs of 31.2, 13.9 and 9.4 million bags, respectively (see Table 1). These 4 countries account for 68.9% of global production while top 8 countries produce 83.5%.

On the consumption side of the market, an upward tendency can also be observed. In the last 10 years coffee consumption increased by 2.1% annually and reached to 165.4 million bags (of 60 kg) as of 2018 and due

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to the decrease in global economic growth it is expected to be 167.9 million bags (1.5% increase) in 2019. In terms of regions Europe ranks first by far (as of 2018 54 million bags). Asia & Oceania and North America follow with consumption values of 37.8 million and 30.9 million bags, respectively (International Coffee Organization (ICO), 2019a, pp. 5, 7). USA, Germany and Japan are the top 3 countries in coffee consumption. These statistics can also be monitored from per capita coffee consumption. As of 2016 Finland (12 kg), Norway (9.9 kg), Iceland (9 kg), Denmark (8.7 kg), Netherlands (8.4 kg), Sweden (8.2 kg), Switzerland (7.9 kg), Belgium (6.8 kg), Luxemburg (6.5 kg) and Canada (6.2 kg) are the top 10 per-capita-consumers (Galland, 2019).

Due to an upward consumption trend, changing consumer preferences in favour of coffee, coffee production can merely meet the consumption. In the last 5 years (2015-2019) only in 2018 that the production is higher than consumption by 3,657 thousand bags. In 2015, 2016, 2017 and 2019 the balance is negative (-495, -18, -2,195 and -502 thousand bags) (ICO, 2019a, p. 7).

*Table 1: Coffee Production and Export by Countries (in thousands, 60-kg bags)*

| **Countries** | **Coffee Production (2018)** | **Coffee Exports (2017)** |
|---|---:|---:|
| **Brazil** | 62,925 | 30,638 |
| **Vietnam** | 31,174 | 23,209 |
| **Colombia** | 13,858 | 12,985 |
| **Indonesia** | 9,418 | 8,198 |
| **Congo, Dem. Rep.** | 7,457 | 142 |
| **Honduras** | 7,328 | 7,341 |
| **India** | 5,325 | 6,542 |
| **Uganda** | 4,704 | 4,774 |
| **Mexico** | 4,351 | 3,057 |
| **Peru** | 4,181 | 3,946 |
| **Total (World)** | **170,205** | **117,499** |

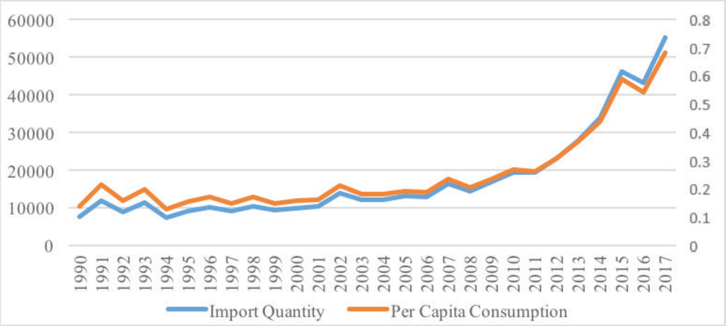
**Source:** *ICO, 2019a, 5; ICO, 2019b.*

As the producer countries and consumer countries markedly differ, the trade of coffee is indispensable. The trade of coffee can be analysed in terms of green coffee or roasted coffee. For green coffee exporting countries are the producers. Therefore production and export statistics of green coffee are similar. That is Brazil, Vietnam, Colombia and Indonesia are the top 4 countries both in terms of production and exportation. These 4 countries account for 68.9% of global production and 63.8% of global coffee exports (see Table 1). Ethiopia (3,773), Guatemala (3,383) and Nicaragua (2,473) are also significant in coffee exportation. On the other hand due to their globally known coffee brands Germany, Switzerland, Italy, France and USA are also among crucial mostly roasted coffee (re-)exporters (Workman, 2019). As of 2017 the (re-)exports of Germany, Switzerland and the USA are 5,800, 2,929 and 1,861, bags respectively (Centre for the Promotion of Imports from Developing Countries, 2019; ICO, 2019b).

In sum, as a popular beverage coffee is crucial for small producers mostly from developing world and the global actors mostly from developed countries. Therefore the sector has always been the subject of regulations and agreements and hence academic research. These policies may be made for regulating the market, for protecting small producers, for decreasing “field to table” price differences or instead to increase the profits of international wholesalers. For example International Coffee Agreement (ICA) was eliminated in 1990 for increasing the competition in the market but failed to do so and instead transferred the market power from exporting countries to international wholesalers (Gomez & Castillo, 2001, p. 2, Shepherd, 2004, pp. 2-3). Furthermore as small coffee producers are becoming poorer and poorer with the decrease in coffee prices they receive, but instead global firms lead the sector (Charveriat, 2001; Feleke & Walters, 2005); as coffee is penetrating into daily life more and more and as the price differential between coffee bean and roasted coffee (in spite of the low value added in coffee market) is quite high. Besides, in most of the exporting countries international wholesalers have some degree of concentration. For example in Colombia five companies account for approximately 70% of all private sector exports. In USA five roasters account for 80% of the market, while the same figure is 84% for Germany. Nestle, on its own, accounts for 56% of the market in Switzerland. Similar values are valid for Uganda, Guatemala, and Mexico (Shepherd, 2004, p. 4). Therefore the aforementioned characteristics of global coffee market may lead to deviations from perfect competition. For this purpose it is necessary to examine the structure of coffee market particularly in producer and importer countries.

Turkey is one of the (pure) coffee importers in the world. The import of coffee has rapidly increased in the last ten years due to an increase in demand. Chain/franchise stores has boosted coffee culture, particularly of the youngsters. Consequently coffee import value increased from 15.1 to 309 million USD in the 1990-2017 period (Statistics of the Food and Agriculture Organization of the United Nations (FAO), 2019). In the same period per capita consumption increased by 5-fold, from 0.13 kg in 1990 to 0.68 kg in 2017 (Figure 1) and even to 1.1 kg in 2018 (NTV, 2019). Compared to top consuming countries, for example Finland with 12 kg., Turkey seem to have great potential in terms of consumption increase.

*Figure 1: Green and Roasted Coffee Import and Per Capita Consumption in Turkey*



**Source:** *FAO, 2019 and Turkish Statistical Institute, 2019.*

Considering both increasing coffee consumption in Turkey who is a pure importer and highly concentrated structure of world coffee production and trade, Turkey is chosen as a case study and the market power is estimated empirically. For this purpose a structural model is developed for (green + roasted) coffee imports in order to determine whether international wholesalers apply any market power on Turkish coffee imports. The results of the study are expected to be useful for policy makers to determine trade policies.

## Coffee in Academic Research:

In the literature there are a vast number of studies on coffee market. Most of these studies are on price transmission due to the difference between producer and consumer prices and on the elimination of ICA or in other terms on the liberalisation of the market (Krivonos, 2004; Worako, van Schalkwyk, Alemu, & Ayele, 2008; Mkandya, Kilima, Lazaro, & Makindara, 2010; Mofya-Mukuka & Abdula, 2013; Gachena & Mitiku, 2014; von Cramon-Taubadel, 2017; Vollmer & von Cramon-Taubadel, 2019). Only some of these studies try to correlate the analysis with market power (Bettendorf & Verboven, 2000; Gomez & Castillo, 2001; Shepherd, 2004; Li & Saghaian, 2014; Durevall, 2016).

On the other hand the number of those studies trying to estimate the market imperfection in coffee market is relatively limited. As one of these studies Durevall (2003, p. 99) utilises Bresnahan-Lau Model (Bresnahan, 1989) that is an oligopoly model that uses aggregated industry time series data for determining the market power in roasted coffee markets in different EU countries (Austria, Denmark, Finland, Spain and Sweden) for the period 1988:1 - 2000:4. As a result no evidence of market power for any country is determined in the study. In another study Durevall (2007, pp. 721, 735) examines Swedish roasted coffee market for 1978:1 - 2002:4. In the study, with cointegration analysis he aims to determine if there is a long-run relationships between the variables and then he estimates a system of equations for demand and pricing behaviour of multinational companies. He determines some market power in the short-run but it is almost as small as in perfect competition. Yet there is no market power in the long-run.

There are other studies on import market imperfections. Two of them belong to Deodhar & Sheldon and Hatırlı, Jones, & Aktaş. Deodhar & Sheldon (1994) examine German market for banana imports. By utilising a structural econometric model proposed by Bresnahan (1982) they reveal that German banana market is not perfectly competitive but instead have the features of Cournot-Nash behaviour Hatırlı, Jones, & Aktaş (2003) develop an integrated trade and new empirical industrial organization (NEIO) model for estimating the market power in Turkish banana import market in the 1984-2000 period. As a result of the study they determine that the market is not perfectly competitive but the behaviour of the firms is much closer to price-taking than to collusion.

## A Theoretical Background for Market Power at a Glance

Dixit (1984, p. 1) constructed a theoretical framework for increasingly imperfect competitive markets in international trade. The framework has constituted a foundation for the integration of trade theory with international organisation (IO) theory. The integration is caused by the relevance of the concepts of IO, i.e. economies of scale and scope, barriers to entry, product differentiation, and marketing and trade oligopolies, with international trade theory (Dixit, 1984, pp. 1-3).

On the other hand market power is estimated with various methods. One of them is the concentration indices which was first used by Means in a report dated 1939 (Marfels, 1971, p. 486). A high value of index means high concentration, in turn means low level of competition. As there are various indices and different indices give different values, as none of these indices can be chosen as ‘best’, and as the relationship between concentration and competition is not straightforward structural and non-structural models had started to be preferred (Demirel, 2014, p. 132).

Structural models can be classified as formal and non-formal models. The formal models are Herfindahl-Hirschman Index (HHI) and k Concentration Ratio ($CR_k$). Among non-formal models the Structure-Conduct-Performance (SCP) paradigm is the most common model in the literature. The model assuming a deterministic relationship (through collusions and cooperation hypothesis) between market structure and firm behaviours. As concentration in the market increases, the market power of firms would increase, competitive conduct would decrease and the efficiency would decrease while profitability increases. However, as econometric models develop, this deterministic relationship is found to be non-robust. Another theory in the non-formal models is the Efficiency Hypothesis. Although efficiency hypothesis has the same basic assumption with SCP, the causality in the efficiency hypothesis relies on the efficiency instead of collusions. Efficiency hypothesis has been criticized for the dependant variable selection and the inability to test the effect of efficiency on the market structure. The last theory under non-formal models is the Relative Market Power Hypothesis which is commonly known as Quiet Life Hypothesis. The hypothesis is not preferred as much as SCP Paradigm and Efficiency Hypothesis (Demirel, 2014, p. 132-133).

Formal models include the conjectural variation coefficient therefore they can be thought as a transition from non-formal structural models to non-structural models. In the non-structural models cost and profit functions are simultaneously estimated through profit maximization (or cost minimization) motive. Depending on the differentiation of the basic equation, non-structural models consist of Iwata, Panzar-Rosse (P-R) and Bresnahan (-Lau) models (Demirel, 2014, p. 133). The Iwata model necessitates micro-level data that is fairly difficult to attain and lacks an exogenous variable. Therefore the model could not become widespread. The specification problem in Iwata model is solved with the Bresnahan model. Therefore Bresnahan model is preferred to Iwata model. P-R model also necessitates firm-level data and assumes a long-term equilibrium. This long-term assumption invalidates various P-R analysis[3]. Furthermore

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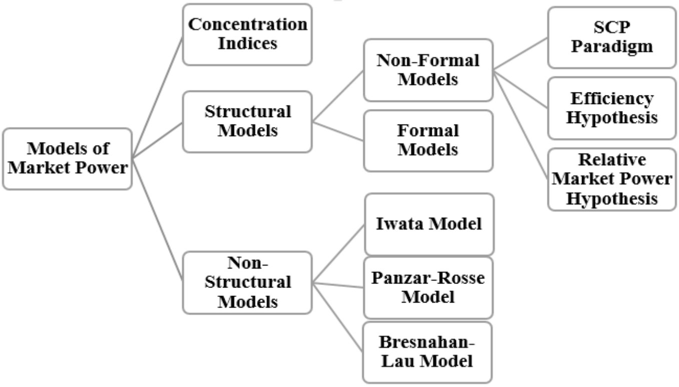
[3] For a detailed comparison of P-R and Bresnahan models please refer to Demirel, 2014, p. 124.

Bresnahan model is the only model that can integrate the output price into the estimations. For these reasons Bresnahan model is the most robust and preferred model in the literature. All the aforementioned methods for determining market power are summarised in Figure 2.

*Figure 2: Models of Market Power*


Models of Market Power
Concentration Indices
Structural Models
Non-Structural Models
Non-Formal Models
Formal Models
SCP Paradigm
Efficiency Hypothesis
Relative Market Power Hypothesis
Iwata Model
Panzar-Rosse Model
Bresnahan-Lau Model

## Market Power Model Development for Coffee Import

In the IO literature, several approaches are developed in order to measure market power. The current study uses the Bresnahan (-Lau) (1982) approach that allows analysing market power within the interaction of demand and supply. The approach estimates market power through simultaneous equations that consist of a demand equation, a marginal cost equation, and an optimality equation that represents the equilibrium of marginal revenue and marginal cost. To estimate market power of an industry or a good, Bresnahan approach uses the change in price-cost relationship between two equilibrium points.

For the development of the model, assume that an industry consist of $n$ firms where each firm produces a homogenous product $(q_1, q_2, \dots, q_n)$ . Hence, industry output is the summation of each firm's output:

$Q = \sum_{i=1}^{n} q_i$. The market demand of industry could be expressed by the following function:

$$Q_t = Q(P_t, G_t) \tag{1}$$

where $Q_t$ is the total quantity demanded, $P_t$ is the price of commodity, $G_t$ indicates a vector of exogenous variables that influence on demand such as income, the prices of complement and substitute products, and $t$ is a time subscript. From the above demand equation, inverse demand function is expressed as follows:

$$P_t = P(Q_t, G_t) \tag{2}$$

Since total revenue (TR) is defined as, $TR_t = P_t{*}Q_t$ and, perceived marginal revenue $\{MR_t(\lambda)\}$ could be expressed as:

$$MR_t(\lambda) = P_t + \lambda Q_t \left[\frac{dP_t}{dQ_t}\right] \tag{3}$$

where $\lambda$ indicates the degree of market power which is the divergence between market price and industry marginal cost. The market power parameter ($\lambda$) shows the market structure of an industry, and it ranges between 0 for perfect competition and 1 for monopoly (Shaffer, 1993, p. 51; More & Nagy, 2004, p. 18). Hence, it is essential to specify marginal cost function ($MC_t$) of an industry to measure market power, and it is specified by the following equation:

$$MC_t = MC(Q_t, W_t) \tag{4}$$

where $W_t$ is a vector of exogenous variables such as factor prices and technology.

Following the assumption that each firm is a price taker or operates in a perfectly competitive market, the equilibrium condition $P_t = MR_t = MC_t$ can be given as follows:

$$P_t = MR_t(\lambda) = MC_t$$

$$P_t + \lambda Q_t \left[\frac{dP_t}{dQ_t}\right] = MC_t \tag{5}$$

Equation 5 shows that if $MR_t(\lambda)$ equals $MC_t$, the market structure of industry is perfectly competitive. Hence, the degree of market power, $\lambda = 0$, implies that none of the firms is able to set the price above marginal cost.

The aforementioned demand and marginal cost functions are given in implicit forms. However, in order to estimate market power for an industry, an optimality equation that exemplify the equilibrium of marginal revenue and marginal cost needs to be specified. In order to estimate the model, import demand function and marginal cost function of coffee are to be specified in functional form. For this purpose, the import demand (IMPQ) function is expressed in double logarithmic form as in Equation 6.

$$\mathrm{logIMPQ}_t = \alpha_0 + \alpha_1 \mathrm{logRP}_t + \alpha_2 \mathrm{logPCI}_t + \alpha_3 \mathrm{logPCC}_t + \alpha_4 \mathrm{logT}_t + \varepsilon_{1t} \qquad (6)$$

where $IMPQ_t$ is the coffee import quantity is a function of real retail price of coffee ($RP_t$), per capita income ($PCI_t$), per capita coffee consumption ($PCC_t$) and time trend ($T_t$) variables. $\varepsilon_{1t}$ is the error term that is normally distributed with mean $\mu$ and variance $\sigma^2$.

Marginal cost ($MC_t$) function is assumed to be a function of coffee import price ($IMPP_t$), coffee import price dummy ($IMPPD_t$) and time trend ($T_t$) variables and given below:

$$\mathrm{logMC}_t = \beta_0 + \beta_1 \mathrm{logIMPP}_t + \beta_2 \mathrm{IMPPD}_t + \beta_3 \mathrm{logT}_t \qquad (7)$$

After substituting Equation 7 into Equation 5, that is the profit maximizing condition, and rearranging terms, the following optimality equation is derived:

$$\mathrm{logRP}_t = \beta_0 + \beta_1 \mathrm{logIMPP}_t + \beta_2 \mathrm{IMPPD}_t + \beta_3 \mathrm{logT}_t + \beta_4 \mathrm{logIMPQ}_t + \varepsilon_{2t} \qquad (8)$$

where $\beta_4 = -\lambda[dRP_t/dIMPQ_t]$ and $\varepsilon_{2t}$ is the error term that is normally distributed with mean $\mu$ and variance $\sigma^2$.

Taking the derivative of with respect to $IMPQ_t$ in inverse form of Equation 6, $[dRP_t/dIMPQ_t] = 1/\alpha_1$ is derived. Further, $1/\alpha_1$ is substituted for $[dRP_t/dIMPQ_t]$ into $\beta_4 = -\lambda[dRP_t/dIMPQ_t]$, hence the market power parameter,

$\lambda$, is derived as: $\lambda = -\beta_4 * \alpha_1$. In order to estimate the market power parameter, equation 6 and 8 are estimated simultaneously. In Bresnahan model, one more variable, $P_tG_t$, is added into demand function in order to avoid identification problem. Since marginal cost is assumed to be constant in the current study, there is no identification problem.

In the study annual data for 1994-2016 period is used in order to estimate the market power in Turkish coffee market. The data for coffee import quantity (IMPQ) is attained from the International Trade Statistics Database of the United Nations (n.d.) (for 1994-1999) and from Turkish Statistical Institute (n.d.) (for 2000-2016). The retail price data (in Turkish Liras) and consumer price index (2010=100) are attained from Turkish Statistical Institute. Retail price is deflated with consumer price index and then converted to USD with exchange rate data attained from Exchange Rate Database of http://paracevirici.com/ (n.d.) and the values of real retail price (RP) are attained. Adjusted net national income per capita (PCI) is attained from World Development Indicators DataBank of the World Bank. Per capita coffee consumption (PCC) is calculated with [(Coffee Import Quantity – Coffee Export Quantity)/Population]. Coffee export quantity is also attained from the International Trade Statistics Database of the United Nations (for 1994-1999) and from Turkish Statistical Institute (for 2000-2016). The population data on the other hand is attained from World Development Indicators DataBank of the World Bank. Real coffee import price (IMPP) is calculated through first finding import price by dividing coffee import value with import quantity; and then deflated the result with dividing it to import price index. All the import value, import quantity and import price index data are attained from Turkish Statistical Institute. In addition to the above variables, since import price shows crucial fluctuations in some years of the examined period, a dummy variable for import price (IMPPD) is included in the model. Also, a time trend variable is included in the marginal cost function as it reflects changes in marginal cost of coffee that might arise from the changes in technological development and the improvements in production process. Time trend variable is also utilised in Deodhar &

Sheldon (1994), and Hatırlı, Jones and Aktaş (2003). All the abbreviations, units and the descriptions of the variables are given in Table 2.

*Table 2: Variables Used in the Model*

| **Variables*** | **Descriptions for the variables** |
|---|---|
| IMPQ | Coffee Import Quantity (tons) |
| RP | Real Retail Price ($/kg) |
| PCI | Adjusted net national income per capita (constant 2010, $) |
| PCC | Per Capita Coffee Consumption (kg) |
| IMPP | Real Coffee Import Price ($/ton) |
| T | Time Trend |
| IMPPD | Import Price Dummy Variable (0 for 1996, 2002 and 2014; 1 for other years ) |

** All the variables except for IMPPD are in log form.*

## Empirical Results

All the variables in the study are tested for stationarity using the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) test statistics with constant and trend. The results of the unit root tests are given in Table 3 and accordingly all variables are stationary in the second difference at 1% significance level.

*Table 3. Results of Unit Root Test*

| **LEVEL** | **ADF** | | **PP** | |
|---|---|---|---|---|
| | **Constant** | **Constant+Trend** | **Constant** | **Constant+Trend** |
| logIMPQ | 2.724 (1.000) | -0.380 (0.982) | 0.481 (0.982) | -1.740 (0.703) |
| logRP | -2.101 (0.2460 | -1.470 (0.812) | -3.340 (0.023)* | -1.310 (0.862) |
| logPCI | -0.471 (0.881) | -2.568 (0.295) | -0.471 (0.881) | -2.669 (0.256) |
| logPCC | 0.843 (0.992) | 0.783 (0.953) | 0.179 (0.965) | -1.793 (0.678) |
| logT | -13.549 (0.000)* | -18.585 (0.000)* | -8.338 (0.000)* | -15.232 (0.000)* |
| logIMPP | -1.621 (0.458) | -1.593 (0.767) | -1.854 (0.347) | -1.834 (0.658) |

| **1st DIF.** | **ADF** | | **PP** | |
|---|---|---|---|---|
| | **Constant** | **Constant+Trend** | **Constant** | **Constant+Trend** |
| logIMPQ | -9.311 (0.000)* | -11.794 (0.000)* | -8.638 (0.000)* | -26.637 (0.000)* |
| logRP | -2.109 (0.242) | -2.548 (0.304) | -2.046 (0.266) | -2.548 (0.304) |
| logPCI | -4.931 (0.001)* | -4.810 (0.004)* | -4.931 (0.000)* | -4.810 (0.004)* |
| logPCC | -6.359 (0.000)* | -6.495 (0.000)* | -6.342 (0.000)* | -6.472 (0.000)* |
| logT | -16.070 (0.000)* | -21.904 (0.000)* | -14.057 (0.000)* | -23.306 (0.000)* |
| logIMPP | -3.829 (0.007)* | -3.757 (0.036)** | -3.829 (0.007)* | -3.757 (0.036)** |
| **2nd DIF.** | **ADF** | | **PP** | |
| | **Constant** | **Constant+Trend** | **Constant** | **Constant+Trend** |
| logIMPQ | -6.497 (0.000)* | -6.320 (0.000)* | -44.923 (0.000)* | -43.897 (0.000)* |
| logRP | -5.973 (0.000)* | -5.895 (0.000)* | -6.301 (0.000)* | -6.222 (0.000)* |
| logPCI | -8.074 (0.000)* | -7.878 (0.000)* | -10.745 (0.000)* | -10.442 (0.000)* |
| logPCC | -5.398 (0.000)* | -5.444 (0.002)* | -19.515 (0.000)* | -17.818 (0.000)* |
| logT | -19.388 (0.000)* | -25.905 (0.000)* | -25.902 (0.000)* | -37.417 (0.000)* |
| logIMPP | -5.316 (0.000)* | -5.182 (0.001)* | -13.732 (0.000)* | -13.409 (0.000)* |

**Note:** *The lag length is determined by the Akaike Info Criterion (AIC).*
**, ** and *** indicate that the values are statistically significant at 1%, 5% and 10%.*

In the study market power in Turkish coffee market is to be found with the simultaneous estimation of Equations 6 and 8. Therefore the simultaneity of the equation systems is tested using Hausman Model Establishment Test (Hausman, 1976; Gujarati, 1999). According to the results of the Hausman Test, it is found that the equation systems are simultaneous at 1% level of significance. Besides, variables included in the equation systems are analysed using Hausman Externality Test in order to detect if they are either endogenous variables or exogenous variables and it is revealed that error parameters of the coffee import and optimality equations systems are endogenous at 1% level of significance. Then, the state of determination of each equation in the simultaneous equation system is analysed and it is decided that two equation systems in the study are determined excessively. Therefore, the market power of coffee imports is estimated from simultaneous equation systems using the methods of two-stage least squares (2SLS). Three-stage-least-squares (3SLS) is also estimated but as no significant improvement is attained with 3SLS, 2SLS method is preferred. The model is estimated with EViews 9.1 and Shazam software packages and the results of 2SLS analysis are given in Table 4.

When 2SLS results are examined, the coefficients of determination of import and optimality equation systems are 0.92 and 0.99, respectively. Since time series data is used in the model, autocorrelation should be tested. The auto-correlation problem is analysed by the Durbin-Watson (dw) and Von-Neumann (vn) tests and according to the test results there is no auto-correlation problem (dw: 1.6047 and 1.5194; vn: 1.6744 and 1.5855). In addition, there is no problem of multiple linear connections in the equations of import and optimality.

All variables in two models, except for IMPPD (level of significance 5%), are statistically significant at 1% level of significance. According to the estimation results of the import equation; the signs of all parameters are consistent with theoretical expectations. Since double logarithmic mathematical pattern is used in the study, the estimated coefficients represent elasticities. Based on the estimation results the price elasticity of coffee import is -0.208, which implies that 1% increase in the coffee retail price would cause a 0.208% decrease in coffee imports. As price elasticity of coffee import has a value between 0 and 1, it is inelastic. Another determinant of the coffee import function is the level of per capita income. The income elasticity of coffee imports is about 2.046. As income elasticity of coffee import is greater than 1, coffee is found to be a luxury good. The consumption elasticity of coffee imports is 1.249. A 1% increase in per capita coffee consumption would increase coffee imports by 1.249% which is coherent with the theoretical expectation.

When the optimality equation is analysed, real retail price (RP) is positively affected by real coffee import price (IMPP) and a 1% increase in real coffee import price would increase real retail price by 1.542%. The import price dummy variable (IMPPD) negatively affects real retail price. Time trend negatively affects real retail price. The real retail price is positively affected by the import quantity (IMPQ). Its elasticity is about 1.292.

*Table 4. Two-Stage Least Squares (2SLS) Method Estimation Results*

| **Import Equation** | | | |
|---|---|---|---|
| | **Coefficient** | **t-statistic** | **p-value** |
| Constant | -4.881 | -1.703 | 0.089*** |
| logRP | -0.208 | -4.132 | 0.000* |
| logPCI | 2.046 | 6.216 | 0.000* |
| logPCC | 1.249 | 7.756 | 0.000* |
| logT | -1.261 | -5.645 | 0.000* |
| R-square | 0.9204 | | |
| Durbin-Watson stat | 1.6047 | | |
| Von-Neumann stat | 1.6744 | | |
| RHO | 0.1920 | | |
| **Optimality Equation** | | | |
| | **Coefficient** | **t-statistic** | **p-value** |
| Constant | -14.621 | -8.089 | 0.000* |
| logIMPP | 1.542 | 11.36 | 0.000* |
| IMPPD | -0.340 | -2.400 | 0.016** |
| logT | -3.451 | -31.14 | 0.000* |
| logIMPQ | 1.292 | 6.335 | 0.000* |
| R-square | 0.9889 | | |
| Durbin-Watson stat | 1.5194 | | |
| Von-Neumann stat | 1.5855 | | |
| RHO | 0.1837 | | |

**Note:** **, ** and *** indicate that the values are statistically significant at 1%, 5% and 10%.*

In the simultaneous system, the parameters of market power in the Turkish coffee import market are ($\alpha_1 = -0.208$) and ($\beta_4 = 1.292$) as shown in Table 4 and both of these parameters are statistically significant at 1% level of significance. Therefore the market power parameter in the study is $\lambda$ = -(-0.208) (1.292) = 0.269 that is coherent with theoretical expectations as theoretically $\lambda$ should be positive and should have a value between 0 and 1. As aforementioned 0 represents a perfectly competitive market while 1 represents a monopolistic market. Therefore the estimated

$\lambda$ value (0.269) reveals that Turkish coffee import market performs under imperfect competition and the value is closer to perfect competition than to monopoly but still it is obvious that when exporting coffee to Turkey, coffee exporters use their market power to some extent.

## Discussion for Turkish Coffee Import

Coffee consumption in Turkey is completely dependent on imports due to the equatorial nature of production. Coffee imports are made from a concentrated market that is mainly controlled by few international wholesalers. In order to determine whether these wholesalers have market power and utilise it, an empirical model is developed for Turkish coffee imports between 1994 and 2016. The results of the model reveal that the market certainly deviates from perfect competition and displays a certain amount of oligopolistic behaviour. It is also determined that import quantity depends on retail price, per capita income, per capita coffee consumption and time trend that probably implies the change in consumption habits in favour of coffee. According to income elasticity coffee consumption is found to be luxury. On the other hand retail price depends on import price, time trend and import quantity.

In sum policy makers should recognise that as coffee import deviates from perfect competition, the import price is higher than competitive price level and therefore the price may be decreased through some global policies to be applied by international regulations of global organisations.

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# 23

# DETERMINATION OF INNOVATION STRATEGIES AND BASIC COMPETITION STRATEGIES OF LARGE FACTORING COMPANIES IN ISTANBUL

*Hasan BARDAKÇİ*[1]

## Introduction

Due to the necessity of producing different and new ones in order to survive in the global competitive environment, the change in the competitive environment has increased the interest of the enterprises to innovations and enabled them to develop new strategies. To be able to compete with big companies and enterprises that benefit from scale economy; Being small and flexible, being able to adapt quickly to innovations and seeing changes in customer preferences quickly, they are not far from small-scale companies, but they are trying to continue their competition with other major competitors in the race.SMEs, which are trying to be rivals to large-scale enterprises, have started to closely follow the environment that will make improvements in their products, processes, marketing techniques and organizational structures in order to meet customer needs. They are also developing basic competition strategies. The aim of this study was to determine the particular type of business in Turkey more unreviewed a factoring company as innovation and competitiveness strategy and has seen preliminary examination. As a result, general innovation strategies and competition strategies of factoring firms were determined and these strategies were interpreted.

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## 1. Innovation Strategies

Innovation can not be left to chance in the competitive and rapidly changing environment of the present period, so organizations need a clear strategy to ensure the realization of innovation activities (Saleh and Tang, 1993).

There are many studies to characterize and systematize innovation strategies. Deciding whether to be a leader or follower in innovation management is a critical strategic decision (Christensen, 1997).

There are many alternative strategies that companies can follow, depending on their resources and objectives (Trott, 2005). There are different classifications in the literature regarding innovation strategies.

Freeman and Engel (2007) defined six alternative innovation strategies. This strategy classification is based on the timing and speed of the firm's entry into new technological fields (Hadjimanolis and Dickson, 2000: 63).

### 1.1. Aggressive Innovation Strategies

The aggressive innovation strategy means being ahead of the competition and technology and market leader in creating new products. This strategy is based on either a special relationship with the world science-technology system or an independent strong R & D or faster exploitation of new opportunities. Therefore, the company's R & D unit plays a key role in this strategy. A firm following an aggressive strategy will be heavily researched and will therefore depend heavily on internal R & D activities. (Freeman and Engel, 2007) A successful aggressive innovation strategy requires generating concrete value for customers, improving business processes and leading results that create new opportunities. In addition, a successful aggressive innovation strategy will require the realization and commercialization of all ideas, from the smallest recovery movement to a new invention that will shake the world.

## 1.2. Defensive Innovation Strategies

What is important in defensive strategy is not to develop a completely new product or a new process, but to make full use of it by improving an existing product or process (İraz, 2010).

Companies that follow the defensive strategy do not want to be the first to enter the market, but they do not want to stay behind the wave of technological change. Although this strategy does not want to take the high risk of being the first in innovation, they want to benefit from the mistakes of early innovators and the opening of the market (Freeman and Engel, 2007).

A defensive strategy does not mean that there is no R & D, on the contrary, research can be as intense as the aggressive strategy. The difference between the two strategies is the nature and timing of innovation (Freeman and Engel, 2007).

The defensive innovator can also be an information intensive firm by running a high rate of scientific and technical personnel, as well as the aggressive innovator. The defensive innovator can wait until he sees how market development is going and what pioneers have made mistakes (Freeman and Engel, 2007).

## 1.3. Counterfeit Innovation Strategies

Companies that adopt a counterfeit innovation strategy are content to follow the leading companies in the market. With this strategy, businesses do not have to endure high R & D costs while working with low labor, material, energy and investment costs. The most important problems encountered in this strategy are that it is difficult to obtain information about the changes in the market, the choice of innovation to be imitated is difficult and the difficulties in identifying the enterprises to receive know-how (İraz, 2010). Because, companies run the risk of adapting weak performance innovations or rejecting innovations that have the potential to strengthen firm performance (Brockman and Morgan, 1999).

In this context, information is a very important function for the selection of the products to be imitated and the selection of the know-how company (Freeman and Engel, 2007). According to Scumpeter, if imitators develop on original innovation, they can be more successful in their goals and become innovators themselves. Because, an important innovation tends to be a guide for other innovations.

## 1.4. Traditional Innovation Strategies

In this strategy, companies make small changes in their products when necessary. In the traditional strategy, the firm also sees no reason for the change unless there is a change in demand in the market or difficulty in competition. A company that follows this strategy deals with design changes that are fashionable rather than technology, and sometimes this change can actually have strong effects (Freeman and Engel, 2007).

## 1.5. Dependent Innovation Strategies / No need for customization

In the dependent strategy, the entity adopts the role of the satellite or subsidiary of another powerful entity. In this strategy, if the subordinate entity does not receive a clear request from its users, it does not attempt technical change in its products. Determining the technical characteristics of the new product and the technical services related to the market is expected from the users. In this strategy, many large businesses, around the intermediate goods, parts, etc. It works with a number of satellite businesses which contract services such as manufacture. Dependent businesses are usually small and capital intensive enterprises with virtually no initiatives in product design and research and development. Fully dependent businesses, in a way, work as part of a large business or a workshop. However, they may not want to lose their formal independence with the thought of changing their situation by going to differentiation or expanding their markets in the future. Accepting the dependent business as a sub-industry organization and maintaining the customer relationship can also benefit the economic fluctuations in order to reduce the impact of economic fluctuations. Although they have poor bargaining power, they can provide sufficient profits due to low overhead and administrative costs, venture capabilities, specialized knowledge and special local superiority. Despite the prevalence of market withdrawals and those taken over by large enterprises, it is observed that such enterprises are quite established (Barutçugil, 2002).

In general, enterprises that have adopted this strategy, which acts as a supplier in the environment of large enterprises operating in industrialized countries, have lost all their initiative in design. Therefore, they do not have any research and development units (Güleş 2009).

## 1.6. Opportunity Tracking Strategy

Businesses' efforts to sustain their lives, make profits and grow lead them to implement one or more strategies. However, businesses can respond to a variety of possible situations against changing situations. These are described as opportunistic strategies. In a rapidly changing market, entrepreneurs are always able to identify new opportunities. This situation does not require R & D or complex design within the enterprise, and it can bring success by finding a significant gap in the market and providing products and services to meet consumer needs that no one thinks (Durna, 2002).

Businesses with creative entrepreneurship can see new technological opportunities and innovation opportunities that most research-intensive industries and businesses do not. The strategy of tracking opportunities is similar to military strategies that look for the weaknesses and gaps of the opposite to attack. Often it can be very difficult for one business to compete directly in the same innovation as another. Utilizing the same technology without directly confronting the weaknesses of competing businesses is a high-probability strategy (Barutçugil, 2002).

## 2. Competition Strategies

Enterprices can reach privileged advantages in four ways (Wheelen et al., 2012: 186); The enterprice may have privileged advantage from its establishment, the enterprise may have acquired its superiority from another company, the enterprise may share its superiority with another company, or may have been developed by the enterprise over the years.

Strategy means doing trade-offs in competition. The essence of the strategy is to choose what not to do. Trade off is used to mean giving up something to get something. Without trade-off, there would be no need for a strategy, and every good idea could be imitated immediately. In addition, performance was entirely based on operational efficiency (Porter, 2013: 32). Businesses are looking for the best strategy for themselves, while competing companies and competitive strategies and strategies by monitoring counter-measures are planned. In order to be successful in competitive markets, to defeat the rival, to gain market share from them, to ensure profitability and permanence, a war-style market game is often played by letting competitors lose (Barutçugil, 2013: 247 According to Hambrick and Fredricson (2001), factors affecting the formation of competition strategy can be examined in five dimensions. These (Okumus et al., 2014: 146); fields, tools, means of creating difference, degrees and economic perspective. A lasting advantage in competition can only be achieved by recreating the business strategy. Competing in both domestic and foreign markets will depend to a large extent on the redevelopment of the strategy (Kıngır, 2007: 255). In order to provide competitive advantage, the enterprises should take into account the competitive features of the market; They can develop strategies in four different areas such as price, quality, time and diversity (Dinçer, 2013: 198). The selected competition strategies should be successfully implemented. The concept of speed as the source of competitive advantage was pioneered by the Boston Advisory Group with the concept of time-based competition (Grant et al., 2014: 175-176). Successful managers who want to cope with competitive forces; will protect the company from the pressure of five competitive powers as much as possible, will be in search of competitive approaches that will affect the competitive rules of the sector in the direction of the interests of the company and provide a strong position for the firm in the competition game (Barutçugil, 2013: 137). Some of the methods that can be used to determine the competitive positions of enterprises are as follows (Akgemci, 2013: 39); McKinsey matrix, Porter's competitive strategy (five-factor analysis), Boston portfolio consulting product portfolio matrix, product lifestyle and market / competition matrix. The competitive advantage of an enterprise depends on the value, rarity and mimicability of resources and capabilities. However, businesses should be well organized so that they can fully realize their potential and use their resources and capabilities. In other words, it should be an organized company to take advantage of the full competitive potential of its resources and capabilities (Barney et al., 2012: 99). Porter attributes the sustainability of competitive advantage to three conditions. The first is the source of superiority. The second feature is the amount of superiority resources that the enterprise possesses. The third and most important resource is continuous innovation and improvement (Porter, 1992: 50-51). If businesses aim to be one step ahead of their competitors, they should save their existing talent profile, creative functionality, mental energy and position from the effect of a conservative understanding (Kıngır, 2007: 22). An important feature in determining sustainable competitiveness is the amount of resources it possesses. Resources are anything that can be thought of as the strengths or weaknesses of the business. The most important source of sustainable competitive advantage is continuous innovation and improvement. Regardless of the size of an enterprise, it should strive to improve production quality, time and customer-oriented services. Businesses should make it difficult for their competitors to imitate themselves by making continuous innovations and improvements or they should not give their competitors time to imitate themselves (Akgemci, 2013: 180). A very effective way of sustaining competitive advantage in network-influential sectors is to capture economies of scale and scale benefits (in network-influential sectors) long before competitors (Tulga, 2015: 113). According to Porter (1985), in order to achieve sustainable competition, the profitability of a company compared to its competitors in a certain market must be above the sector average and for a long time. Porter (1985), in order to achieve sustainability, imposes obstacles that make it difficult to imitate the business strategy by its competitors and to constantly renew these obstacles. Rumelt (1984) argues that the sustainability of the company's products and resources should not be imitated. Barney (1991), on the other hand, states that an entity cannot be applied or copied by its current or potential competitors in a similar period in order to make the competition sustainable; It is necessary to implement a strategy that creates value (Okumus et al., 2014: 148) M. Porter argues that the strategy is about selecting a set of activities for which an organization will prevail over competitors to make a sustainable difference in the market. The sustainable difference may be to offer customers more value than their competitors or to offer similar value at lower prices. Porter said that the difference arises both from the selection of activities and how they are realized (Kaplan, 2014: 61). J. Harrison, an organizational resource or ability to create sustainable competitive advantage prerequisites listed as follows (Harrison, 2003: 74-75); to have value in the market that will create opportunities for an enterprise or to eliminate a threat, be unique (not present in other businesses), be difficult or costly to imitate, the existence of organizational systems that enable the use of potential, and the awareness of the superiority of the enterprise. M.Porter states that for a competitive advantage, a company with weak and strong points against its competitors may have a competitive advantage in three ways. These strategies include; low cost, differentiation and focus. Porter calls them comprehensive competition strategies. Here, the concept of scope (generic) refers to the general competitive features that will enable the business to be better than its competitors in its market area (Dinçer, 2013: 198). The five main factors that determine the competitive power are; the threat of entry is the power of suppliers and customers, the presence of sub-industry or substitute firms, being competitive competitors, becoming competitive competitors, competition and cooperation (Johnson et al., 2011: 115-122). Achieving and maintaining a competitive advantage of a business depends on the ability of a business to develop its own unique strategy that competitors cannot implement or simulate easily (Porter, 1996: 65). Competition strategies are to provide an opinion about where and how the company is compared to its competitors (Liao, 2005: 295). Pursuing only one strategy can lead to many dangers. Instead of a single strategy, more than one strategy (multi-strategy) in a study evaluating the performance of enterprises, in general, multi-strategy enterprises, superior performance was found to be (Güleş et al., 2004: 58). It can be argued that the understanding of competition strategies cannot be applied to all sectors. It can be said that the understanding of competition strategies has been developed for the industrial sectors and that there may be difficulties in application to the service sector. Both sectoral structure analysis and generic strategies seem to be more suitable for manufacturing industry sectors. In addition, competition strategies seem to be appropriate for the private sector. For the non-competitive public sector, major difficulties in applicability are inevitable. Although certain areas of the public sector are increasingly shifting to a more competitive environment and therefore competitive strategies are needed, competitive conditions are still more dominant in the private sector (Barca, 2009: 45). According to Burns and Stalker (1961), competition strategies are generally considered appropriate for undertaking a low-cost strategy. The differentiation strategy is generally associated with organic more flexible models. The condition dependency theory stated that the development of differentiation strategies generally prevails in environments characterized by a high degree of uncertainty and dynamism, and that the effective development of these strategies requires the development of an organic structure. However, a mechanistic structure that is more effective in less pronounced environments would be more appropriate to implement a low-cost strategy (Ortega et al., 2008: 140). According to J. Child (1972), managers have more discretion in choosing competitive strategies than changing organizational structure in the short term, because organizational change is slower than strategic change. V. A. According to Govindarajan (1988) and D. Miller (1988), low cost strategies are generally effective with mechanical structures and differentiation strategies with organic structures (Cortes et al., 2012: 993-1002). In the strategic management literature, four types of basic organizational strategy typologies are mentioned. These strategy typologies (Miller, 1986: 237); differentiation, cost leadership, focus and focusing on differentiation strategies. M. Porter (1986) recognizes that competitive power analysis has an impact on organizations that choose to prioritize the differentiation strategy.

## 3. Research Method and Evaluation of Findings

### 3.1. Subject of The Research

The subject of the research is Belir Determination of Innovation and Basic Competitive Strategies of Large Factoring Companies Based in Istanbul ”.

### 3.2. Purpose of The Research

Today, in order to survive in a globalizing world, companies must fulfill certain competitive conditions. In order to survive in a competitive environment, businesses have to develop their own imperfect self-capabilities and innovate in their products, services, marketing methods and, where necessary, processes.

Innovation strategies and competition strategies implemented in enterprises are of great importance for the survival and development of firms.

In this study, the legal structure of the enterprises, the size of the firm on the basis of employees, the age of the firm, the fields of activity of the enterprises and the structure of the sector in which they are located are discussed. The aim of this course is to determine the innovation strategies and basic competition strategies and to understand the future projections of the enterprises.

### 3.3. Universe and Sample

Factoring firms in the 500 public lighting platforms operating in Istanbul were determined. After determining the sample region, it was understood that there were 15 factoring firms in the sample and the managers of these 15 major factoring firms were reached. The sample selection was based on Yazıcıoğlu and Erdoğan, (2004). A total of 15 senior executives were surveyed. The confidence interval was taken as 95% and the questionnaire application was done by phone and mail.

### 3.4. Method of Research

The questionnaire developed for the application is composed of 3 sections. The first part of the questionnaire will contain questions about the company. In this section, the legal structure of the firms, the field of activity, the number of employees, the characteristics of the sector in which they operate and the age of the firms are foreseen.

The second part of the questionnaire included questions about innovation and competition strategies in firms.

In the third section, the questions about the demographic characteristics of the company representatives participating in the survey are given. Within the scope of demographic characteristics; questions about gender, age, educational background, position in the company, department of employment and working time in the company. The data obtained from the survey application were analyzed with the help of SPSS package program. Kolmogrov-Smirnov test was used to investigate the suitability of the scales to normal distribution. As a result of this test, it was obtained that the distribution conforms to the normal distribution and the normal distribution assumption condition was continued with the analyzes required. Before constructing factor structures for determining the relationships between self-efficacy and innovation, reliability analyzes of these scales were performed.

### 3.5. Limitations of Research

The research covers only the factoring firms in the Public Lighting Platform (KAP). Other businesses were not included in the research.

### 3.6. Results

Below are the findings of the demographic questions in the questionnaire applied to the managers of factoring companies. A total of eleven (11) questions were asked to determine the gender, age, education, duties in the firm, the department they work for and the duration of work in the company they work for. The obtained data are taken as a descriptive statistical analysis and shown as a single table below.

**Table 1:** *Distribution of Participants by Gender*

| **Distribution of Legal Structures of Firms** | **Answered (Frequency)** | **Percentage (%)** | **Distribution of Capital Structure of Firms** | **Answered (Frequenc)** | **Percentage (%)** |
|---|---|---|---|---|---|
| Joint Stock Company | 15 | 100,0 | Private Equity | 12 | 79 |
| Partnership | 0 | 0,0 | Foreign Partnership | 2 | 16 |
| Ltd. Sti.(Basic company) | 0 | 0,0 | Public-Owned | 1 | 5 |
| Holding | 0 | 0,0 | | | |
| Total | 15 | 100,0 | Total | 15 | 100,0 |
| **Distribution of Participants According to Working Time in the Workplace** | **Answered (Frequency)** | **Percentage (%)** | **Distribution of Participants by Departments** | **Answered (Frequency)** | **Percentage (%)** |
| Less than 1 year | 0 | 0 | Accounting | 8 | 53 |
| 1-5 years | 4 | 27 | Production | 0 | 0 |
| 5-10 years | 4 | 27 | R & D | 1 | 7 |
| 10-15 years | 4 | 27 | Management | 1 | 7 |
| More than 15 years | 3 | 19 | Marketing | 1 | 7 |
| Total | 15 | 100,0 | Quality Department | 0 | 0 |
| | | | Human resources | 4 | 26 |
| | | | Total | 15 | 100,0 |
| **Educational Status** | **Answered (Frequency)** | **Percentage (%)** | **Distributions by Gender** | **Answered (Frequency)** | **Percentage (%)** |
| University | 10 | 67 | Male | 11 | 73 |
| Masters Degree | 4 | 27 | Female | 4 | 27 |
| PhD | 1 | 6 | | | |
| Total | 15 | 100,0 | Total | 15 | 100,0 |
| **Distribution of the participants according to their duties in the company** | **Answered (Frequency)** | **Percentage (%)** | **Distribution of Participants by Age Groups** | **Answered (Frequency)** | **Percentage (%)** |

| **Distribution of Legal Structures of Firms** | **Answered (Frequency)** | **Percentage (%)** | **Distribution of Capital Structure of Firms** | **Answered (Frequenc)** | **Percentage (%)** |
|---|---|---|---|---|---|
| General Manager / Gen. Dir. Asst. | 5 | 33 | 25 years and under | 0 | 0 |
| Department Manager | 9 | 60 | 26-35 years | 1 | 7 |
| Head of Department | 0 | 0 | 36-45 years | 7 | 46 |
| Business Owner | 0 | 0 | 46-55 years | 6 | 40 |
| Manager | 1 | 7 | 56 years and over | 1 | 7 |
| Total | 15 | 100,0 | Total | 15 | 100,0 |
| **Number of years in which the enterprises are active Distributions** | **Answered (Frequency)** | **Percentage (%)** | **Number of employees of enterprises** | **Answered (Frequency)** | **Percentage (%)** |
| Between 1 and 5 years | 0 | 0 | 500 Less than | 15 | 100 |
| Between 6 and 10 years | 3 | 12 | Between 500 and 1000 | 0 | 0 |
| Between 11 and 20 years | 4 | 16 | Between 1000 and 5000 | 0 | 0 |
| Between 21 and 49 years | 8 | 72 | Between 5000 and 10.000 | 0 | 0 |
| Over than 50 year | 0 | 0 | Between 10.000 and 25.000 | 0 | 0 |
| Total | 15 | 100,0 | Total | 15 | 100,0 |
| **Sectoral Distribution of Businesses** | **Answered (Frequency)** | **Percentage (%)** | | | |
| Manufacturing sector | 0 | 0 | | | |
| Retail sector | 0 | 0 | | | |
| Services sector | 15 | 100 | | | |
| Total | 15 | 100,0 | | | |

73% (11 people) were male and 17% (4 people) were female employees.

When the age distributions in Table 1 are examined, it is seen that the majority of the participants are 46% (7 people). 40% (6 people) of the participants were in the 46-55 age range, 7% (1 person) of 56 years and over, 3.2% (9 people) were under 25 years of age.

When we examine the educational status of the participants, it is seen that the university graduates are mostly involved in the research. 26.6% of the participants are 2.1% of the graduates of the research and 1.4% of the high school graduates.

When we examine the distribution of tasks in the companies where people are located, 36.5% (103 people) are department managers and 14.2% (40 people) are general managers. Asst. Assist, 17.4% (49 people) stated that they were department chief, 0.4% (1 person9 business owner and 31.6% (89 people) were in the management position. and department managers.

According to the results of the distribution of the department, the majority of the people working in the human resources and accounting department draw attention. 2,1% work in production, 3,9% in R & D, 5,7% in marketing, 7,1% in management and 4,3% in quality department departments.

When we examine the working time of the participants, 28.7% (81 people) are 1-5 years, 27.3% (77 people) 5-10 years, 19.5% (55 people) 10-15 years, 18.1% (51 people) stated that they had been working in their workplace for more than 15 years and 6.4% (18 people) had been working for less than 1 year.

When the companies participating in the research are examined structurally, it is seen that most of them are Anonymous and company. 5% was established as a holding company, 4.3% as a limited liability company, 1% as a partnership and continues its activities in this way.

When the capital structure of the companies surveyed is examined, it is seen that the majority of the companies have private capital structure. The capital structure of 13.1% is foreign capital and the capital structure of 6.4% is public capital.

When we examine the field of activity of the companies participating in the research, 47.2% are in manufacturing sector, 8.5% are in retail sector and 44.3% are in service sector.

When the table is examined, more than half of the respondents are companies with less than 500 employees. 14.2% were between 500-1000, 12.8% were between 1000-5000, 5.7% were between 10000-25000, 4.3% were between 5000-10000 and 3.9% were It consists of companies with more than 25000 employees.

When the table regarding the activity periods of the companies participating in the research is examined, it is determined that 50.7% of the companies have been operating in the sector for 21-49 years. 21.6% of them operate between 11 and 20 years, 16% of them over 50 years, 10.6% of them operate between 6-10 years.

**Table 2:** *Distribution of firms according to innovation strategies*

| Most applied innovation strategy | Frequency | Percentage | Cumulative Percentage |
|---|---|---|---|
| **Strategy for Monitoring Opportunities** | 6 | 40 | 40 |
| **Traditional Strategy** | 6 | 40 | 80 |
| **Offensive Strategy** | 2 | 13 | 93 |
| **Defensive strategy** | 1 | 7 | 100,0 |
| **Counterfeit and dependent strategy** | 0 | 0 | 100,0 |
| **Total** | 15 | 100,0 | |

When the distribution of innovation strategies followed by companies is examined; It is seen that 44% follow opportunities strategy, 22.7% follow defensive innovation strategy, 22.3% follow traditional innovation strategies, and 10.6% follow aggressive innovation strategies.

The fact that 44% of companies follow the strategy of monitoring opportunities is generally aimed at being an innovative company, having the necessary production capacity by giving the necessary importance to R & D studies and aiming to evaluate the weak points and gaps of the leading company in the market in order to present their innovative products to the market.

**Table 3:** *Distribution of Firms According to Core Competition Strategies*

| Your main competition strategy | Frequency | Percentage | Cumulative Percentage |
|---|---|---|---|
| **Focusing on customer value** | 4 | 27 | 27 |
| **Focus on innovation and creativity** | 5 | 33 | 60 |
| **Focusing on low costs** | 1 | 7 | 67 |
| **Focus on quality** | 0 | 0 | 67 |
| **Focusing on product differentiation** | 2 | 13 | 80 |
| **Focus on skills and abilities** | 3 | 20 | 100,0 |
| **Total** | 15 | 100,0 | |

According to the results in Table 3 (28%), 5 companies stated that their main competitive strategy was innovation and creativity, 4 companies (23.8%) were customer oriented and 0 companies (0%) were quality oriented. Since the strategies of focusing on customer, innovation and creativity become the sine qua non of global competition, they make a big difference in terms of sustainable competition. The strategy that makes this difference is Basic Talent-based strategies and the number of enterprises that choose this strategy is only 3. Although there is not a sufficient number, it suggests that there is an awareness and potential about Basic Talent.

## 4.RESULT

Increasing conditions of competition are now cross-border. This has led to changes in the structure of enterprises beyond the change in consumer demand and needs. Initially, the competition was valid for the same geography and region, while globalization became the competitor of large-scale enterprises. Both small and medium-sized companies that are able to grow and change easily thanks to their highly flexible structures, and large-scale companies that better implement innovations and regulations on a global level are often confronted. This situation forces the companies to change and to develop continuously. It has become almost impossible for companies that cannot keep up with the changes brought about by this situation. While firms that can reduce their costs and seek new ways and methods can survive, companies that cannot use the conditions of globalization, innovation and time have started to disappear one by one. Particularly large-scale firms need a change in which they can turn this threat into an opportunity. Therefore, the competitiveness of companies applying innovation is also increasing.

In addition, companies' ability to innovate in their processes, products, marketing and organizational structures along with their competitiveness provides competitive advantage. Innovation is generally expressed as a reason for increasing competitiveness.

In order to increase the competitiveness they need, businesses can implement new ideas in their own processes, products, marketing activities and organizational structures. However, many strategies are used by enterprises in the implementation of innovation types. They are expressed as addictive and imitated, traditional, tracking opportunities, aggressive and defensive strategies. In this study, innovation and competition strategies are tried to be determined. The application of the study on the most powerful and competitive factoring firms of the country is aimed to be more understandable and support the literature.

As a result of the study, the following findings were obtained;

As a result of the research, it is seen that organizational and process innovation types, which are the types of innovation applied in companies, are seen more in holding, joint stock and limited companies, which is an expected result.

When the innovation strategies of the firm are examined, it is seen that there is a positive relationship between the types of innovation applied by the firms and the determination of aggressive innovation strategy in terms of single product innovation. It is seen that the companies that determine the aggressive innovation strategy give priority to product innovation practices. In addition, it is understood that the companies that determine the innovation strategy for defense give more importance to process and market innovation. There was no correlation between product innovation strategy and companies' ability to monitor opportunities.

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# 24

# MARKET REACTION TO CHANGE IN DEPOSIT INSURANCE COVERAGE- EVIDENCE FROM TURKEY

*Emre BULUT*[1]

## I. Introduction

Over the last two decades there has been an evolution on the policy of financial system development. Deposit insurance systems have become an interesting topic over the period. In order to stable the financial system, deposit insurance systems expanded around the world. Many countries set up deposit insurance systems in the 1980s and 1990s for the sake of more powerful financial infrastructure.Hence, many researchers have focused on the topic of deposit insurance and proposed different suggestion on what should be done regarding deficiencies of the deposit insurance systems and how to deal with their side effects. This paper investigates one aspect of this debate by analyzing the effect on the bank equity values of change in deposit insurance coverage by the policymakers.

There is huge literature about deposit insurance its relation to financial system stability both theoretically and empirically. On the theory side, Rolnick and Weber (1986) studied the period when there is almost no regulation on banks in the US. The period was called 'free banking era' when there happened to be bank panics and failure causing depositors to lose their money. Rolnick (1993), in his paper, mentions about the National Banking Act of 1863, which was the first action to empower the stability financial system in US. In addition, thanks to Great Depression in 1930, Federal Deposit Insurance Corporation (FDIC) in 1934 was established. The underlying model of deposit insurance comes from the seminal paper of Diamond and Dybig in 1983. In their model, the authors state that if depositors expect a bank to fail, they panic and attempt to withdraw their money leading to a bank run. The authors' model is an explanation of the interaction between bank runs and deposit insurance. In addition, Bryant (1980) posits that, when there is no deposit insurance, existence of risky assets and asymmetric information cause bank runs. He states that there is uncertainty among depositors. Hence, depositors want to know that their deposits are safe.

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On the empirical side, most of the studies worked on the US since it is the first country to set the deposit insurance system. Demirguc-Kunt and Huizinga (2004) examines the interaction of deposit insurance and market discipline. They suggest that with the existence of deposit insurance, depositors demand lower interest rates. Hence, market discipline coming from the depositors goes down causing banks to take more risks. The main finding of the paper is that the existence of deposit insurance impact market discipline negatively and banking crisis tend to decrease the market discipline. Hence, deposit insurance, originally designed to prevent bank runs, might become a factor of banking crisis. In addition, Martinez-Peria and Schmukler (2001) also study banking crisis and market discipline. Their sample consists of Mexico, Chile and Argentina from 1980s to 1990s. They ask the question of can the behavior of deposit and interest be explained by bank characteristics. In their results, they show that there is market discipline across all countries however the more banks take risk the less is deposit growth.

A couple of studies have been done to see the effects of change in minimum deposit insurance coverage change. Tsuru (2003) examines financial markets in Japan and investigates how depositors shape the market before a change in deposit coverage. Prean and Stix (2011) study the increase in deposit coverage during the crisis period. They use a survey data applied on household in Crotia. Hadad et al. (2011) studies the change in deposit policies during Indonesian crisis in 1998.

Based on the controversial literature on deposit insurance and market discipline, this paper examines one issue largely unexplored by the literature on deposit insurance. The paper studies the interaction between the deposit insurance coverage change and market reaction to this change. I focus on the experiences of the Turkey banking sector. This paper is interesting not only because I focus on a topic that is unexplored by the literature but also because the developments in Turkey and the bank level data I put together enable me to conduct a very thorough study of deposit insurance from the perspective of an emerging country.

The paper is organized as follows. In the next section, I give a brief summary of origins of deposit insurance in Turkey. Section II presents my empirical evidence and methodology, sample selection criteria and results. The final section discusses the implication of my research on deposit insurance policies.

## A- History of Deposit Insurance in Turkey

According to Gundogdu (2015), deposit insurance was legalized in Turkey in 1930. However, it was institutionalized in 1960 with the establishment of Banks Liquidation Fund. In 1983, Savings Deposit Insurance Fund was founded. It is the authority for performing deposit insurance system. In 1993, the Banking Regulation and Supervison Agency founded the legal entity of Saving Deposit and Insurance Fund. In 1994, minimum deposit coverage rate was %100 thanks to 1994 crisis. Initially, %100 coverage model was aimed to prevent bank runs but it caused moral hazard problems and the risks in banking system again increased. As a result of the increase in banking system risk, Turkey experienced 2001 crisis, which put away 50 billion USD nearly 35% of GDP at that time. Turkey changed minimum deposit insurance coverage in short periods. Generally, full coverage was applied during crisis period and limited coverage was applied in normal times.

| **Amount of insurance coverage for deposits and participation funds since 1983** | |
|---|---|
| **Term** | **Limit (TL)** |
| 07.22.1983-10.09.1986 | Up to TL 3 million |
| 10.09.1986-03.06.1992 | 100% coverage for 0-3 million, 60% coverage for 3-6 million |
| 03.06.1992-04.11.1994 | Up to 50 million ( 100% coverage for 0-25 million, 60% coverage for the remaining) |
| 04.11.1994-05.05.1994 | Up to 150 million |
| 05.05.1994-06.01.2000 | Full coverage |
| 06.01.2000-12.06.2000 | 100 billion |
| 12.06.2000-01.15.2001 | All of the liabilities of Deposit Banks |
| 07.03.2003-07.05.2004 | Full coverage |
| 07.05.2004 | 50 billion |
| 15.02.2013 | 100.000 TL |

*Source: TMSF Annual Report 2013.*

## II. The Market Reaction to Change in Deposit Insurance Coverage

## B- Sample Selection Procedure

Although there are many banks in the sector, most of them are not publicly traded. To examine the impact of deposit insurance coverage change, I collected data for those banks for which daily stock price data were publicly available and which actively traded during my estimation period. This resulted in 16 banks.

| *Table-1 –Banks that are publicly traded in BIST* |
|---|
| AKBANK |
| ALBARAKA TURK |
| ALTERNATIF |
| DENIZBANK |
| FINANSBANK |
| SEKERBANK |
| TEKSTILBANK |
| TEB |
| GARANTI |
| HALKBANK |
| IS BANKASI |
| KALKINMA |
| TSKB |
| VAKIFBANK |
| YAPIKREDI |

Table-1 shows the banks of which equities are publicly traded.

Since 1983 deposit insurance coverage has been changed eleven times, however, due to data convenience and to avoid clustering, I have included five of them to my study. In addition, in the period that I conduct my study, 6 of the banks were not traded in 1st event and 5 of the banks were not traded 2nd, 3rd, 4th events. All of the banks were traded. So, my sample size has a total of 59 banks for 5 events. Data for this study covers the period from December 1999 to March 2013. I collected the data and daily stock returns from Bloomberg. Also, I collected deposit insurance coverage change announcements from TMSF annual report 2013.

## C- Event Window Determination

The first problem to be resolved in any event study is determining when information is conveyed to the market. In my search for media news, I was not able to find any information before the announcement dates of events. So I defined TMSF announcement dates as the dates of the event. However, further research might have conducted. I determined the event window as the dates of the event centered from -20 to +20. Furthermore, based on the literature my null hypothesis is "*There is no wealth effect of deposit insurance coverage change announcements. Or, Market does not react to deposit insurance coverage change announcements*".

## D- Methodology

I followed the standard Brown and Warner event study approach in my study, I calculated residual returns for each of the 59 sample banks for a forty-day window centered on the date of the announcement. I estimated the daily expected firms' returns by using the market adjusted model:

$$A_{i,t} = R_{i,t} - R_{m,t}$$

Where $A_{i,t}$ as the excess return for security *i* at day *t*, $R_{i,t}$ is arithmetic return for security *i* at day *t* and $R_{m,t}$ is the return on BIST 100 index for day *t*.

I estimated the marked adjusted estimates from returns days -110 to -20. I limited my estimation period to 90 days to avoid clustering. Since the announcement occurs on the same day for all banks and all firms are in the same industry, I cannot assume that the residual returns are cross-sectionally independent. Therefore, I used test statistics that is based on a standard deviation estimated for the portfolio of sample banks from residual returns in the estimation period. The test statistic is the ratio of the day '0' mean excess return to its estimated standard deviation; the standard deviation is estimated from the time-series of mean excess returns. The test statistic for any event day t (in this case t = 0) is:

$$\mathbf{T = Abar_t/s}$$

Where $\mathbf{A_{i,t}}$ is firm *i*'s abnormal return, $\mathbf{Abar_t}$ is the mean (overall the companies in the sample) abnormal return on day t. **s** is the standard deviation of the $\mathbf{Abar_t}$ overall days in the estimation period.

## E- Results

Table-2 shows the average abnormal returns and t-statistics for all events between the days -10 to +10. It seems that there is no significant response from the banks to the events. These results might be from concurrent events or firm-specific events occurring at the same time. In addition, at the time of event 1 and event 2, there was a financial crisis going on in Turkey. The effect of financial crisis might have surpassed the significance of events. When I dig into event and look event-specific results, from table-3 it seems that on day 1 following the announcement, Event 1 and 2 have a return above the average and Event 4 has a return above the average on day 3 following the announcement.

Table-4 shows event-specific t-statistics results. Similarly, Event 1, 2 and 4 have significant results. However, the magnitude of the results is not powerful. On the other hand, there is no significant response for Event 3 and 5. I can assume that deposit insurance coverage change announcements are mostly not significant.

## F- Robustness

In order to double-check the results, I performed robustness tests. Firstly, I applied the same methodology to calculate abnormal returns by using mean-adjusted model:

$$A_{i,t} = R_{i,t} - R_{bar}$$

Where $A_{i,t}$ as the excess return for security *i* at day *t*, $R_{i,t}$ is arithmetic return for security *i* at day *t* and $R_{bar}$ is the average return for the estimation period. Table-5 shows the results for all events by using mean adjusted return. Like the market-adjusted return model, there is no significant response to announcements. When I check for event-specific results (Table-6) for mean-adjusted return model, it has different abnormal returns than market-adjusted model has. Abnormal returns are different than zero in the event period; however, since the standard deviation is high for each event, t-statistics are not significant. Only on day 10 on event 5 and at day -7 on event 2 have significant results.(Table-7). Consequently these results seem not to be meaningful.

Secondly and lastly, for the sake of robustness, I checked the significance of announcements for a firm basis. Table-8 shows the results for firm-specific tests. From the table, I can assume that some banks responded to the announcement while others did not. Before t-statistics test, I was expecting that all privately held and deposit collecting banks should respond the announcements significantly. Apparently, after test results, Akbank, Albaraka, Finansbank, Tekstilbank, TEB, and Vakifbank have significant results. On the other hand, while being privately-held and authorized to collect deposit, Denizbank, Alternatif, Sekerbank, Garanti, Isbankasi do not have significant results. This might be because of some banks not being in the sample for all events i.e Denizbank, Alternatif, Sekerbank. From the table, I can assume that it is very normal for TSKB and Kalkinma Bankasi to not respond significantly since they do not collect deposit.

## III. Conclusion

This paper analyzed the relationship between deposit insurance coverage change announcements and market reaction to these announcements. Utilizing time series and cross-sectional variation in the existence of a deposit insurance scheme in Turkey, I find that the market does not respond significantly to the deposit coverage change announcements. I draw two possible conclusions from this result. One, market neutralizes the positive and negative effects of deposit insurance coverage change and does not react. And second, deposit insurance scheme of Turkey might not be fully credible. In addition, although the result might not significant, further and detailed research should be very beneficial.

## IV. Appendix (Tables)

*Table 2- T- Statistics for All Events*

| t | Ar-bar | T-Stat | STD |
|---|---|---|---|
| -10 | 0.6% | 1.12 | %0.5 |
| -9 | -0.2% | -0.32 | |
| -8 | 0.4% | 0.79 | |
| -7 | -0.5% | -0.88 | |
| -6 | 0.2% | 0.38 | |
| -5 | -0.1% | -0.16 | |
| -4 | 0.3% | 0.52 | |
| -3 | -0.5% | -0.94 | |
| -2 | 0.3% | 0.55 | |
| -1 | -0.5% | -1.02 | |
| 0 | 0.6% | 1.08 | |
| 1 | -0.2% | -0.43 | |
| 2 | 0.0% | 0.07 | |
| 3 | 0.2% | 0.33 | |
| 4 | -0.4% | -0.68 | |
| 5 | -0.2% | -0.44 | |
| 6 | 0.4% | 0.80 | |
| 7 | 0.0% | -0.01 | |
| 8 | 0.4% | 0.71 | |
| 9 | -0.5% | -0.99 | |
| 10 | 0.1% | 0.27 | |

*Table 3-Average AR*

| t | event 1 | event 2 | event 3 | event 4 | event 5 |
|---|---|---|---|---|---|
| -10 | 0.42% | 1.21% | 0.00% | 0.93% | 0.40% |
| -9 | 0.04% | -1.84% | -0.10% | 0.05% | 0.68% |
| -8 | -0.60% | 2.27% | 0.76% | 0.18% | -0.34% |
| -7 | 0.95% | -2.71% | -0.95% | -0.54% | 0.62% |
| -6 | 0.55% | 0.08% | 0.58% | 0.11% | -0.15% |
| -5 | 0.05% | -0.98% | -0.34% | 0.78% | 0.02% |
| -4 | 0.39% | -0.75% | 0.08% | 1.18% | 0.40% |
| -3 | -0.27% | -1.44% | -0.04% | -0.78% | -0.08% |
| -2 | 0.38% | 0.26% | -0.16% | 0.68% | 0.26% |
| **t** | **event 1** | **event 2** | **event 3** | **event 4** | **event 5** |
| -1 | -0.44% | 1.09% | -1.19% | -1.31% | -0.72% |
| 0 | 1.79% | 0.94% | 0.93% | -0.44% | -0.03% |
| 1 | -3.40% | 2.64% | -1.21% | 0.55% | -0.05% |
| 2 | 0.54% | 0.01% | -0.08% | -0.23% | 0.00% |
| 3 | -0.30% | -0.07% | -0.26% | 2.10% | -0.39% |
| 4 | -0.07% | 0.03% | -0.99% | -0.33% | -0.36% |
| 5 | -0.56% | 0.62% | -0.11% | -0.11% | -0.77% |
| 6 | -0.12% | 1.64% | 0.02% | 0.23% | 0.32% |
| 7 | -1.38% | 0.94% | -0.29% | 0.21% | 0.24% |
| 8 | 0.53% | 0.79% | 1.00% | -0.85% | 0.38% |
| 9 | -0.16% | -1.24% | -0.63% | -0.33% | -0.28% |
| 10 | -0.36% | 0.84% | -0.77% | 0.06% | 0.66% |

*Table 4- Event Specific T-Statistics*

| t | event 1 | event 2 | event 3 | event 4 | event 5 |
|---|---|---|---|---|---|
| -10 | 0.25 | 0.84 | 0.00 | 1.07 | 0.68 |
| -9 | 0.02 | -1.27 | -0.10 | 0.05 | 1.16 |
| -8 | -0.35 | 1.57 | 0.75 | 0.21 | -0.57 |
| -7 | 0.55 | -1.87 | -0.93 | -0.62 | 1.05 |
| -6 | 0.32 | 0.05 | 0.57 | 0.13 | -0.26 |
| -5 | 0.03 | -0.68 | -0.33 | 0.90 | 0.04 |
| -4 | 0.23 | -0.52 | 0.08 | 1.36 | 0.69 |
| -3 | -0.16 | -1.00 | -0.04 | -0.90 | -0.13 |
| -2 | 0.22 | 0.18 | -0.15 | 0.78 | 0.45 |
| -1 | -0.26 | 0.75 | -1.16 | -1.51 | -1.22 |
| 0 | 1.04 | 0.65 | 0.92 | -0.51 | -0.05 |
| 1 | -1.98 | 1.82 | -1.19 | 0.63 | -0.08 |
| 2 | 0.31 | 0.01 | -0.08 | -0.26 | 0.01 |
| 3 | -0.17 | -0.05 | -0.25 | 2.42 | -0.67 |
| 4 | -0.04 | 0.02 | -0.98 | -0.38 | -0.61 |
| 5 | -0.33 | 0.43 | -0.11 | -0.13 | -1.31 |
| 6 | -0.07 | 1.13 | 0.02 | 0.27 | 0.55 |
| 7 | -0.80 | 0.65 | -0.28 | 0.24 | 0.41 |
| 8 | 0.31 | 0.55 | 0.98 | -0.98 | 0.65 |
| 9 | -0.10 | -0.85 | -0.62 | -0.38 | -0.47 |
| 10 | -0.21 | 0.58 | -0.76 | 0.07 | 1.13 |

*Table 5- T-statistic for all events-Mean adjusted Value*

| t | AR bar | t-stat | std |
|---|---|---|---|
| -10 | 0.26% | 0.18 | 1.4% |
| -9 | -0.86% | -0.60 | |
| -8 | -0.79% | -0.55 | |
| -7 | 0.82% | 0.57 | |
| -6 | -0.26% | -0.18 | |
| -5 | 2.18% | 1.52 | |
| -4 | -0.20% | -0.14 | |
| -3 | 0.80% | 0.56 | |
| -2 | -0.43% | -0.30 | |
| -1 | -0.86% | -0.60 | |
| 0 | -0.05% | -0.04 | |
| 1 | -0.85% | -0.59 | |
| 2 | 0.64% | 0.45 | |
| 3 | 0.37% | 0.26 | |
| 4 | -0.91% | -0.63 | |
| 5 | -0.82% | -0.57 | |
| 6 | 0.15% | 0.11 | |
| 7 | 0.02% | 0.01 | |
| 8 | 1.03% | 0.72 | |
| 9 | -1.21% | -0.84 | |
| 10 | -0.63% | -0.44 | |

*Table 6 - Event Specific Mean Adjusted Average AR*

| | **Average AR** | | | | |
|---|---|---|---|---|---|
| | ***event 1*** | ***event 2*** | ***event 3*** | ***event 4*** | ***event 5*** |
| -10 | -3.59% | 4.09% | -2.04% | -0.16% | 1.89% |
| -9 | -3.54% | -1.22% | -1.39% | -0.19% | 0.98% |
| -8 | -2.63% | -0.91% | 0.23% | 0.55% | -1.17% |
| -7 | -3.86% | 9.21% | -1.06% | -0.17% | -0.03% |
| -6 | 1.31% | -1.49% | 0.23% | 2.84% | -2.86% |
| -5 | 2.51% | 4.86% | 1.21% | 2.79% | 0.38% |
| -4 | -2.86% | 2.40% | 0.37% | 1.29% | -1.74% |
| -3 | -1.27% | 5.12% | -1.12% | 0.49% | 0.66% |
| -2 | -1.10% | -1.82% | -1.59% | 2.44% | -0.24% |
| -1 | 1.57% | -1.27% | -1.93% | -0.66% | -1.51% |
| 0 | 1.78% | -3.67% | 1.07% | 0.27% | 0.29% |
| 1 | -2.99% | 3.71% | -3.50% | -1.20% | -0.60% |
| 2 | 0.44% | 4.50% | -1.72% | 0.06% | 0.15% |
| 3 | -0.51% | 0.08% | 1.43% | 0.86% | 0.07% |
| 4 | -3.99% | 4.66% | -2.92% | 1.01% | -2.74% |
| 5 | 1.59% | -1.77% | 0.02% | 0.08% | -2.87% |
| 6 | -2.10% | 0.04% | 0.35% | 0.87% | 1.01% |
| 7 | -5.53% | 1.26% | 1.46% | 0.94% | 1.01% |
| 8 | -2.05% | 1.98% | 3.24% | 0.88% | 0.90% |
| 9 | -3.68% | -3.10% | -1.99% | 0.64% | 0.89% |
| 10 | -2.55% | -0.12% | -1.34% | -1.09% | 1.01% |

| *Table 7- Event Specific Mean Adjusted T-Statistics* | | | | | |
|---|---|---|---|---|---|
| | **T-Stat** | | | | |
| | ***event 1*** | ***event 2*** | ***event 3*** | ***event 4*** | ***event 5*** |
| -10 | -0.91 | 1.01 | -0.63 | -0.08 | 1.91 |
| -9 | -0.90 | -0.30 | -0.43 | -0.10 | 0.99 |
| -8 | -0.67 | -0.22 | 0.07 | 0.29 | -1.19 |
| -7 | -0.98 | 2.27 | -0.33 | -0.09 | -0.03 |
| -6 | 0.33 | -0.37 | 0.07 | 1.49 | -2.89 |
| -5 | 0.64 | 1.19 | 0.37 | 1.46 | 0.38 |
| -4 | -0.73 | 0.59 | 0.11 | 0.67 | -1.76 |
| -3 | -0.32 | 1.26 | -0.34 | 0.26 | 0.67 |
| -2 | -0.28 | -0.45 | -0.49 | 1.28 | -0.24 |
| -1 | 0.40 | -0.31 | -0.59 | -0.35 | -1.52 |
| 0 | 0.45 | -0.90 | 0.33 | 0.14 | 0.29 |
| 1 | -0.76 | 0.91 | -1.07 | -0.63 | -0.60 |
| 2 | 0.11 | 1.11 | -0.53 | 0.03 | 0.15 |
| 3 | -0.13 | 0.02 | 0.44 | 0.45 | 0.07 |
| 4 | -1.02 | 1.15 | -0.90 | 0.53 | -2.77 |
| 5 | 0.40 | -0.44 | 0.01 | 0.04 | -2.89 |
| 6 | -0.53 | 0.01 | 0.11 | 0.46 | 1.02 |
| 7 | -1.41 | 0.31 | 0.45 | 0.49 | 1.02 |
| 8 | -0.52 | 0.49 | 0.99 | 0.46 | 0.90 |
| 9 | -0.94 | -0.76 | -0.61 | 0.33 | 0.90 |
| 10 | -0.65 | -0.03 | -0.41 | -0.57 | 1.02 |

**Table 8- Firm Specific Tests**

| | AKBANK | | ALBARAKA | | ALTERNATIF | | DENIZBANK | | FINANSBANK | |
|---|---|---|---|---|---|---|---|---|---|---|
| | AR bar | T-stat | AR bar | T-stat | AR bar | T-stat | AR bar | T-stat | AR bar | T-stat |
| -5 | 0.5% | 0.63 | -0.2% | -0.11 | -0.1% | -0.06 | -0.2% | -0.12 | 2.0% | 1.70 |
| -4 | -0.8% | -1.09 | -0.3% | -0.18 | -0.1% | -0.04 | 0.9% | 0.48 | 1.0% | 0.87 |
| -3 | 0.9% | 1.17 | 1.1% | 0.73 | -0.7% | -0.46 | -0.1% | -0.07 | -0.4% | -0.36 |
| -2 | 1.3% | 1.65 | 0.7% | 0.48 | 0.6% | 0.41 | -0.7% | -0.40 | -0.6% | -0.54 |
| -1 | -0.2% | -0.29 | -1.6% | -1.11 | 1.8% | 1.22 | -0.5% | -0.25 | -1.0% | -0.81 |
| 0 | -0.3% | -0.42 | -0.6% | -0.45 | -0.3% | -0.23 | 0.8% | 0.41 | 0.5% | 0.39 |
| 1 | -0.5% | -0.65 | -1.9% | -1.31 | -1.8% | -1.20 | -0.7% | -0.38 | -0.5% | -0.44 |
| 2 | 2.2% | 2.91 | -3.2% | -2.19 | -0.2% | -0.11 | -1.4% | -0.75 | -0.6% | -0.49 |
| 3 | 0.3% | 0.42 | 0.3% | 0.22 | -0.1% | -0.06 | 0.2% | 0.08 | -0.5% | -0.44 |
| 4 | 1.2% | 1.56 | 1.5% | 1.05 | -1.5% | -1.00 | 1.1% | 0.60 | 0.1% | 0.09 |
| 5 | 0.4% | 0.57 | -0.4% | -0.29 | 1.7% | 1.16 | 0.8% | 0.44 | -1.8% | -1.49 |
| | **SEKERBANK** | | **TEKSTILBANK** | | **TEB** | | **GARANTI** | | **HALKBANK** | |
| | AR bar | T-stat | AR bar | T-stat | AR bar | T-stat | AR bar | T-stat | AR bar | T-stat |
| -5 | -1.48% | -0.53 | -1.9% | -1.28 | 0.7% | 0.42 | 1.3% | 1.52 | 1.4% | 0.95 |
| -4 | 0.01% | 0.00 | -0.8% | -0.56 | 1.1% | 0.65 | -0.1% | -0.17 | 1.5% | 1.07 |
| -3 | -1.99% | -0.71 | -2.4% | -1.63 | -2.8% | -1.76 | 1.1% | 1.34 | -0.8% | -0.54 |
| -2 | -0.19% | -0.07 | 0.8% | 0.54 | 1.9% | 1.19 | -0.5% | -0.61 | -1.5% | -1.08 |
| -1 | -0.98% | -0.35 | -3.7% | -2.50 | -3.6% | -2.26 | -1.0% | -1.24 | -1.9% | -1.31 |
| 0 | 1.20% | 0.43 | 0.6% | 0.41 | 3.0% | 1.89 | 1.3% | 1.51 | -0.3% | -0.24 |
| 1 | -0.36% | -0.13 | 0.1% | 0.04 | 1.8% | 1.10 | -0.3% | -0.34 | -0.1% | -0.05 |
| 2 | -0.56% | -0.20 | -0.6% | -0.41 | 0.1% | 0.04 | 0.8% | 1.00 | 1.3% | 0.92 |
| 3 | 3.02% | 1.07 | 0.5% | 0.34 | 1.2% | 0.75 | -0.3% | -0.37 | -0.2% | -0.14 |
| 4 | -1.38% | -0.49 | -1.4% | -0.92 | 0.4% | 0.27 | 0.5% | 0.55 | -1.4% | -1.01 |
| 5 | -0.76% | -0.27 | -0.3% | -0.18 | -1.4% | -0.86 | 1.0% | 1.23 | -0.9% | -0.66 |
| | **ISBANKASI** | | **KALKINMA** | | **TSKB** | | **VAKIFBANK** | | **YAPIKREDI** | |
| | AR bar | T-stat | AR bar | T-stat | AR bar | T-stat | AR bar | T-stat | AR bar | T-stat |
| -5 | 0.2% | 0.18 | -2.2% | -1.03 | 0.9% | 0.83 | 2.4% | 1.76 | 1.7% | 1.54 |
| -4 | 0.6% | 0.50 | 0.2% | 0.07 | 1.1% | 0.95 | 0.7% | 0.49 | 0.9% | 0.83 |
| -3 | -0.3% | -0.24 | 0.4% | 0.19 | 0.6% | 0.55 | 0.5% | 0.34 | 1.1% | 0.95 |
| -2 | -0.6% | -0.56 | 0.1% | 0.03 | 0.9% | 0.77 | 2.8% | 2.03 | 0.6% | 0.55 |
| -1 | 0.6% | 0.51 | -1.0% | -0.46 | 1.6% | 1.40 | -1.0% | -0.72 | 0.9% | 0.77 |
| 0 | 1.3% | 1.15 | -0.2% | -0.09 | -0.4% | -0.36 | 0.5% | 0.34 | 1.6% | 1.40 |
| 1 | -0.6% | -0.58 | 2.0% | 0.94 | 0.3% | 0.28 | 0.6% | 0.43 | -0.4% | -0.36 |
| 2 | -0.7% | -0.60 | 2.0% | 0.93 | -0.7% | -0.60 | 0.3% | 0.19 | 0.3% | 0.28 |
| 3 | 0.4% | 0.37 | -0.4% | -0.18 | 0.2% | 0.22 | -1.2% | -0.83 | -0.7% | -0.60 |
| 4 | -0.5% | -0.48 | -1.6% | -0.78 | -1.2% | -1.09 | -1.6% | -1.16 | 0.2% | 0.22 |
| 5 | -0.9% | -0.85 | 0.0% | 0.00 | 0.7% | 0.51 | -0.5% | -0.37 | -1.2% | -1.09 |

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