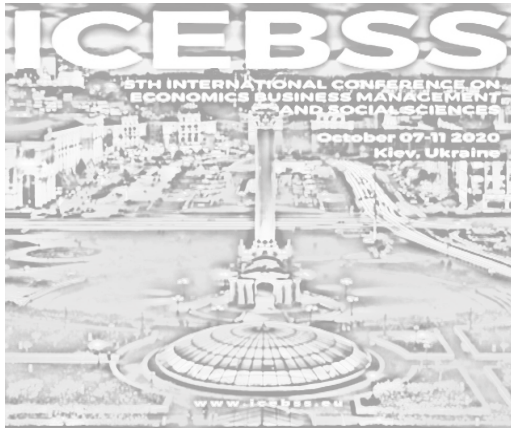


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A nighttime aerial photograph of Independence Square in Kiev, Ukraine. The central feature is the Independence Column, a tall, illuminated blue monument. At its base is the Independence Palace, a large, ornate building with a prominent glass dome. The square is surrounded by other illuminated buildings and streets, with light trails from cars visible on the roads. The sky is dark with some clouds, and the overall scene is lit up with warm and cool lights.

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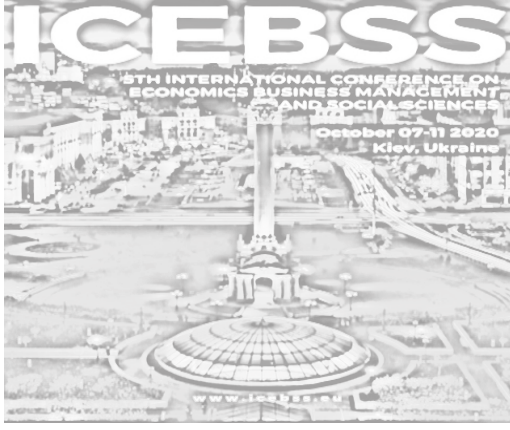
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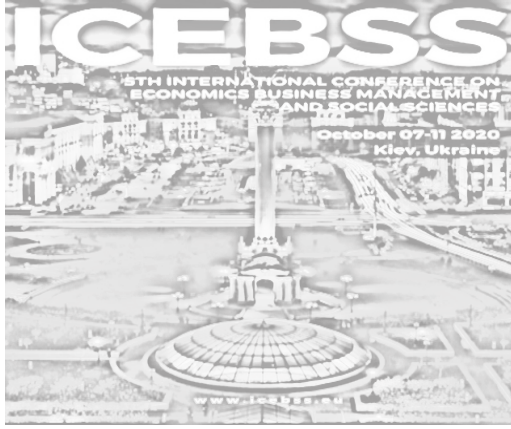
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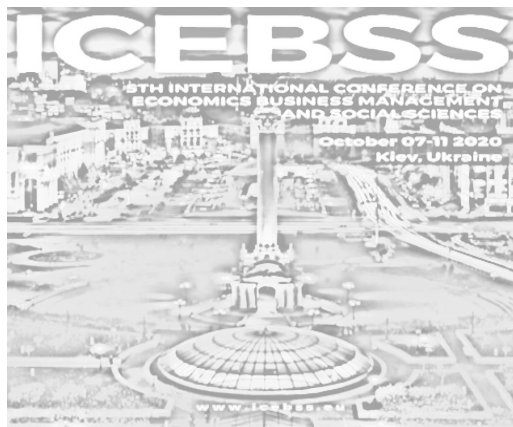
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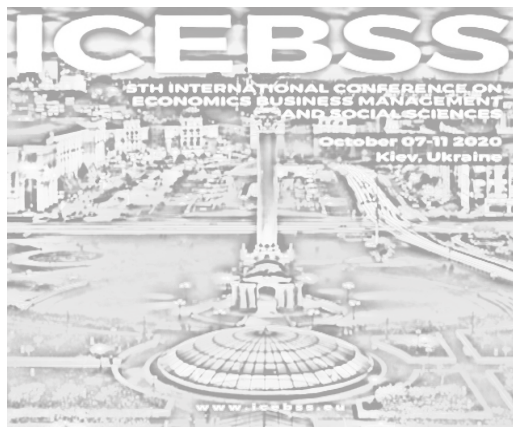
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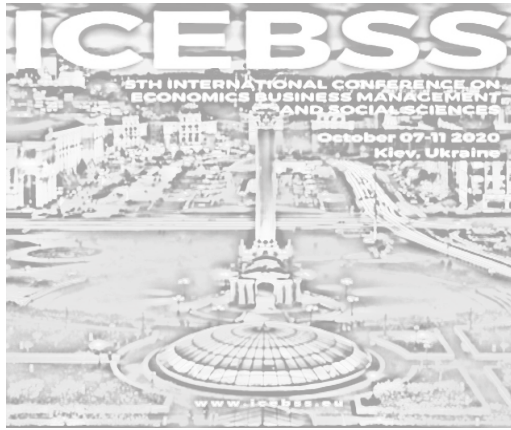
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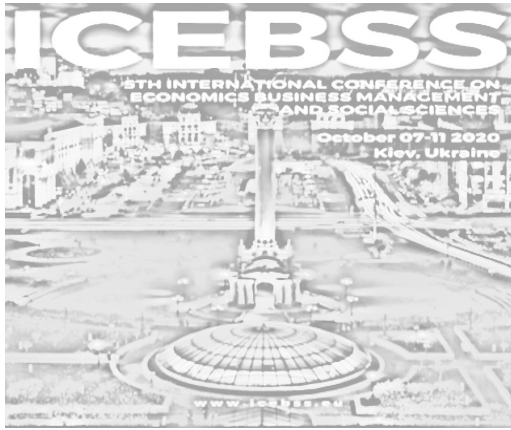
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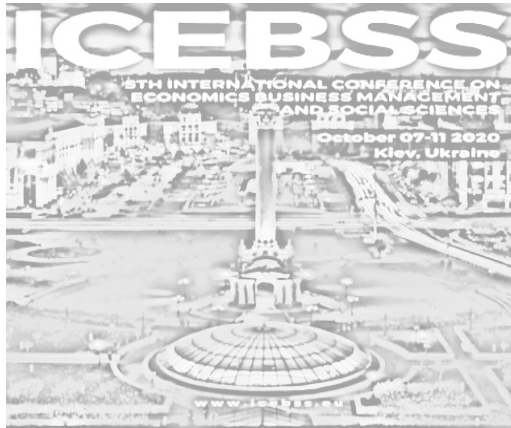
PREFACE

We sincerely hope that the contributors and attendees of ICEBSS'2020 will find presented studies enlightening, useful and of interest. The aim of ICEBSS is to bring researchers from different disciplines together and inspire them to collaborate.

On behalf of the organization committee, I thank all the authors who have shared their precious works, all reviewers for their valuable contributions and members of the committee for their never ending supports and advices.

We hope that ICEBSS will reinforce interdisciplinary and international collaboration and hearten information exchange between various fields.

October 2020
Prof. Dr. Mahmut ZORTUK
Coordinator of ICEBSS



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**CAN VOLUNTEERING EXPERIENCE TELL US WHAT DO YOUNG EMPLOYEES WANT OUT OF
THEIR FIRST JOBS?**

Mirna Koričan LAJTMAN¹, Goran OBLAKOVIĆ², Matej NAKIĆ³

Abstract

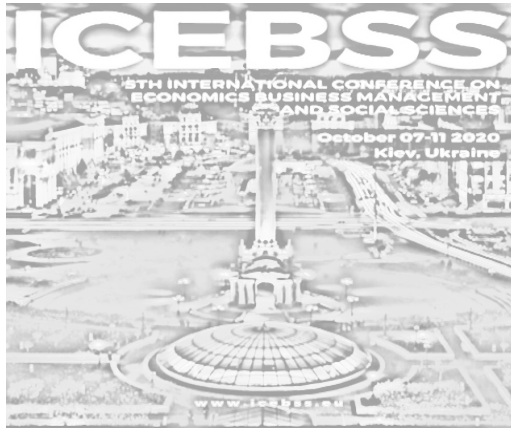
In this paper we set out to explore the connection between Motivation to Volunteer (VFI) as theorized by E. Gil Clary and Mark Snyder (1998) and Job Expectations which students possess before entering the workforce for the first time. Our goal is to find out the relation between six personal and social functions (values, understanding, social, career, protective & enhancement) potentially served by volunteering and students' first Job Expectations, taking either intrinsic or extrinsic form. Considered were job expectations that reflect either intrinsic or intrinsic values. For the purpose of this research, we have focused on those intrinsic values which include the importance personal growth, work life balance and existing ethical standards. Further, job expectations that reflect extrinsic values include the importance of compensation, benefits and opportunity for ladder climbing. Our sample is composed of 130 Croatian and International students in their junior and senior years of study. Methods used are quantitative and the research nature is correlational. The authors aspire to close the research gap regarding the predictive validity of past volunteering experience, where job expectations serve as a criterion. Past volunteering experience is information that can usually be sought for in job applicant's bio, which makes it rather practical for human resource managers.

Keywords: Motivation to Volunteer; Job Expectations; Intrinsic Motivation; Extrinsic Motivation

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**WOULD YOU WORK IF YOU WON THE LOTTERY? THE EFFECT OF ETHNICITY AND OTHER
DEMOGRAPHIC VARIABLES ON EMPLOYMENT COMMITMENT**

Moshe SHARABI¹, Ilan SHDEMA², Oriana Abboud ARMALY³

Abstract

Non-Financial Employment Commitment (NFEC) is an important measure of work ethics. The most common indicator of NFEC is the classic "Lottery Question" which asked whether an individual would continue or stop working if they won a lottery or inherited a large sum of money. NFEC of Muslims in general and of Arab Muslims in particular, have not been studied. Accordingly, the purpose of this study is to fill this gap by exploring the NFEC among Arab Muslims in Israel and comparing it to that of Jews in Israel. The sample included 215 Muslims and 898 Jews representing the Israeli labor force. The findings reveal higher NFEC among Arab Muslims, particularly among women, compared to Jews. Muslims and Jews in urban areas have a lower NFEC than those who live in smaller localities. Among both Jews and Muslims, NFEC significantly increases with education level and income.

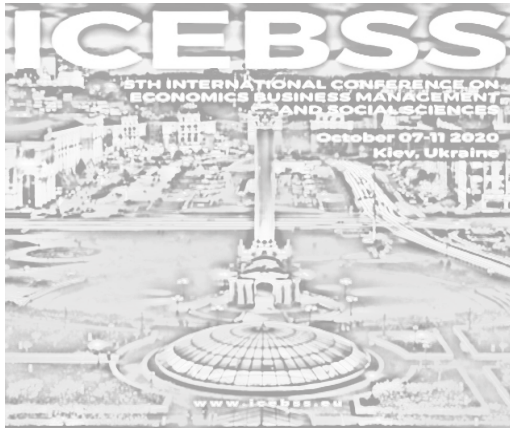
We adapted the core-periphery model and found that it could explain our findings regarding NFEC differences among ethno-religious groups in different residential areas. As we indicated before, it is the first time that NFEC of Arab Muslims has been studied. NFEC is an important measure of the work ethic. A high NFEC of Arab Muslims, especially among women, reflects a high non-actualized potential for Western societies integrating Arab Muslim immigrants and refugees into the labor market.

Keywords: Lottery Question, Non-financial Employment Commitment, Jews, Muslim Arabs, Israel

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**GENERALIZED DATA ENVELOPMENT ANALYSIS FOR MEASURING EFFICIENCY WITH
NEGATIVE DATA**

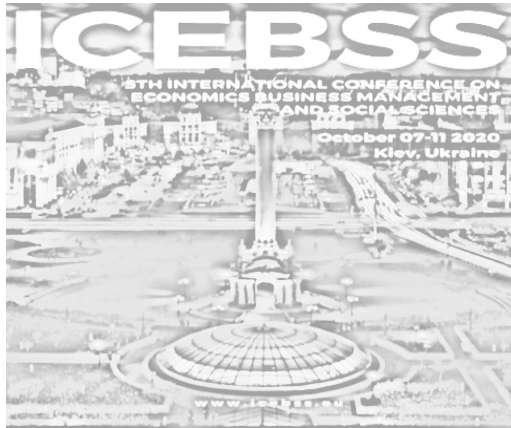
Chiang KAO¹

Abstract

Data envelopment analysis (DEA) is a technique used to measure the relative efficiency of a set of production units that applies multiple inputs to produce multiple outputs. In its original settings, the data is required to be nonnegative. To allow for negative data, several methods have been proposed. While these methods have merits, they also have weaknesses and limitations. This paper generalizes the construction of the production possibility set from production units with nonnegative observations to those with real values. Given the signs of the target and observed aggregate outputs of the production units to be evaluated, three models are developed to calculate the efficiencies under both variable and constant returns to scale technologies, and an additive model is used to identify the signs of the target and observed aggregate outputs. There are three cases that specific models are used to calculate efficiency: positive target and positive observed outputs, positive target and negative observed outputs, and negative target and negative observed outputs. Since the efficiencies are calculated from the original observations without transformation or manipulation, the proposed method does not have the drawbacks of the existing methods. A case of the Detroit National Bank shows that the results obtained from the proposed method are more representative and reliable as compared to those obtained from a data transformation method.

Keywords: Data envelopment analysis, Efficiency, Negative data

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**THE APPLICATION OF BRAND MARKETING STRATEGY IN UNIVERSITY BRAND
MANAGEMENT**

Liang RUI¹, Kseniia BLUMSKA²

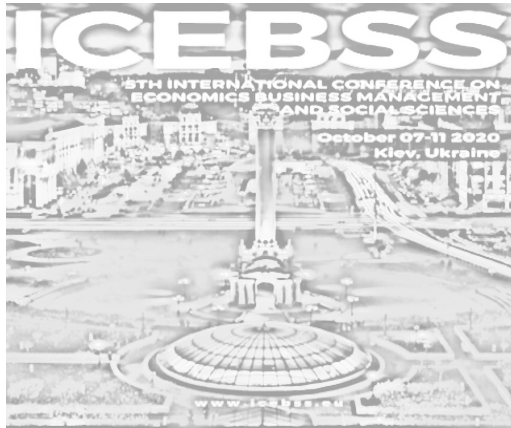
Abstract

In the context of marketization and globalization of higher education, Chinese universities are faced with the opportunity to use the market mechanism to achieve self-development, and they are also facing fierce competition in the foreign higher education market. Under the conditions of opportunities and challenges, universities implement brands Management becomes possible and inevitable. How to apply the brand marketing strategy to the university brand management, to realize the optimal allocation of the tangible and intangible resources it possesses, to establish a good brand image, to expand its popularity and reputation, and to gain a competitive advantage has become a top priority for universities. Based on the premise of following the laws of higher education and relying on market operation mechanisms and laws, this article studies university brand management and finds that the university's brand resource elements should be optimized and coordinated and integrated to make full use of internal and external resources. It is necessary to strengthen the brand management concept, clarify the university brand positioning, build a strong university brand, promote the superior university brand, and establish a university brand crisis management system to enhance the university's core core competitiveness and obtain greater profits. However, higher education graduation is a quasi-public product, and applying brand marketing strategies to university brand management has certain limitations.

Keywords: Application of Brand Marketing Strategy, University Brand, Management

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ORGANIZATIONAL CULTURE LEADERSHIP

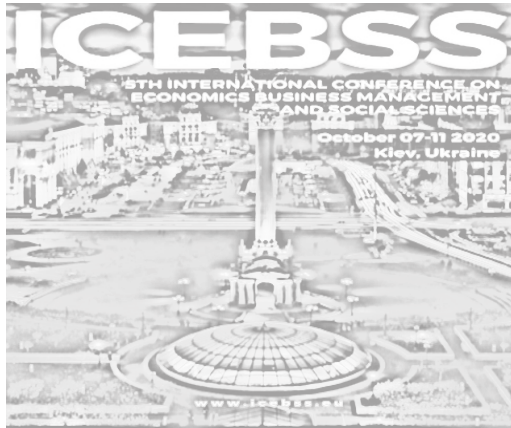
Sandro SERPA¹

Abstract

Leadership is essential to the success of any type of organization as a coordinated collective unit in pursuit of objectives that cannot be achieved individually, and with relationships with the external environment. This communication aims to contribute to the reflection of leadership in the management of organizational culture as a more or less shared way of thinking, acting and feeling the organization by its members and which tends to generate a cohesion among these elements. To this end, it will seek to discuss on the basis of a systematic collection of literature on this subject: what is leadership, what is understood by organizational culture, and finally, what is the relationship between leadership and the formation of an organizational culture in the diachronic existence of an organization (since its foundation, consolidation, maturity, and need for reformulation) considering the following three perspectives of organizational culture: integration, differentiation and fragmentation. Implications in this time of pandemic COVID-19 with its deep economic and social consequences, will be presented the contribution of leadership in the (re)formulation of an organizational culture shaped by the digital and sustainability dimensions that enables the success of different types of organizations such as industrial, financial, social or school respecting their specific purposes and characteristics.

Keywords: Leadership, Organizational culture, Organizations

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COVID-19 CRISIS, MANAGEMENT REACTION IN ROMANIAN HOSPITALS

Laura BOSTANGIU¹, Alexandru Iulian IORDACHE², Nicolae Dragos GAROFIL³

Abstract

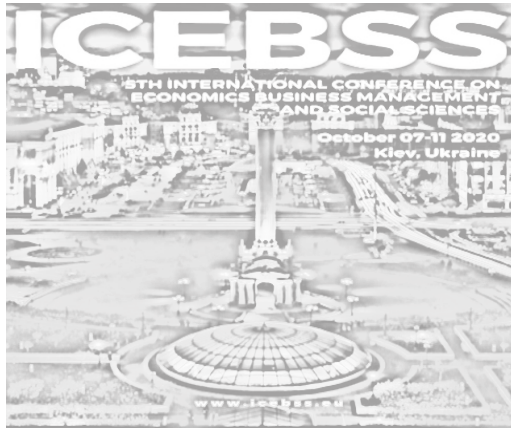
In early January 2020, begin in China the COVID-19 pandemic, which has taken over governments, health systems, companies and very fast the world generate an outbreak. With few exceptions, states have not responded in a coordinated manner to this major public health problem so spreading around the world in less than two months the virus called SARS-CoV-2 forced half of the world's population to isolate itself in order to break the chain of contamination. As in any crisis, decision-making efficiency, analysis of their long-term implications, foresight, and good team coordination and individuals with power of decision, with vision are some of the features that leaders must not lack. This kind of response can make the difference between great or awful outcomes, especially when it comes to people's lives. Hospitals, clinics, Intensive Care Units support or other types of medical units needed a panel of rules and procedures, management guidance being vital at that time. The aim of This article is to present the diagnosis of the romanian public health system and management reaction during the first period of the Covid-19 crisis, taking into account all the factors involved, as well as the measures that have been taken by the government in order to limit the spread of the SARS-CoV-2 virus, protect the population's health and minimize negative economic impact.

Keywords: COVID-19, SARS-CoV-2, Management, Economic impact, Health system, Virus crisis, Pandemic

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**CAN VOLUNTEERING CHOICES REFLECT JOB EXPECTATIONS? – MOTIVATIONAL IMPACT OF
PERCEIVED SELF-SUFFICIENCY AND PERSONAL RELIGIOUS BELIEFS**

Matej NAKIĆ¹, Mirna Koričan LAJTMAN², Goran OBLAKOVIĆ³, Renato ŠIMUNIĆ⁴

Abstract

In this paper we set out to explore the impact of perceived self-sufficiency and personal religious beliefs on the connection between Motivation to Volunteer (VFI) as theorized by E. Gil Clary and Mark Snyder (1998) and Job Expectations which students possess before entering the workforce for the first time. Our goal is to find out the relation between six personal and social functions (values, understanding, social, career, protective & enhancement) potentially served by volunteering and students' first Job Expectations, while controlling for psychological variables of perceived self-sufficiency (Locus of Control) and Religiousness. Locus of control is the degree to which people believe that they, as opposed to external forces (beyond their influence), have control over the outcome of events in their lives (Rotter, 1954). We hypothesize that internal Locus of Control will impact the volunteering functions connected with intrinsic motivation facets, according to the results of Kamdron's (2015) study which shows that the employees with internal Locus of Control are significantly more satisfied and more driven - while being predominantly intrinsically motivated. Our sample is composed of 130 Croatian and International students in their junior and senior years of study. Methods used are quantitative and the research nature is correlational.

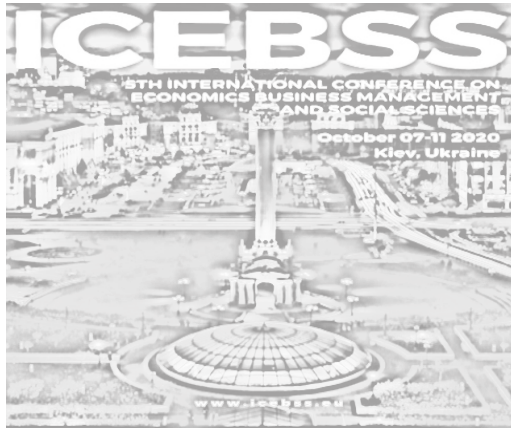
Keywords: Motivation to Volunteer, Job Expectations, Locus of Control, Religiousness

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**CONSTRUCTING INDIVIDUAL IDENTITY WITHIN TRADITIONAL SOCIETY THE CASE OF
YOUNG ARABS IN ISRAEL, GRADUATES OF ALTERNATIVE EDUCATION**

Oriana Abboud ARMALY¹, Victor FRIEDMAN², Moshe SHARABI³

Abstract

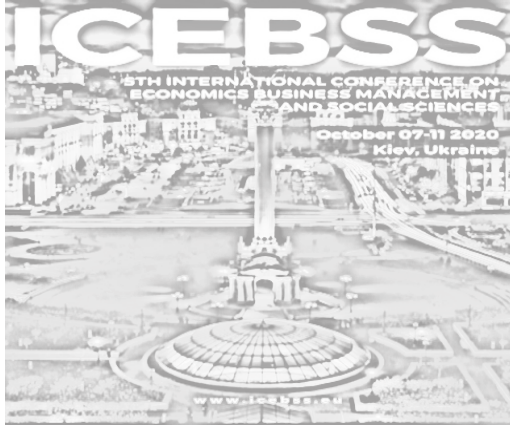
Studies on Arab society as a minority group in Israel, most often deal with the role of identity in the Arab-Israeli conflict and minority-majority relations. While the fact that Arab society in Israel is a minority ruled by a Jewish majority is of great importance, it is not the sole factor that influences and shapes processes within Arab society. As such, this study examined the intra group relations within Arab minority in Israel. Identity touches on how individuals and societies perceive themselves within conflict, and it also forms a link between the individual and society (Burke & Stets, 2009). The present study examined the conflict between the individual identity and the social identity of young Arabs, graduates of alternative education, that encouraged them to intellectually and normatively differentiate themselves from the Arab society. Method: Semi-structured interviews were conducted with 26 young men and women from the Arab society, Christians and Muslims, aged 18-25. The interviews were analyzed using two combined methods: content analysis and structural analysis. The findings suggest that the alternative educational experience fostered a normative intra-group conflict, and identity conflict at the individual level. Findings: a) Individual identity was constructed within Alternative education as "incubator", saturated with dialogue and critical pedagogy. b) Meeting traditional Arabic society, the young people face ideological and behavioral gaps. c) Identity conflict accrue and escalate between their individual identity and their social identity. d) The young cope with conflict using four main strategies: Verbal dialogue, "Dialogue through actions", Placation and Avoidance. Each strategy is used according to a specific component of the conflict. Apparently, constructing an identity with individualistic characteristics within traditional Arab society is accompanied by a process of socialization and loyalty to the educational experience, while accompanied by acute conflict between young Arabs and their own traditional society.

Keywords: Conflict, Identity, Intragroup relations, Alternative education, Arab society.

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**SCALE DEVELOPMENT OF A FORMATIVE HIGHER ORDER CONSTRUCT: SITUATIONAL
STRENGTH AT WORK**

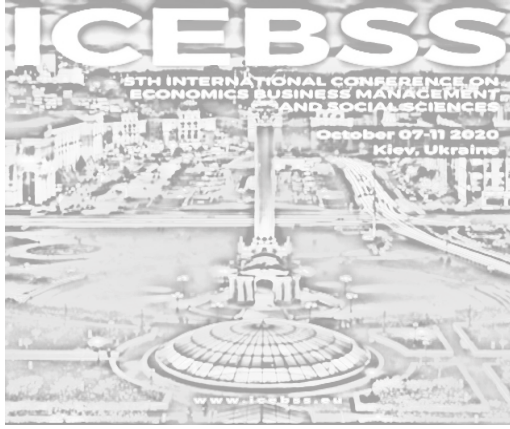
Pınar ÖZBİLEN¹

Abstract

The purpose of the study is to develop a scale measuring “situational strength at work” drawing on qualitative methods. This study contributes to the literature by using a focus group and interview methods. The existing scale to measure this construct is based on the previously described theoretical universe. For item generation, nine interviews and one focus group studies are conducted. Additionally, items were generated based on a review of the literature, deduction from the theoretical definitions of the construct and previous empirical researches. A systematic literature review (SLR) is conducted to find related literature on previous theoretical and empirical research on Situational Strength at Work construct. The audiotapes of the exploratory studies are transcribed, and the main themes are revealed by content analysis. The frequency of each emerging theme is calculated. In order to measure content validity, interrater reliability index is calculated and found as satisfactory. The scale takes its last version after the pretest session.

Keywords: Situational Strength at Work, Scale development, Formative High Order Construct

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FOREIGN TRADE EVALUATION OF GAMES AND TOYS INDUSTRY IN TURKEY

Maide Betul AKSOY¹, Cuma BOZKURT²

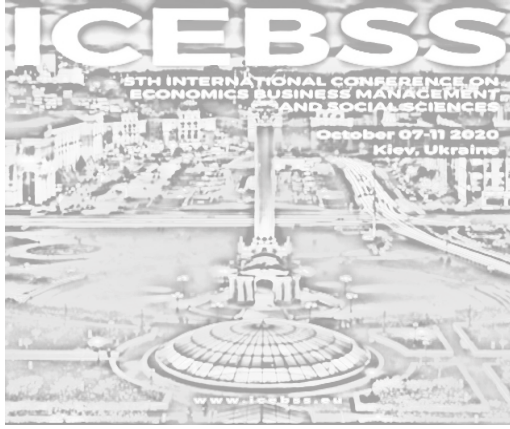
Abstract

The most important source of the child's physical, mental, social and emotional development are games and toys. 0-14 age group constitutes 24.6% of Turkey's total population in 2018, has made the toy market a very fast growing and developing industry. Turkey's first systematic toy production in Eyup district of Istanbul began in the 17th century. The advancing technology, urbanization and the lack of playgrounds has changed the habits of children to play and socialize. Traditional games have been replaced by digital games played via computer and internet over time. Competition is increasing day by day in the world economies and therefore competitiveness comes to the fore. The main purpose of businesses is to maintain and increase their share in the constantly growing market. Despite the fact that the toy industry has an important place in world trade, Turkey has the trade deficit in this industry. The world toy trade volume, which was 35 billion in 2001, reached 104 billion dollars in 2019 and increased by 193%. In Turkey, the toy trade volume in 2001 was around 42 million dollars, in 2019 this value rose to 182 million dollars. The main purpose of this study is to determine the trade situation of the toy industry in Turkey, between 2011 and 2019. This study aims to analyze the development of the toy industry with import and export data of Turkey. In the study, Turkey's 9-year period in the toy industry (GTIP 9503 "Toys, Games & Sports Equipment; Their Parts, Parts and Accessories" in a total of 11 separate product groups under this title) foreign trade course were investigated.

Keywords: Foreign Trade, Game and Toy Industries, Turkey

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PUBLIC ADMINISTRATION EDUCATION IN THE RUSSIAN FEDERATION

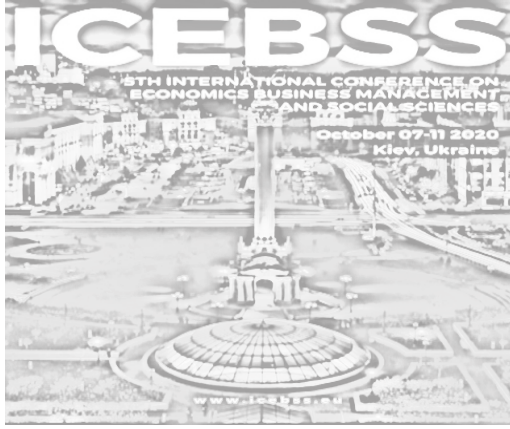
Bakko Mehmet BOZASLAN¹

Abstract

The Russian Federation, which has a very high place among OECD countries in terms of literacy, has a unique structure in higher education as well as in many other fields. Following the dissolution of the Soviet Union, the Russian Federation, which adopted liberal policies in many fields and went through radical changes, preferred to continue its legacy from the Soviets in the field of education for a long time. This preference began to change since 2014 and the Russian Federation started to implement the forms adopted by Western higher education institutions. First of all, the number of universities in the country, which has reached three thousand, has been reduced by two thirds to thousands. In this way, there has been a transition from quantity to quality, universities and departments with a low scientific activity rate were closed. The Russian Federation, which has higher education institutions such as nuclear engineering, aircraft, chemical and genetic engineering, history, political science and international relations, also has higher education institutions that have made a name in the field of public administration. In the Russian Federation, no branch distinction is made during high school education and all students are given the same formation and students pass an exam named Yediny Gosudarstvennyy Egzamen to complete their high school education and they have to be successful in this examination. The students are given the opportunity to register to the university of their choice according to the score they will get from the mentioned exam. In accordance with the Constitution of the Russian Federation, citizens who have the right to receive education in the mother tongue are provided with instruction in the standard Russian language at universities. In the Russian Federation, where education and training is completely free, except for some exceptional cases, the number of students who want to get public administration education has been increasing recently. In this context, in the study where document analysis method and content analysis method, which is one of the qualitative research methods, are used, the universities that carry out public administration education in the Russian Federation have been considered and the course contents of the education given by these universities have been studied. However, after graduation, the students of public administration education business areas mainly in Turkey has tried to compared with some Western states. In the study, it is tried to take a photo of the public administration in the Russian Federation by making use of statistical data such as the departments that teach public administration and the number of academic staff, etc.

Keywords: Public Administration Education, Russian Federation, Higher Education Institutions.

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INDIVIDUALIZATION AND ALIENATION: VIRUS and "NEW NORMAL"

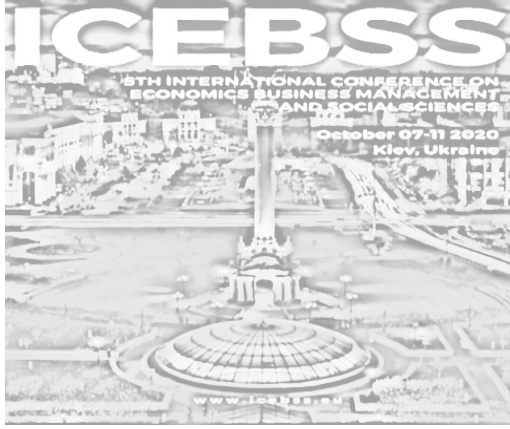
Emel OKOĐULLAR ¹

Abstract

It is likely that when Coronavirus first appeared in Wuhan, China in December 2019, almost no one could predict what change 2020 or later would witness. The virus, which was initially considered as other influenza viruses and was regarded as an ordinary epidemic despite its spread in several countries, has shown that it is not at all ordinary with the outcome of the first quarter of 2020. The virus, which has influenced almost the entire world, has been declared that the world is no longer the "old World" as it is frequently emphasized, as it creates many loss of life. Following the announcement of the pandemic of the World Health Organization (WHO), the quarantine decisions and strict measures taken by the countries aimed to stop the socialization process and isolate it. The only way to stay healthy and survive in this process has been isolation. While individuals did not leave their homes, while trying to eliminate the threat related to their lives, they inadvertently isolated themselves from other members of the society and entered into a voluntary isolation process. Undoubtedly, due to age and socio-economic differences, individualization and isolation have changed in various dimensions. The existence of the people who had to work out of the house and the elderly population faced a much greater threat was effective in this change. However, a period started in general when digitalization and the actual use of technology were seen as necessities for the continuation of life. All the structural trials and arrangements have been made for the execution of daily tasks, which are seen as ordinary and simple, in digital media. Active applications were carried out in a very short time. This digitization and individualization also initiated the process of separating society and its members from each other. So much so that this situation has been named as "new normal". In this study, it is emphasized what kind of a "new" the process started due to the pandemic and the results that this innovation brings on the relationship between the individual and society and the influence of the "new" power relations established with the "single" emphasis on the political field is tried to be addressed.

Keywords: Alienation, Coronavirüs, Digitalization, Individualization, "New normal"

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**EFFECTS OF EPIDEMIC DISEASE OUTBREAKS ON CAPITAL MARKETS VOLATILITY: A CASE OF
BORSA ISTANBUL**

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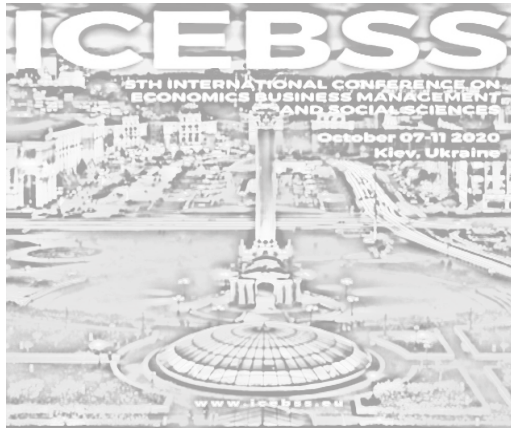
Abstract

Stock markets are important platforms for investment and hedging transactions. However, commercial activities and the attitude of investors are affected by many factors, primarily political and sociological. Especially when the conditions in the 21st century are evaluated, it is seen that also epidemics and pandemics have important effects on the course of stock market and commercial activities. This study examines the effects of epidemic disease outbreaks on the volatility of capital markets through the case of Borsa Istanbul. The data set of the study covers the period from January 2, 2009 to August 11, 2020 and consists of daily frequency observations. In the study, first, the appropriate volatility model for BIST 100 Index, which is the main market index of Borsa Istanbul, was determined. ARCH, GARCH, T-GARCH and E-GARCH models were tested to estimate the appropriate volatility model. Subsequently, dummy variables for H1N1, MERS and EBOLA outbreaks were created and the change in market volatility was analyzed by including them in appropriate model. According to the findings obtained from the study, it was determined that E-GARCH (1,1), one of the asymmetric models, is more suitable for modeling the BIST 100 Index volatility. It was found that the H1N1 pandemic caused an increase in BIST 100 Index volatility. It was determined that positive news rather than negative news was effective on BIST 100 volatility. In addition, the effects of Covid-19 pandemic on BIST in the current environment were evaluated. During the pandemic period, the excessive increase in volatility and the negative trend in the return series are remarkable compared to previous periods

Keywords: Epidemic Disease Outbreaks, H1N1, MERS, Ebola, Stock Market Volatility, Borsa Istanbul.

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1. INTRODUCTION

Stock markets are the lifeblood of the economy due to their resource allocation function. Transactions carried out within stock markets are under the influence of many factors. Especially since the 2000s, many epidemic disease outbreaks, which reached a global dimension, began to be considered as a powerful factor affecting the economies and the stock markets, which are the general indicators of the economies.

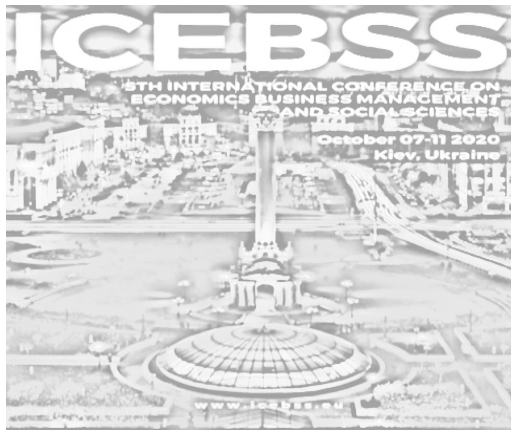
Lastly, at the end of 2019, the world faced the threat of Covid-19. By August 31, Covid-19 spread in over 180 countries, 25.484.767 cases were reached, and 850.535 died due to Covid-19 (John Hopkins University, 2020). Due to Covid-19, countries have started to implement social, economic, psychological precaution and restrictions in a short term (Şenol and Zeren, 2020; Ahmad et al., 2020). These precautions and restrictions will continue to be implemented depending on the course of the disease. Long-term effects are predicted to be more than previous outbreaks. It is predicted that long-term effects will be more severe than previous outbreaks (Ceylan and Ozkan, 2020; Ma et al., 2020; Zhang et al., 2020). This study analyzes the effects of previous epidemic disease outbreaks on Borsa Istanbul (BIST), which is represents capital market of Turkey as developing country. Additionally, the current effects of Covid-19 are examined. Turkish economy is open structure due to both geographical position and implemented economic policies. In addition, the distribution of domestic and foreign investors and their transaction volume is almost equal within BIST (Dünya, 07.09.2020). Therefore, BIST has the capability to represent the motivation of different geographies for investors.

In this study the effect of epidemic disease outbreaks on BIST volatility is examined. H1N1, MERS, Ebola and Covid-19 outbreaks were included in the study. It consists of the relevant literature, data set and methodology, findings and conclusion respectively.

2. LITERATURE REVIEW

McKibbin and Sidorenko (2006) examined the effects of pandemic influenza on the global economy under mild, moderate, severe and ultra-scenarios with the Asia Pacific G-Cubed model. As a result, it reported that deaths would be 1.4 million to 142.2 million, and GDP losses would be \$ 330 million to \$ 4.4 trillion. Prager et al. (2017) examined the effects of influenza outbreak on the US GDP under different scenarios such as the availability of vaccine, seasonal or pandemic form for the period of 2005-2013. Computable general equilibrium model simulations reported that outbreaks could create between \$ 19.9 billion and \$ 45.3 billion loss in GDP.

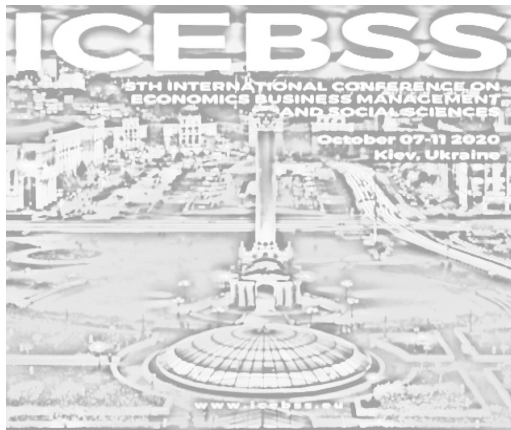
Del Giudice and Paltrinieri (2017) investigated the impact of Ebola outbreak and the Arab Spring on investment funds that take African countries as reference for the period 2006-2015.



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It is concluded that Ebola outbreak and the Arab Spring have greatly affected the fund performance and caused investors to withdraw their savings from the relevant funds. Withdrawals in funds increase as the rate of coverage in the media increases. Ichew and Marinč (2018) examined the effects of the Ebola outbreak on companies in the perspective of the geographical proximity of the company's activities and locations to the disease region and the intensity of media coverage. As a result, it is stated that the effects of the outbreak are closely related to geographical proximity, company size (small companies), industry and media publications. In his study, Jalloh (2019) investigated the economic conditions of countries affected by the Ebola outbreak, stated that Ebola negatively affected the economies of the countries where the outbreak occurred, however, the isolation of the countries where the outbreak was experienced greatly contributed to the worsening of the economic conditions.

Baker et al. (2020) examined stock and commodity markets since 1900 and compared Covid-19 with previous infectious disease outbreaks. It has been reported that Covid-19 has a much larger impact on both the stock and the goods market compared to previous infectious disease outbreaks, and the effect on market volatility is approximately twice as much as the 2008 financial crisis. Zhang et al. (2020) examined the interaction of 12 country stock markets under the Covid-19 pandemic. When the data up to March 27, 2020 are evaluated with binary correlation and minimum spanning tree method, it has been stated that the structure of the interaction between stock market has changed greatly. Sharif et al. (2020) examined the interaction between Covid-19, oil price shocks, the stock market, geopolitical risk, and economic policy uncertainty for the US. The data for the period of January 21, 2020 - March 30, 2020 were evaluated with the wavelet method and the wavelet-based Granger causality tests and it was stated that the Covid-19 and oil price shocks had unprecedented effects on geopolitical risk, economic policy uncertainty and stock market volatility. It also has been reported that Covid-19 should be interpreted differently in the long and short term, but it can currently be described as an economic crisis. Ruiz Estrada et al. (2020) examined the time and spatial patterns of outbreaks and analyzed the impact of Covid-19 on financial markets. The findings obtained are that Covid-19 can produce similar results to the 1929 crisis and the current situation may begin to improve at the end of 9-12 months. It has been reported that the stock market performance index created with the data of 10 countries' stock markets was 1.88 at the beginning of the epidemic, but reached 0.45 on the 140th day of the epidemic, and the bull market view at the beginning of the epidemic turned into a bear market. Rabhi (2020) investigated the reactions of China, India, Indonesia, Malaysia, Philippines and Thailand stock markets to Covid-19. It has been found that fatality affect the stock markets more than the number of cases, and in general, Covid-19 affects the stock markets negatively. In addition, in times of turmoil and uncertainty, it has been observed that the oil price, gold price, exchange



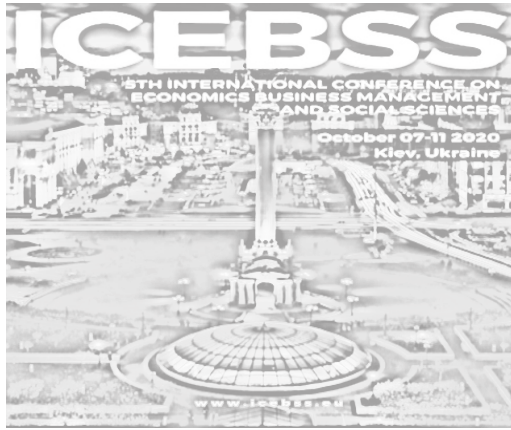
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rate and US stock markets are the determinants of Asian stock markets. Ma et al. (2020) examined the effects of 1968 Flu, SARS, H1N1, MERS, Ebola and Zika health crises on the economy. It was stated that the GDP decreased by three percentage points in the countries where the crises were experienced, compared to the ones that were not experienced, and it would take about five years to return to the previous level. It has been reported that the global economic impacts of Covid-19 will be much greater and the impact of previous crises can be expressed as the lower limit for Covid-19.

Şenol and Zeren (2020) examined the impact of Covid-19 on stock markets within the framework of MSCI Global, Emerging Markets, Europe and G7. According to the Fourier cointegration results, the existence of a cointegration relationship between Covid-19 and indices was determined. Ashraf (2020) measured the response of 64 countries' stock market to Covid-19 for the period between January 22, 2020 and April 17, 2020. It has been concluded that Covid-19 negatively affects the markets and the markets take the number of cases into account compared to the fatality number. In addition, it has been stated that the markets react quickly to the outbreak and the response changes over time depending on the outbreak stage. Ali et al. (2020) examined the impact of Covid-19 on China, USA, UK, Italy, Spain, France, Germany, Switzerland, South Korea stock markets, corporate bond index (S&P 500), US treasury bond core index (ICE core), Bitcoin, Oil (WTI) and gold prices. It has been reported that stock markets and financial instrument returns were negative during the outbreak period, volatility increased and the current situation worsened during the moving from epidemic to pandemic. Ngwakwe (2020) examined the change of Shanghai Stock Exchange Composite Index, Euronext 100, S&P 500 and DJIA Indices with reference to 50 days before and after the Covid-19 outbreak. It was stated that the indices reacted differently to the outbreak. While DJIA decreased and SSE increased in the period before the outbreak, the S&P 500 and Euronext 100 did not show a significant change. It was reported that only the average of the SSI Index increased in the period after the outbreak. Al-Awadhi et al. (2020) investigated the effects of Covid-19 on the Hang Seng Index and the SSE Composite Index. It was stated that the outbreak negatively affected the markets, and there was a strong negative relationship between the number of cases and fatality and indices.

3. DATA SET

BIST 100 Index, which is an indicator of Borsa Istanbul, was used in the study. The VIX Index (Volatility Index) was taken as the control variable. The data were obtained from BIST Data Store and the CBOE official website. MERS, H1N1 and Ebola outbreaks have been studied by creating dummy variables. The date of dummy variables are the periods when the spread of



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epidemics peaked or in other words, their effects were felt the highest. The relevant dates have been created by considering the publications and notifications of the World Health Organization (WHO). The effects of Covid-19 were evaluated for the period December 31, 2019 and August 11, 2020. The data set covers the period between January 02, 2009 and August 11, 2020. The series are converted into return series with the formula $(r = \ln (P_t/P_{t-1}) * 100)$. Descriptive information about the series is included in Table 1.

Table 1: Information on Variables

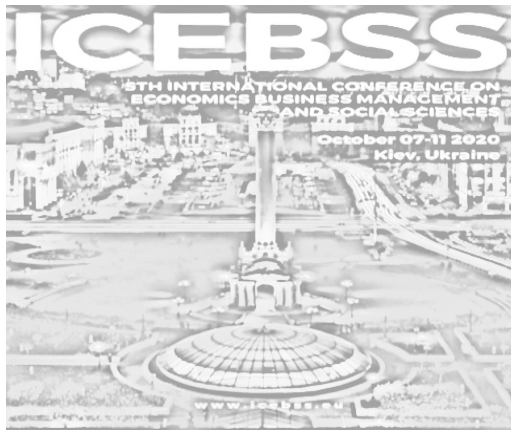
Variable	Symbol	Period
BIST 100	BIST 100	1.2.2009 - 8.11.2020
VIX	VIX	1.2.2009 - 8.11.2020
Influenza A	H1N1	4.27.2009 - 8.9.2010
Ebola	Ebola	3.10.2014 - 3.28.2016
MERS	MERS	3.24.2014 - 10.30.2015
Covid-19	Covid-19	12.31.2019 - 8.11.2020

There are two selection criteria for epidemics diseases; it must occur recently and directly or indirectly affected Turkey. The H1N1 pandemic was effective between 2009 and 2010 (WHO, 2009; WHO, 8/10/2010). The number of deaths announced by WHO is 18.449 (WHO, 3/7/2010), and the estimated number of deaths is between 151.700-575.400 (Dawood et al., 2012). Ebola emerged in Africa in 1976 and 1590 people died of Ebola by 2012 (WHO, 6/14/2017). The Ebola outbreak started in 2014 and 11,310 people died between 2014 and 2016 due to Ebola, the PHEIC (Public Health Emergency of International Concern) status for Ebola was lifted by WHO on March 29, 2016 (WHO, 5/11/2016; CDC, 2016). MERS first appeared in Saudi Arabia in 2012 and peaked in 2014 and 2015. It was reported by WHO that 858 people died due to MERS (WHO, 11/27/2019; WHO, 12/5/2016). Covid-19 emerged in China on December 31, 2019 and was described as a pandemic by WHO on March 11, 2020. The number of cases was 20.405.695 on August 13, 2020 (WHO, 8/13/2020).

4. METHODOLOGY

In the study, Augmented Dickey Fuller and Phillips Perron tests were used for the analysis of stationarity. ARCH, GARCH, E-GARCH and T-GARCH (ARCH family models for short) were used for modeling volatility. Since the VIX index generally represents the current and expected reactions of the markets, it is included in the analysis process as a control variable.

In the time series analysis, first, the stationarity test is performed to eliminate the spurious regression problem. In the case of spurious regression, the high correlation detected between

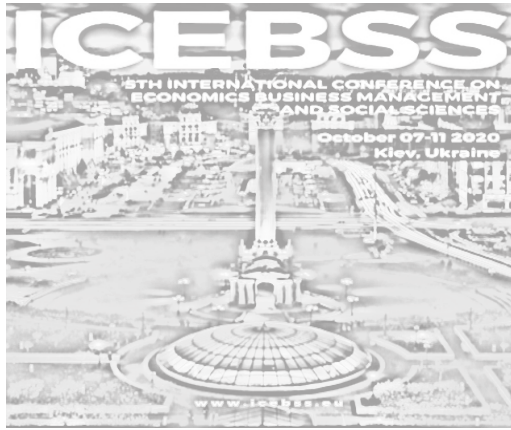


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variables is erroneous and the regression established does not reflect the real relationship (Granger and Newbold, 1974: 111). The results of the stationarity tests also affect the subsequent analysis process. For the analyzing stationarity, mostly unit root tests are used. Augmented Dickey Fuller (ADF) (1981) and Phillips Perron (PP) (1988) tests are among the commonly used unit root tests. ADF and PP tests were applied for stationarity in the study. ADF and PP are testing the presence of unit root in the null hypothesis. If the test statistic is greater than the critical values, it means that the null hypothesis is rejected. In this case, the series is stationary.

Variance, which is one of the criteria of stationarity in time series, changes over time, and Autoregressive Conditional Heteroscedasticity (ARCH) models are used in the modeling of time series. The first model that provides a systematic framework for volatility modeling is Engle's (1982) ARCH model. Due to the method of determining the number of lags of the error squares to be included in the model is not clear, and the high number of lags reduces the efficiency of the model, the existence of very strict restrictive criteria for the coefficients, and the asymmetry effect of shocks is not taken into account (Brooks, 2014: 428; Tsay, 2010: 119), ARCH models leaved its place to the improved versions. By adding the conditional variance's own lag values to the ARCH model, a Generalized ARCH (GARCH) model was created by Bollerslev (1986). ARCH and GARCH models assume that shocks have the same effect on volatility. Therefore, they are regarded as symmetrical models. Investors' different responses to positive and negative shocks have led to the development of asymmetric models suggesting different effects of positive and negative shocks in volatility modeling. Asymmetric volatility models are considered extensions of the GARCH model, and among these models, E-GARCH and T-GARCH are frequently used.

The GARCH model is good at capturing the thick tail and volatility cluster. However, since the error terms are defined as a function of their magnitude independent of their signs in the GARCH model, it fails to capture the asymmetry in the variance structure (Songül, 2010: 18). Nelson (1991) developed the Exponential GARCH (E-GARCH) model that considers the magnitude and effect aspects of lagged error terms. The E-GARCH model formulates the conditional variance equation instead of the variance itself, allowing the coefficients to be negative since it uses logarithmic values. The model provides an advantage in that the coefficients are not constrained to be negative and allows asymmetric peaks of conditional variance with exponentiation (Alexander, 2008: 151). Another model that considers asymmetry in volatility modeling is the Threshold GARCH (T-GARCH) model proposed by Zakoian (1994). T-GARCH model, which indicates that the effect of positive and negative shocks is not symmetrical, is obtained by adding the leverage parameter to the GARCH model (Baykut and Kula, 2018: 286). Table 2 contains information on ARCH, GARCH, T-GARCH and E-GARCH models (Engle: 1982; Bollerslev: 1986; Nelson: 1991; Zakoian: 1994).



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Table 2: Overview of ARCH Family Models Used in the Study

Model	Equation	Model Specification
ARCH	$h_t = \alpha_0 + \sum_{i=1}^q \alpha_i \varepsilon_{t-i}^2$	$\alpha_0 > 0, \alpha_1 \geq 0$
GARCH	$h_t = \alpha_0 + \sum_{i=1}^q \alpha_i \varepsilon_{t-i}^2 + \sum_{i=1}^p \beta_i h_{t-i}$	$\alpha_0 > 0, \alpha_1 \geq 0, \beta_1 \geq 0, \alpha_1 + \beta_1 \leq 1$
E-GARCH	$\log(h_t) = \alpha_0 + \sum_{i=1}^q \beta_i \log(h_{t-i}) + \sum_{i=1}^p \alpha_i \left \frac{\varepsilon_{t-i}}{\sqrt{h_{t-i}}} \right + \sum_{i=1}^r \gamma_i \frac{\varepsilon_{t-i}}{h_{t-i}}$	$\gamma \neq 0 \Rightarrow$ asymmetry effect exists, $\gamma < 0 \Rightarrow$ leverage effect exists
T-GARCH	$h_t = \alpha_0 + \sum_{i=1}^q \alpha_i \varepsilon_{t-i}^2 + \gamma_i \varepsilon_{t-i}^2 d_{t-i} + \sum_{i=1}^p \beta_i h_{t-i}$	$\gamma \neq 0 \Rightarrow$ asymmetry effect exists, $\gamma < 0 \Rightarrow$ leverage effect exists, $d_{t-i} = \begin{cases} 1, \varepsilon_{t-i} < 0, & \text{negative effect} \\ 0, \varepsilon_{t-i} \geq 0, & \text{positive effect} \end{cases}$

The parameters in the equations are; h_t is conditional variance, α_i and β_i are ARCH and GARCH effects respectively, ε_{t-i}^2 error term, γ leverage effect, and d is the dummy variable for positive and negative shocks.

5. FINDINGS

For BIST 100 Index and VIX Index, the variables to be used for the analysis, the stationary test was first performed. ADF and PP unit root tests were used to determine stationarity. Results are reported in Table 3.

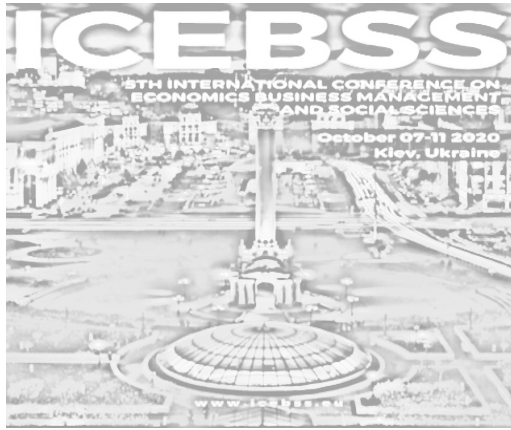
Table 3: Unit Root Test Results for BIST 100 and VIX Index Return Series

Unit Root Test	ADF	PP
	Level	Level
BİST 100	-51.875***	-51.877***
VIX	-54.997***	-65.432***

Notes: Critical values are taken from MacKinnon (1996). ***, **, and * show statistical significance at 1%, 5% and 10% significance level, respectively.
Critical values for ADF and PP tests are -2.567, -2.863 and -3.433 at the 10%, 5% and 1% significance level, respectively.

ADF and PP unit root tests produced results that support each other, the test statistics of BIST 100 and VIX Index return series are statistically significant at 1% significance level. In other words, the H_0 hypothesis stating that the series have unit root at level value was rejected. Series are zero degree integrated or stationary at level.

The appropriate ARMA (p, q) model should be determined after the stationary test for the BIST 100 return series. The Schwarz Bayesian Information Criteria (SIC) was taken as reference.



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Combinations up to the 4th lag number were created for ARCH and GARCH effects, 25 models in total were tested. Table 4 shows the ARMA model results.

Table 4: BIST 100 Return Series ARMA (p, q) Model Selection According to SIC

Model p / q	0	1	2	3	4
0	1.924888	1.927826	1.929973	1.930113	1.933271
1	1.927826	1.930557	1.932293	1.931921	1.933271
2	1.930056	1.932479	1.93227	1.933747	1.935414
3	1.930513	1.931901	1.933628	1.937729	1.93704
4	1.931316	1.932871	1.935193	1.936791	1.937871

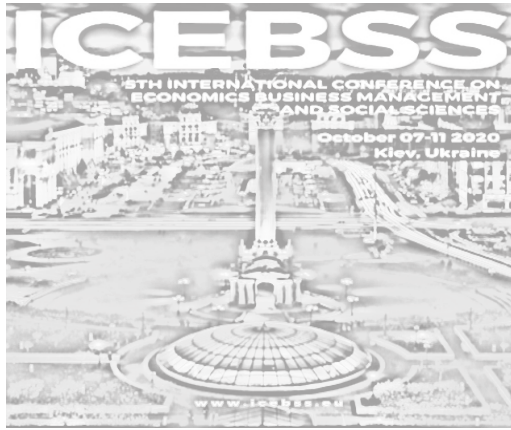
When Table 4 is examined, it is seen that the model with the lowest coefficient according to SIC is ARMA (0, 0). ARMA (0, 0) has the lowest coefficient value with 1.924888 coefficient and is the model decided to be used for analysis. After choosing the ARMA model, ARCH-LM test was applied to determine whether the model has heteroscedasticity problem in error terms. Detecting heteroscedasticity is required to use the ARCH family model. ARCH-LM test results applied for BIST 100 ARMA (0, 0) are shown in Table 5.

Table 5: BIST 100 ARMA (0, 0) ARCH-LM Test Results

Lag Lengths	χ^2 Table Value	Observed R^2	F Statistic
1	3.84146	29.16304***	29.46120***
2	5.99146	52.15006***	26.56180***
4	9.48773	105.7473***	27.47026***
8	15.50731	114.4853***	14.89930***
12	21.02607	121.9724***	10.59822***

Notes: ***, **, and * show statistical significance at 1%, 5% and 10% significance level, respectively.

When Table 5 is examined, it is seen that the observed R^2 values as a result of the ARCH-LM test performed for different lag lengths are greater than the χ^2 table values. In addition, the significance of the R^2 values confirm that the series has heteroscedasticity. In this case, ARCH family models can be used to eliminate the heteroscedasticity problem and to make volatility calculations. Four different ARCH family models are used for volatility estimation for the BIST 100 Index return series. ARCH and GARCH models are used as symmetric models, E-GARCH and T-GARCH models are used as asymmetric models. In the models created, the problem of negativity (negative coefficient), stability (coefficients greater than 1) and heteroscedasticity were checked again and it was decided that the appropriate model was E-GARCH (1, 1). After determining the appropriate volatility model for the BIST 100 Index return series, three dummy variables were added to the model, taking as reference the H1N1, Ebola and MERS



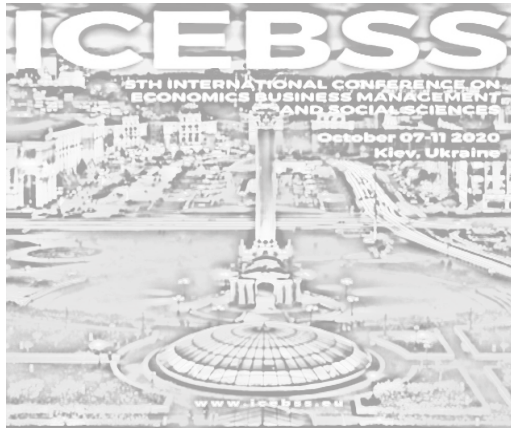
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outbreaks. Later, the VIX Index was added to the model as a control variable, and it was tested whether the effects of dummy variables were caused by other factors. In Table 6, Panel A contains the effect of outbreaks on the stock market index volatility and Panel B contains the results of the model in which the VIX Index is added to the mean equation as a control variable.

Table 6: The Effect of H1N1, Ebola and MERS Outbreaks on BIST 100 Index Volatility

Period: 01/02/2009 – 12/31/2019						
	Panel A			Panel B		
	Mean Equation			Mean Equation		
	Coefficient	Standard error	z Statistics	Coefficient	Standard error	z Statistics
φ	0.026**	0.011	2.382	0.024**	0.011	2.217
ν	-	-	-	-0.040***	0.003	-13.017
	Variance Equation			Variance Equation		
	Coefficient	Standard error	z Statistics	Coefficient	Standard error	z Statistics
	ω	-0.166***	0.016	-10.182	-0.169	0.019
α_1	0.145***	0.016	9.246	0.138	0.016	8.468
β_1	0.948***	0.007	134.551	0.941	0.009	105.662
D_{H1N1}	0.016**	0.008	2.172	0.017**	0.008	2.131
D_{Ebola}	-0.004	0.013	-0.321	-0.012	0.014	-0.866
D_{MERS}	0.000	0.014	0.016	0.005	0.015	0.345
γ	-0.078***	0.007	-10.613	-0.079***	0.008	-10.367
$LB - Q(36)$	22.651			26.166		
$LB - Q^2(36)$	38.858			32.823		
$ARCH(12)$	0.815			0.822324		
Notes: ***, **, and * show statistical significance at 1%, 5% and 10% significance level, respectively. φ and ω are the constant terms in the mean and variance equation, α_1 is ARCH effect, β_1 is GARCH effect and ν is VIX Index. $D_{H1N1}, D_{Ebola}, D_{MERS}$ are dummy variables for H1N1, Ebola and MERS, respectively.						

When the diagnostic tests of both models are examined, it is seen that there is no autocorrelation in the standardized error and standardized error squares and the ARCH effect disappears. The appropriateness of the models is confirmed by these results. When the dummy variables were evaluated, it was determined that the MERS and Ebola outbreaks did not have a significant effect on the BIST 100 Index volatility. It was found that the effectiveness of H1N1 on BIST 100 Index volatility was at the 5% significance level and increased the volatility by 1.5%. According to the E-GARCH (1, 1) model, the coefficient is negative (-0.079) and is significant at 1% significance level. Therefore, positive news has more impact on volatility than negative news.



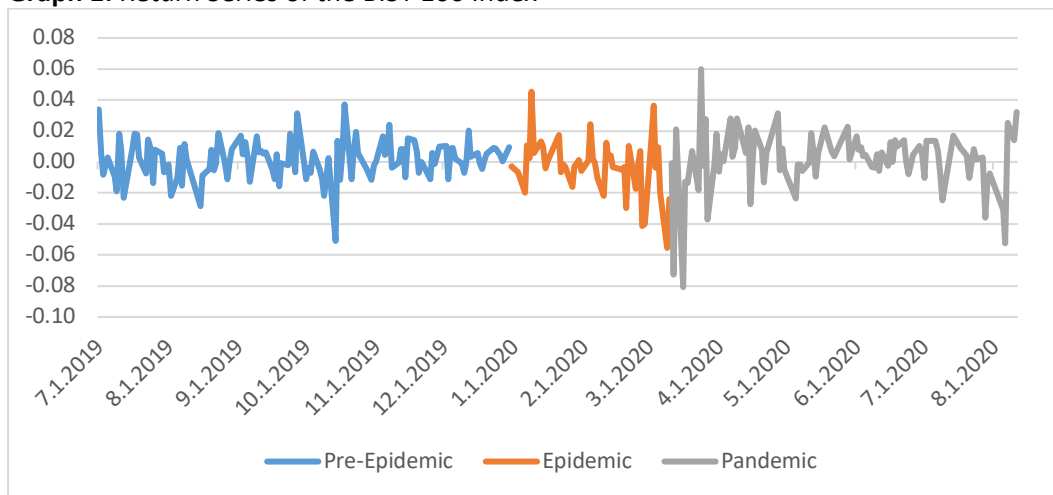
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6. COVID-19 AND BIST 100

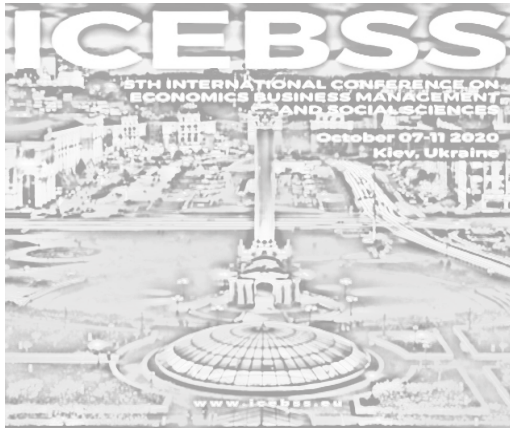
The Covid-19 pandemic continues as of September 2020. In Turkey, along with June, the travel ban, the restrictions that apply, such as curfew has been lifted in a large part, and economic and social life flows in a controlled manner. Although the pandemic has not yet ended, it is observed that the general trend in BIST 100 Index followed a horizontal course, especially as of June, when the restrictions were lifted (Ministry of Internal Affairs, 2020). Therefore, in order to examine the effects of Covid-19 on BIST under current conditions, BIST 100 Index data are interpreted over three periods; 6 months before the outbreak (as of 11/7/2019), the epidemic period between 12/31/2019 and 3/10/2020 and the pandemic period covering current data from 3/11/2020 to 8/11/2020.

First, the effects of Covid-19 outbreak on the return series of the BIST 100 Index for the period examined were considered. Two series, both unitary and cumulative, were created for the index's return series. Graph 1 includes the return series of the BIST 100 Index.

Graph 1: Return Series of the BIST 100 Index



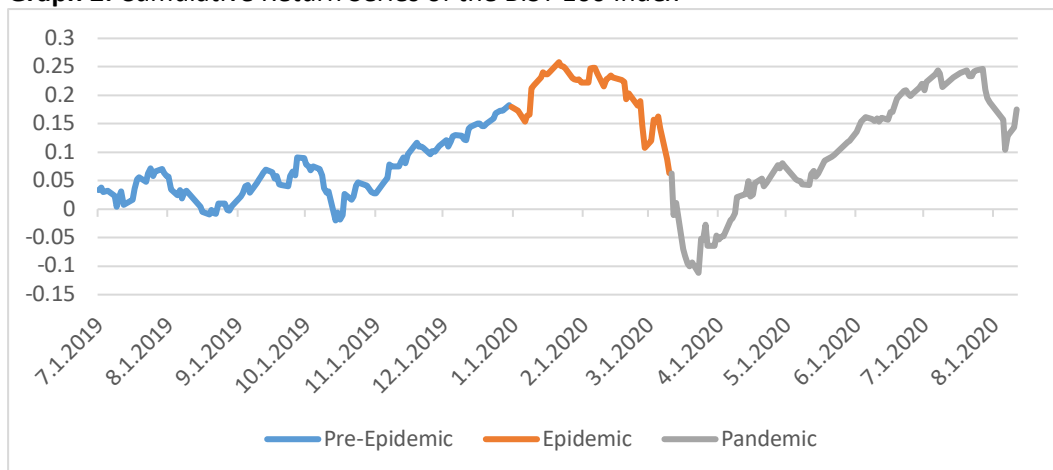
When Graph 1 is analyzed, it is seen that the return series showed an intense movement especially during the epidemic and pandemic period. The return series reached its highest and lowest levels in the period under review during epidemic and pandemic periods. On 3/11/2020 outbreak is declared as a pandemic and the date pose a particular importance for Turkey. The first case detected on 3/11/2020 in Turkey. In the pre-epidemic period, the highest daily returns and losses were 3.7% and 5%, respectively. This situation reached 4.5% and 5.5% in the epidemic period and 6% and 8.1% in the pandemic period. The pandemic has presented opportunities along with risks.



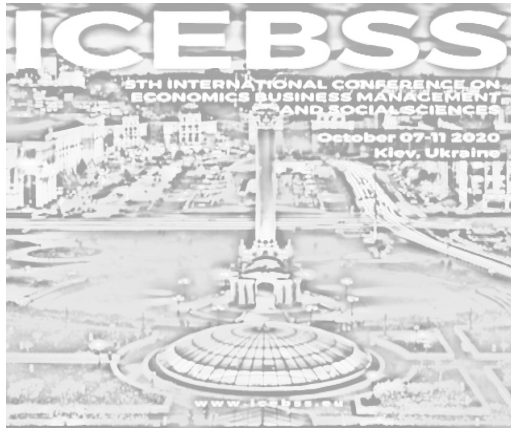
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When the change in the return series is compared in terms of periodic return, it is 18% in the pre-epidemic period, - 12% in the epidemic period and 11% in the pandemic period up to 8/11/2020. The process can be monitored within Graph 2. While the BIST 100 Index was at 1147.54 on 12/30/2019 before the onset of the outbreak, it was at the level of 1110.05 as of 8/11/2020. In the relevant period, huge losses were experienced and the index fell to 842.46 (26% loss). However, losses in the index were largely compensated.

Graph 2: Cumulative Return Series of the BIST 100 Index



At this point it would be useful to make a quantitative assessment of market returns or jumps. In Table 7, market movements in the period examined in the analysis are given quantitatively. The period of 2/4/2009-8/11/2020 was divided into two parts as before and after Covid-19 as of 12/31/2019, and market movements in both periods were calculated. In the period before Covid-19, market movements above 2.5% were 200 and their share in the total was 7.5%. In the Covid-19 period (a period of 1/20 of the previous period), the market movements realized above 2.5% were 20 and their share in the total was 14.4%. Although the outbreak contains many threats, it has also offered opportunities compared to previous periods. Considering the period after 2009, it is understood that Covid-19 has had a great impact on the BIST 100.



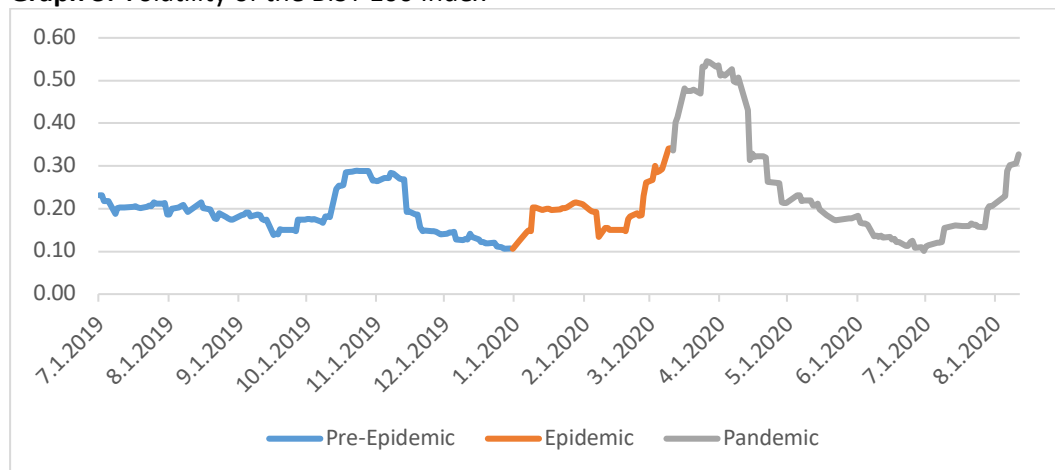
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Table 7: Classification of the BIST 100 Return Index Movements

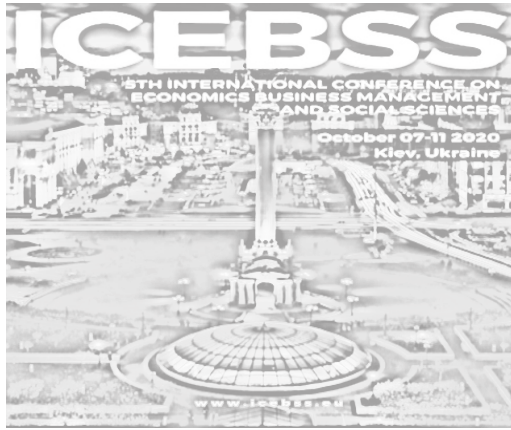
Period	Before Covid-19 (02/04/2009-12/30/2019)	During Covid-19 (12/31/2019-08/11/2020)
Number of Observation	2664	139
Movement	+%2.5	9
	-%2.5	11
Share in Total	%7.5	%14.4

Graph 3 shows that market volatility reached its highest levels especially during the pandemic period. Generally, Covid-19 has increased market volatility. Volatility is a cumulative measure and is created based on historical data. Therefore, it expresses the previous period response of the index. Based on the volatility change, it can be said that the index has an intense response from the beginning of the outbreak.

Graph 3: Volatility of the BIST 100 Index

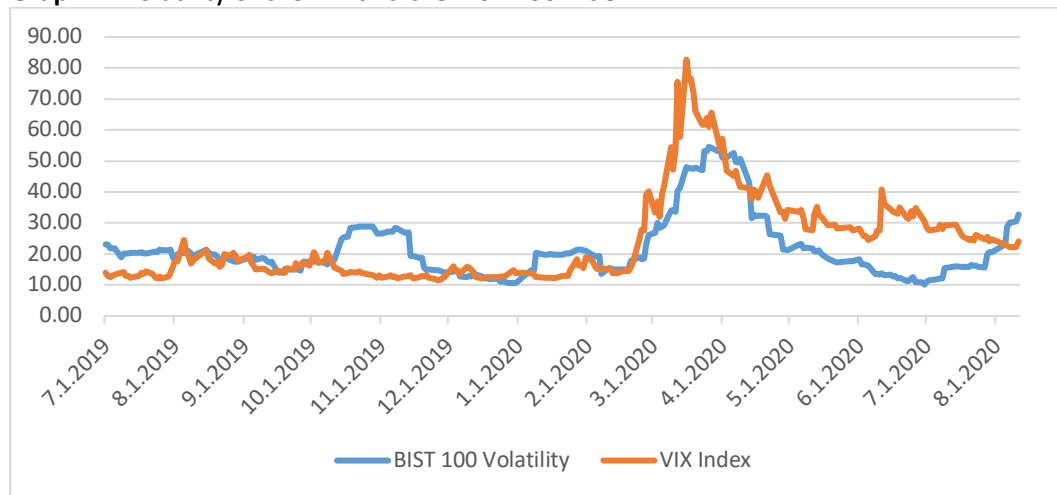


In Graph 4, the VIX Index and the BIST 100 Index volatility are seen together. The VIX Index measures the expected (implied) volatility by taking the relationship of option prices to market volatility as a reference. Hence, the VIX Index is a forward indicator. As indicated in Graph 4, it is seen that the VIX Index exhibits leading movements, and with the help of the established regression, a correlation of 71% determined (when only the outbreak period is taken as reference the correlation increases to 77%). From this point of view, it can be said that the BIST 100 Index gives similar reactions to the developments in the world and is greatly affected by the Covid-19.



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Graph 4: Volatility of the VIX and the BIST 100 Index

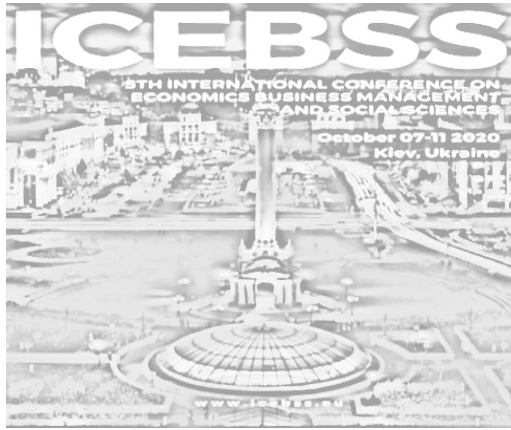


The Covid-19 pandemic has not yet ended, and even in the current situation, it has created a more devastating effect than previous outbreaks. By August 31, Covid-19 spread in over 180 countries, 25.484.767 cases were reached, and 850.535 people died due to Covid-19 (John Hopkins University, 2020). Factors such as the spread of the virus, the fatality rate and the general course of the outbreak, the experience of recent outbreaks and the development of the information network, liberalization and the intensity of cross-border trade in modern economies (Baker et al., 2020) makes Covid-19 a greater pressure element on financial markets compared to previous outbreaks. As a matter of fact, the same situation is predicted for the BIST.

7. CONCLUSION

In this study, the effects of recent epidemics disease outbreaks on the Borsa Istanbul were investigated. First, the effects of H1N1, Ebola and MERS outbreaks on BIST 100 Index volatility and thus on BIST stability were examined. ARCH family models were used for analysis and it was decided that the appropriate model was E-GARCH (1, 1). As a result, it has been determined that only H1N1 pandemic is effective on BIST 100 Index volatility in related outbreaks. It was found that the H1N1 pandemic increased the BIST 100 Index volatility by 1.5%. However, positive news had more impact on volatility than negative news.

In the study, it was aimed to evaluate the current situation of Covid-19 by examining the epidemic disease outbreaks that took place recently. H1N1, Ebola and MERS outbreaks have arisen in nearby geography of Turkey or has influenced the rest of the world intensively. However, Turkey has not heavily or directly affected from relevant outbreaks. Covid-19 is in a very different position. H1N1 caused the most fatality among the epidemics disease outbreaks

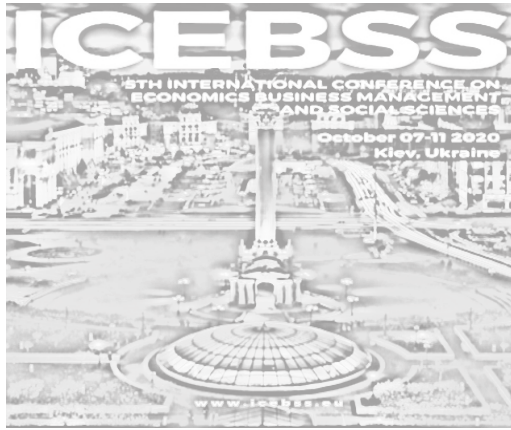


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examined but Covid-19 caused 40 times more fatality than H1N1's official deaths number (WHO, 3/7/2010) and 2.5 times more fatality than H1N1's estimated average deaths number (Dawood et al., 2012). The number of cases has exceeded 25 million. 270.133 cases and 6.370 fatality are already reached in Turkey (John Hopkins University, 2020). Turkey gives a successful test by the means of numerically when assessing the overall situation of the world's against Covid-19 pandemic. However, the graphs and figures examined clearly show that the markets are under great pressure and the pandemic has negatively affected the markets. In addition, there are many studies in the literature (Rabhi, 2020; Ashraf, 2020; Awadhi et al., 2020; Ali et al., 2020; Sharif et al., 2002; Şenol and Zeren, 2020; Jalloh, 2019; etc.) reporting that the impact of epidemics disease outbreaks on the markets increases with the number of cases and fatality. The Covid-19 pandemic is particularly devastating for some sectors and is unlike any previous crisis (IMF, 2020), Covid-19 recession has the worst scenario and forecast among global recessions since 1990 (World Bank, 7/8/2020). Double-digit percentage decreases in stock markets, the VIX Index exceeded 80 level and the volatility of financial markets has reached extraordinary dimensions with many spreads reaching levels not seen since 2008 (Ma et al., 2020). No epidemic disease outbreaks in the last century has had such an impact on stock markets, including the Spanish flu (Baker et al., 2020; Goodell, 2020). The Covid-19 outbreak has already created a global impact and pressure in social, psychological, political, economic and many other aspects. The date when the pandemic will end is a mystery. However, history is repetitive. Throughout history, epidemic disease outbreaks have destroyed the entire population and societies, determined the consequences of wars, but paradoxically paved the way for innovations and advances in the sciences (including medicine and public health), economics and political systems (Huremović, 2019: 7).

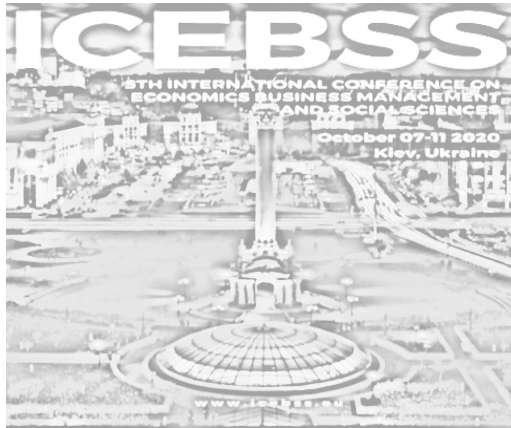
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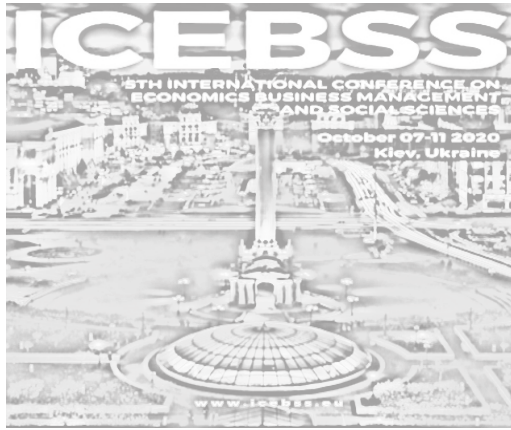
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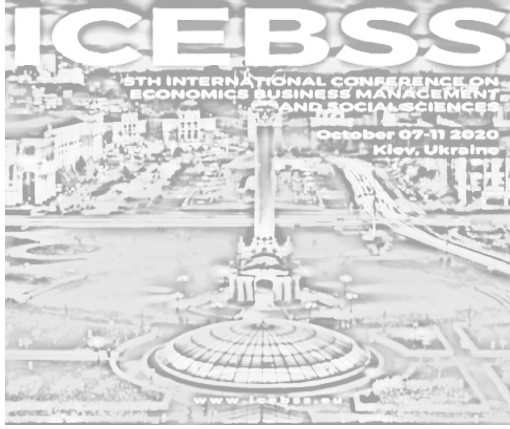
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**THE IMPACT OF CORPORATE GOVERNANCE ON FIRM PERFORMANCE: AN APPLICATION ON
THE FIRMS IN THE MANUFACTURING INDUSTRY IN BORSA ISTANBUL***

Berna DOĞAN BAŞAR¹, Melek ACAR²

Abstract

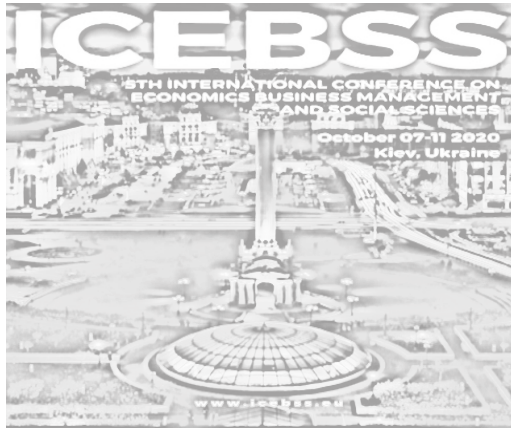
Corporate governance has become an important issue in the aftermath of international financial crises, corruption and corporate scandals since the 1980s. Corporate governance is a broad term and defines the methods, structure and the processes of a company. In this context, the term of corporate governance plays a significant role in ensuring that the firm moves in the right direction and optimally. In this study, the effect of corporate governance practices on firm performance is analyzed empirically in 76 manufacturing industry companies listed on Borsa Istanbul between 2008 and 2017. The measures like Return on Asset (ROA), Return on Equity (ROE), Price Earnings Ratio (P/E), Market Value/Book Value Ratio (MV/BV) and Tobin's Q Ratio (TOBINQ) were used to determine the firm's financial performance. Four independent variables were used in the study. These are board size, the ratio of women managers on the board of directors, range of institutional ownership and CEO duality. Annual data were used in the study and a total of 10 terms were examined. In this context, the system GMM estimator developed by Arellano-Bover (1995), was used. As a result of the study, there is a positive and statistically significant relationship between board size and MV/BV and Tobin's Q. The ratio of women executives in the board of directors is positive on the ROE and negative on the Tobin's Q. While a negative and statistically significant relationship was determined between institutional investor ownership and ROA, ROE and Tobin's Q, there was a positive and statistically significant relationship between institutional investor ownership and P/E and MV/BV. There was a positive and statistically significant relationship between the CEO duality and ROA, ROE and MV/BV and negative between P/E.

Keywords: Corporate Governance, Firm Performance, Generalized Method of Moments, Borsa Istanbul

*This study is derived from Berna Doğan's master thesis titled "The Impact of Corporate Governance on Cost of Capital and Firm Performance: An Application on the Firms in the Manufacturing Industry in Borsa Istanbul

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1. INTRODUCTION

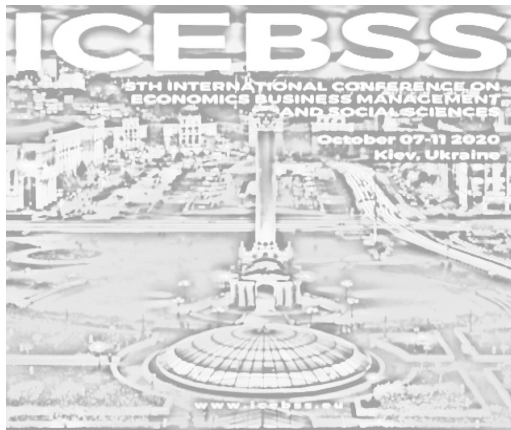
Business organizations are the fuel of the economy and the most productive creators of wealth. Despite the legislation and sectoral regulations, commercial relations include entities that each has its own rules, corporate culture, documentation principles and methodologies. While tremendous progress has been made in many developed countries, setting up and running a firm encompasses a management maze that most people cannot easily handle. In developing countries, company establishment has become a very difficult task due to the indispensable management approach and widespread corruption (Marashdeh, 2014: 31).

As a starting point, most of the work in corporate governance deals with the separation of ownership and control, first put forward by Berle and Means (1932). This separation establishes a “manager” relationship between owners and a representative relationship between managers as an intermediary. In an ideal world, managers show all their abilities and skills to achieve the best possible return for investors (Tosuni, 2013: 8).

Scandals and financial crises experienced in recent years have increased the interest in corporate governance among stakeholders. This situation shows that poor corporate governance can negatively affect financial performance and consequently increase the probability of firm failure (Coffee, 2005: 1).

Depending on the opinions of policy makers, practitioners and theorists, the concept of corporate governance can be viewed from two perspectives: narrow and broad perspective (Solomon, 2010: 1). From a narrow perspective, corporate governance aims to maximize the stakeholder and protect it as much as possible, while corporate governance, from a broader perspective, is responsible for enabling stakeholders other than the company's stakeholders to make more comfortable decisions (Maher and Andersson, 2000: 3). In other words, from a narrow perspective, corporate governance strengthens the relations between stakeholders, managers, auditors and other stakeholders, while corporate governance from a broad perspective includes the whole market as investor trust, effective capital allocation and prosperity development in economies (Fülöp, 2014: 617).

Corporate governance according to the definition made by the OECD and Cadbury is an application where companies are guided and audited (OECD, 1999: 5; Cadbury, 1992: 15), and it has been implemented primarily in joint stock companies (World Bank, 1999: 8). From the perspective of stakeholders, it is a system that respects the values of the society, while protecting the interests of not only stakeholders but also managers (Şehirli, 1999: 2). Good governance enhances the performance as well as competitiveness of a firm thereby leading a clear path for achieving business excellence. It appears that corporate survival depends largely on strong institution of corporate governance. The boards of directors are perhaps the most



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important component of corporate governance mechanisms as they represent the media through which the shareholders and investors monitor and oversee the activities of the top executives and managers (Adeyemi et al. 2015).

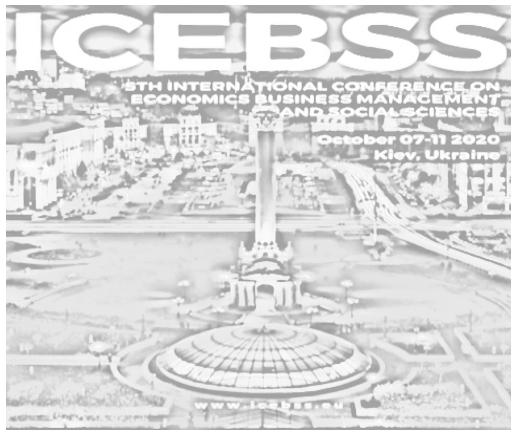
Companies can achieve results such as better access to external finance and higher firm performance by applying the corporate management system. Turkey's ability to benefit from these advantages can resolve socio-economic problems, determine how to strengthen the capital market depends on the ability and general ethical and corporate governance standards. However, the global crisis in 2008, an enterprise management system to improve financial transparency in Turkey has increased awareness of the need to improve. Therefore, Turkey has given priority to corporate governance rules in order to have a better economy. In this context, first of all, corporate governance principles and internal control mechanisms should be developed.

The purpose of this study is to analyze the role of corporate governance on firm performance. In this context, the relationship between corporate governance practices and firm performance on BIST Manufacturing Industry companies between 2008 and 2017 was examined empirically. Four variables are considered as governance mechanisms. These are board size, women board size, institutional ownership and CEO duality. To measure corporate governance mechanisms and firm performance, annual activity and financial reports published on the Public Disclosure Platform (PDP), Borsa Istanbul (BIST), investing.com website and companies' official websites were used.

2. LITERATURE REVIEW

Gompers et al. (2003), based on the data they obtained from the studies published by the IRRIC, created a corporate governance index to represent the rights of the shareholders of approximately 1,500 large companies. As a result of the strategy based on the purchase of the stocks of the companies with the strongest shareholder rights corresponding to 10% in the index for the selected years, and the sale of the stocks of the companies with the weakest shareholder rights corresponding to 10%, it has been determined that an extraordinary 8,5% profit can be obtained for the year. However, it has been concluded that in companies where the rights of stakeholders are more protected, the market value is higher, more profit is obtained, more sales growth, less capital expenditure and lower acquisition rates.

Klapper and Love (2004), using data obtained from Credit Lyonnais Securities Asia, conducted a study with more than one model based on corporate governance rating scores in 14 developing countries. They have taken the return on assets ratio and Tobin Q's ratio as performance indicators. In the model that examines the relationship between corporate governance degree and firm performance; natural logarithm of sales, ratio of tangible fixed



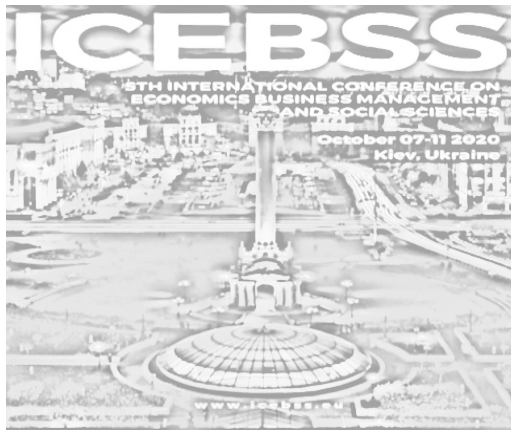
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assets to sales and three-year average sales growth rate variables are used. As a result of the study, it has been determined that there is a high and significant relationship between good corporate governance and performance and market value. However, it has been concluded that corporate governance practices are more important in countries where stakeholder protection levels and legal systems are weak.

Brown and Caylor (2004) utilized the Institutional Shareholder Service data set and used comprehensive corporate governance rating criteria for 2,327 American companies. The authors' criteria were board of directors, shareholding, advanced implementation models, contracts and in-house regulations, training of managers, audit, compensation to be paid to managers and board members, and the current status of the company under eight main headings, including measurement criteria. They compared the scores obtained as a result of corporate governance practices, performance data of companies applying corporate governance principles, market values and dividends distributed to shareholders. As a result of the study, it was determined that companies that apply corporate governance principles better are more profitable, have higher market values and pay more to shareholders as dividends.

Zheka (2006) has created various indices with data showing the corporate governance practices of more than 5,000 publicly-held companies in Ukraine for the years 2000 and 2002. Indices cover the rights of shareholders, the structure of the board of directors, transparency and public disclosure, and agreements with shareholders. As a result of the analysis, the author determined that a one-point increase in this index, which covers corporate governance practices, creates a half-point effect on firm performance. On the other hand, he stated that the rights of stakeholders, transparency and the structure of the board members have significant effects on the performance of the company, and the independence of the chairman of the board will have a negative effect on the company performance.

Morey et al. (2009), using data obtained from the international asset management firm Alliance Bernstein, investigated the relationship between corporate governance and firm value in emerging markets. Tobin's Q and MV / BV ratio were used to measure the value of the firm. Control variables are the expected return, the change in financial leverage, the change in sales, the change in the ratio of capital investments to sales and the risk of the country where the firm is located. According to the findings obtained as a result of the analysis based on monthly corporate governance scores in 21 developing countries between 2001 and 2006, a significant and positive relationship was found between corporate governance and high firm value.



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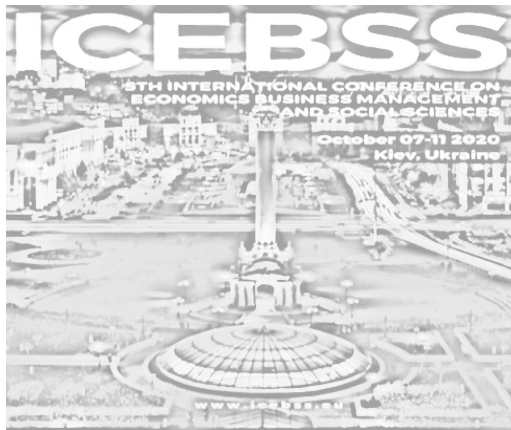
Fodor and Diavatopoulos (2010) expanded the years taken as an example in Gompers et al. (2003)'s study, included the data of the early 2000s in the analysis and reviewed the findings obtained. As a result of the study, they found that the relationship between corporate governance practices and firm stock returns was negative in the opposite direction. The reason for the positive aspect of this relationship in the 1990s is the Nasdaq bubble that occurred in the related period. They argued that large firms performed positively because of this bubble.

Saldanlı (2012) analyzed the relationship between corporate governance index and firm performances by using the data of the companies included in BIST National 100, 50 and 30 between September 2007 and September 2010. Performances were evaluated using Sharpe ratio, Sortino ratio, Jensen performance index and Treynor ratio. Index performance ranking was created for each criterion. As a result of the study, it has been revealed that the developments in the perception of corporate governance and the legal regulations to be made in practice will make positive contributions to the performance of the corporate governance index.

Yenice and Dölen (2013) examined the relationship between the stock performance of firms included in the Borsa Istanbul Corporate Governance Index (BIST XKURY) between 2007 and 2011 and their corporate governance ratings. By using the Wilcoxon signed rank test and t-test in the relationship between corporate governance rating score and stock prices, they determined that there is a positive relationship between companies applying corporate governance principles and stock prices.

Ege et al. (2013), using the TOPSIS multi-criteria decision making method, examined the financial statements of 18 companies included in the BIST XKURY Index between 2009 and 2011, and compared the financial performance scores of these companies. In this context, they created a set of criteria based on inventory turnover ratio, asset turnover ratio, fixed asset turnover ratio, liquid assets turnover ratio, ROA, ROE, earnings per share, price earning ratio and net profit / net sales ratio. The companies are ranked according to the aforementioned criteria and this ranking has been compared with the corporate governance rating scores. As a result of the analysis, it has been determined that the ranking based on financial performance does not move in the same direction with corporate governance ratings. Thus, it has been revealed that the ratings of corporate governance compliance do not fully reflect financial performance.

Latief et al. (2014) analyzed the relationship between the performances and corporate governance practices of 22 firms included in the privatization scope in Pakistan between 2006 and 2010. While company performance is measured with net profit margin, as corporate



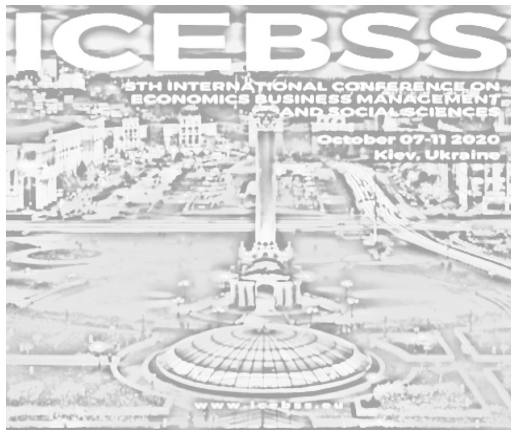
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governance measurement criteria independent directors, CEO duality, the structure of the board of directors, the age and size of the companies have been determined. As a result of the study, it was found that the independence of the board of directors has a positive effect on the performance of the company, the CEO duality does not have an effect on the performance of the company, and there is a positive effect between the board structure and the performance of the company.

Andreou et al. (2014) examined the relationship between firm performance and corporate governance levels of companies operating in the maritime sector in the Greek Cypriot side. In the results of working it has been found that in-house ownership structure, the establishment of corporate governance committees, the structure of the board of directors, the CEO duality and the roles of managers in the board of directors have an effect on financial decisions and the performance of the company.

Gherghina et al. (2014), using the Tobin's Q ratio to measure firm value, examined the relationship between corporate governance rating scores of non-financial firms included in the S&P's 100 Index and firm value in 2013. Rating of corporate governance practices are structure of the board of directors, stakeholders' rights, compensation and independent audit notes, Institutional Shareholder Services Inc. (ISS) based on the ISS Governance QuickScore 2.0 total scoring system. As control variables the natural logarithm of the number of employees representing the firm size, sales growth rate, financial leverage ratio and free float time are taken. As a result of the analysis, a meaningful relationship between corporate governance rating and firm value was not found.

Tai (2015) examined the impact of corporate governance on productivity and financial performance on 57 national banks, which are publicly traded in the countries of the Gulf Cooperation Council. The ratio of the number of non-executive board members, the number of board members, the block shareholding structure, the number of board meetings, the number of board committees and the natural logarithm of assets are used to represent corporate management. As performance indicators return on assets, return on equity and productivity score are used. In addition, banks as dummy variables are discussed under two separate headings as Islamic and traditional banks. According to the results obtained, the number of board committees is an important variable that affects productivity. In addition, the number of board members, block shareholding structure and bank type are other important factors affecting financial performance. While the number of committees has a negative relationship with the performance of banks, the size of the board of directors affects the performance of banks positively. However, the block shareholder structure negatively affects the return on assets.



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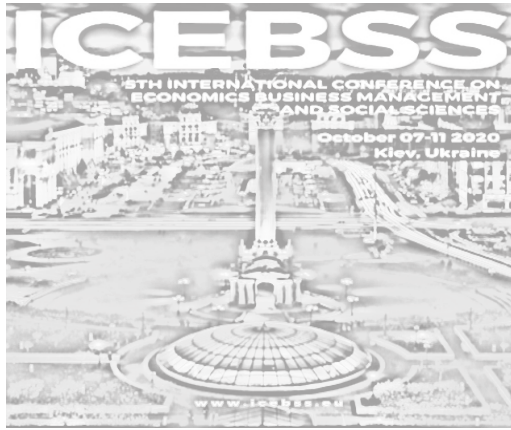
Islam et al. (2015) developed a corporate governance index by applying the Wilcoxon signed ranks test on 30 banks in Bangladesh. As a result of the study, they found that the corporate governance principles significantly improved corporate governance practices. Using annual reports for the two years before and after the principles were put into practice, the authors researched whether the development in question had an impact on financial performance. While return on assets is used to measure financial performance, the ownership structure of banks, risk level, asset size and productivity variables are taken as control variable. It was concluded that the increase in the level of corporate governance did not cause a significant change on the financial performance of banks. However, they found that risk, efficiency and ownership had a positive effect on performance. As a result, they also found that some dimensions of corporate governance had a positive effect on the financial performance of banks, but some dimensions did not have any effect.

Doğan (2015) researched the effects of corporate governance practices on financial performance by using data from 136 manufacturing industry companies that were traded in Borsa Istanbul continuously between 2002 and 2012. The structure of the board of directors and ownership structures of the companies were used as performance measures. Accounting and market based performance data and financial failure data were obtained. Panel data analysis and resistive estimation method developed by Beck-Katz were used in the study. As a result of the analysis, it has been determined that there is a positive relationship between the size of the board of directors and the number of women board members and the firm performance. The increase in the rate of ownership of the board of directors has been the factor that increased the success of the firm performance. In addition, it is concluded that the increase in the CEO duality and the level of foreign investors increase the Tobin's Q ratio.

When the national and international literature on the subject is examined, there is no study that examines the effect of corporate governance mechanism on ROA, ROE, P/E, MV/BV and Tobin's Q in manufacturing industry companies as a sample.

3. EMPIRICAL MODEL DATA AND METHODOLOGY

Since the beginning of the 2000s, the decisions made by the managers have gained importance in increasing the competitive power of the companies. This perception of the managers necessitated corporate governance practices. As the whole world, the importance of corporate governance in Turkey, investors and other stakeholders in the company have led to questioning the existence of an appropriate management approach to corporate governance principles. Turkey as well as in other countries in the field of corporate governance to be implemented by public companies have passed numerous regulations life. Hence, in this study, whether the firm performance is affected by the corporate governance mechanism or



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not, if it is, it is aimed to determine in what direction and to what extent it is affected, and in this direction, dynamic panel data analysis has been carried out. In this context, manufacturing industry companies traded in Borsa Istanbul were selected as the sample. Research was conducted on 76 companies that were traded in Borsa Istanbul between 2008 and 2017 without interruption. Investigating the factors affecting the performance of these companies on the basis of corporate governance may be useful for companies and financial regulators in terms of preparation for possible crises.

The research is limited to the manufacturing industry companies whose financial statements and activity reports can be examined without interruption and are traded in BIST. In addition, only the manufacturing industry companies were included in the analysis in terms of generalizability of the findings to be obtained and the uniformity of the financial statements to be used. Therefore, the effect of sector differences has been ignored. The data used in the study were obtained from PDP, BIST, investing.com website and the official websites of the companies, and it was assumed to be current.

Dependent Variables

A total of five financial performance indicators, including five accounting and market-based performance indicators, were used as dependent variables. Accounting and market-based financial performance indicators are the Return on Assets (ROA), Return on Equity (ROE), Price Earnings Ratio (P/E), Market Value Book Value Ratio (MV/BV) and Tobin's Q Ratio (TOBINQ).

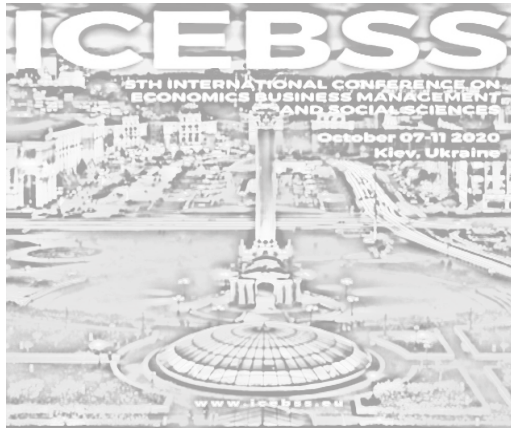
Independent Variables

Four independent variables were used in the study, namely, the size of the board of directors (BOARD), the ratio of female managers on the board (WOMEN), corporate investor ownership (OWN) and CEO duality (CEO).

Control Variables

Leverage ratio (LEV) was taken as the control variable in the study.

The data pertaining to the variables used in the analysis have been obtained from www.investing.com and the annual activity reports by making use of the financial statements and footnotes of the related companies. The relevant financial tables and annual activity reports were obtained from Borsa Istanbul Financial Archive for 2008, and from the annual reports of the companies, web pages, footnote information and the PDP in 2009 and after. The natural logarithm of the data was taken in order to make the observation values in different unit values gain the same type of meaning. Annual data were used in the study, and a total of 10 periods were examined. The variables and calculation methods used in the study are included in Table 1.



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Table 1: Research Variables and Calculation Methods

Codes	Variable	Calculation Method
<i>Dependent Variables</i>		
ROA	Return on Asset	Net Profit / Total Assets
ROE	Return on Equity	Net Profit / Equity
P/E	Price / Earnings	Stock Market Price / Earnings Per Share
MV/BV	Ratio Market Value / Book Value Ratio	Market Value of Shares / Book Value of the Firm per Share
TOBINQ	Tobin's Q Ratio	(Market Value of Equity + Book Value of Liabilities) / Total Book Value of Assets
<i>Independent Variables</i>		
BOARD	Board Size	Logarithm of the total number of board members within one year
WOMEN	Ratio of Women Executives on the Board of Directors	The ratio of the total number of women board members to the total number of board members within a year
CEO	CEO Duality	If the general manager is also the chairman of the board of directors, it is defined as 1, and 0 if not.
OWN	Institutional Ownership	Number of Shares of Institutional Investors / Total Number of Shares
<i>Control Variable</i>		
LEV	Leverage Ratio	Total Debt / Total Asset

The hypotheses of the study are determined as follows:

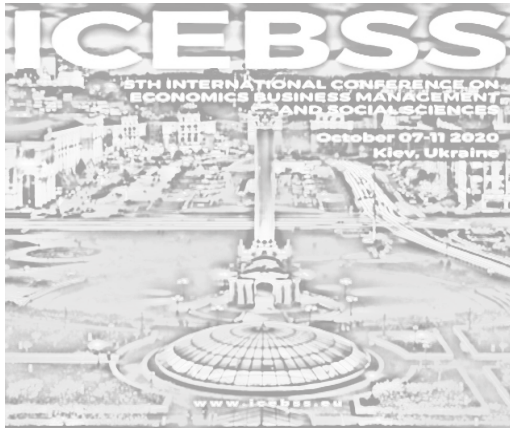
H_1: There is a relationship between corporate governance practices and return on asstes.

H_2: There is a relationship between corporate governance practices and return on equity.

H_3: There is a relationship between corporate governance practices and price/earnings ratio.

H_4: There is a relationship between corporate governance practices and market value/book value ratio.

H_5: There is a relationship between corporate governance practices and Tobin's Q ratio.



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In this study GMM estimator is used proposed by Arellano-Bond (1991) and later developed by Arellano-Bover (1995). It is one of the dynamic panel estimation methods in order to test the effects of corporate governance on preferred dependent variables that due to the fact that the data takes into account the time series feature and does not include biased results.

Within the scope and purpose of the study, the following models have been developed and the effect of corporate governance mechanisms (management and ownership structure) on company performance has been investigated. Based on the theoretical framework, research models include five dependent, four independent and one control variables. The predicted models are those that argue that firm performance is affected by corporate governance practices. Relationship testing models are shown below:

Model 1:

$$ROA_{it} = \beta_0 + \beta_1 ROA_{i(t-1)} + \beta_2 BOARD_{it} + \beta_3 WOMEN_{it} + \beta_4 OWN_{it} \\ + \beta_5 CEO_{it} + \beta_6 LEV_{it} + \varepsilon_{it}$$

Model 2:

$$ROE_{it} = \beta_0 + \beta_1 ROE_{i(t-1)} + \beta_2 BOARD_{it} + \beta_3 WOMEN_{it} + \beta_4 OWN_{it} \\ + \beta_5 CEO_{it} + \beta_6 LEV_{it} + \varepsilon_{it}$$

Model 3:

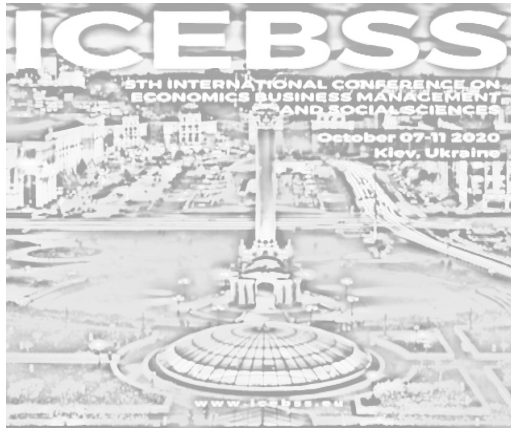
$$P/E_{it} = \beta_0 + \beta_1 P/E_{i(t-1)} + \beta_2 BOARD_{it} + \beta_3 WOMEN_{it} + \beta_4 OWN_{it} \\ + \beta_5 CEO_{it} + \beta_6 LEV_{it} + \varepsilon_{it}$$

Model 4:

$$MV/BV_{it} = \beta_0 + \beta_1 MV/BV_{i(t-1)} + \beta_2 BOARD_{it} + \beta_3 WOMEN_{it} + \beta_4 OWN_{it} \\ + \beta_5 CEO_{it} + \beta_6 LEV_{it} + \varepsilon_{it}$$

Model 5:

$$TOBINQ_{it} = \beta_0 + \beta_1 TOBINQ_{i(t-1)} + \beta_2 BOARD_{it} + \beta_3 WOMEN_{it} + \beta_4 OWN_{it} \\ + \beta_5 CEO_{it} + \beta_6 LEV_{it} + \varepsilon_{it}$$



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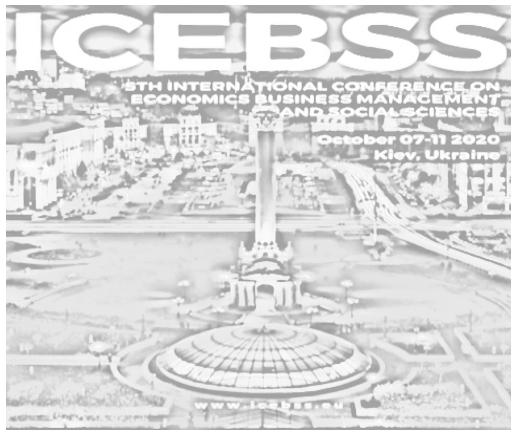
4. FINDINGS

Descriptive statistics for the variables included in the models are shown in Table 2.

Table 2: Descriptive Statistics of the Variables

	Mean	Maximum	Minimum	Std. Dev.	Number of
ROA	5.273638	47.07723	-34.69381	8.767797	760
ROE	8.302940	149.0141	-140.9604	21.81085	760
P/E	25.61753	1020.401	1.419233	49.66727	760
MV/BV	1.857467	74.59702	-39.31194	4.564965	760
TOBINQ	1.363624	9.161397	0.130663	0.903498	760
BOARD	1.943846	2.708050	1.098612	0.281075	760
WOMEN	0.104307	0.500000	0.000000	0.120951	760
OWN	56.67478	100.0000	0.000000	27.94349	760
CEO	0.378947	1.000000	0.000000	0.485444	760
LEV	0.479526	1.710000	0.060000	0.241846	760

When Table 2 is examined, among the dependent variables of the firms included to the study, it is seen that the average rate of return on assets is about 5.5, the average rate of return on equity is about 8.5, the average of the price earning ratio is about 26, the average rate of the stock market value of the companies to the book value is about 2, and the average of the



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Tobin's Q ratio is about 1.5. As can be seen from Table 2, the dependent variables ROA, ROE, P/E, MV/BV and Tobin's Q have high sensitivity to calculation method and period. Similarly, when the independent variables are examined, board size ranges from 1.09 to 2.71, while its average is around 1.94. While the number of board members of the companies subject to the study varied between 3 and 15, the average is 7 people. This suggests that, on average, firms evaluated have mid-level boards. Again, the ratio of female directors in the board of directors ranges from 0.00 to 0.50. The number of female managers in the board of directors of the companies included in the analysis varies between 0 and 4. While institutional investor ownership varies between 0 and 100, its average is approximately 57, and the average of the CEO duality is 0.38. The average of leverage ratio is approximately 0.48.

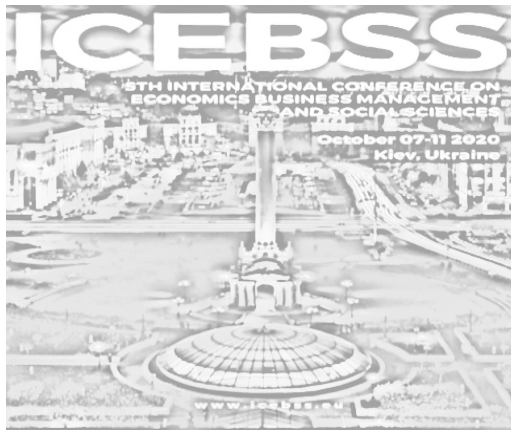
Table 3 shows the correlation matrix for the variables used in the models. It has been observed from Table 3 that there is a significant relationship between most of the variables.

Table 3: Correlation Matrix

Correlation Probability	ROA	ROE	P/E	MV/BV	TOBINQ	BOARD	WOMEN	OWN	CEO	LEV
ROA	1.000000 -----									
ROE	0.843956 0.0000**	1.000000 -----								
P/E	-0.338181 0.0000**	-0.279352 0.0000**	1.000000 -----							
MV/BV	0.284165 0.0000**	0.261854 0.0000**	0.188553 0.0002**	1.000000 -----						
TOBINQ	0.280705 0.0000**	0.201324 0.0001**	0.284259 0.0000**	0.727354 0.0000**	1.000000 -----					
BOARD	0.164303 0.0010**	0.166890 0.0009**	0.067494 0.1807	0.169254 0.0007**	0.017344 0.7311	1.000000 -----				
WOMEN	-0.042972 0.3944	-0.051292 0.3092	0.107090 0.0334*	-0.159226 0.0015**	-0.168892 0.0008**	0.244742 0.0000**	1.000000 -----			
OWN	0.172601 0.0006**	0.140052 0.0053**	0.038633 0.4439	0.115010 0.0222*	0.129341 0.0101*	0.191562 0.0001**	-0.207840 0.0000**	1.000000 -----		
CEO	-0.130309 0.0095**	-0.054277 0.2819	0.062433 0.2157	0.186257 0.0002**	0.164116 0.0011**	0.112342 0.0256*	0.001190 0.9812	-0.269112 0.0000**	1.000000 -----	
LEV	-0.361261 0.0000**	-0.298914 0.0000**	0.096814 0.0545	-0.144557 0.0040**	-0.065880 0.1913	-0.134999 0.0072**	0.052327 0.2995	-0.173994 0.0005**	0.049344 0.3280	1.000000 -----

(*) and (**) show significance at the 5% and 1% level, respectively.

According to the correlation matrix table, a positive and statistically significant relationship was found between the size of the board of directors and the dependent variables ROA, ROE



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and MV/BV. In addition, while there is a negative and statistically significant relationship between the ratio of female directors in the board of directors and MV/BV and Tobin's Q, there is a positive and statistically significant relationship with P/E. There is a negative relationship between the variable CEO duality and ROA and a positive and statistically significant relationship with the MV/BV and Tobin's Q. Again, it is seen that there is a positive and statistically significant relationship between corporate investor ownership and ROA, ROE, MV/BV and Tobin's Q. When looking at the relationship between the control variable and the dependent variables, there is a negative and statistically significant relationship between leverage ratio and ROA, ROE, and MV/BV.

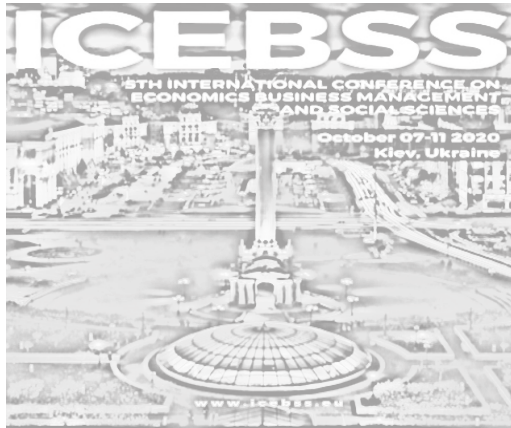
The strong connection between independent variables is called multicollinearity. If $R > 90\%$ and above, one or more variables should not be included in the analysis (Çokluk et al. 2012: 35). According to this analysis, multicollinearity problem was not encountered among variables. It has been concluded that all values in Table 3 are below 90%. So there is no multicollinearity problem among the independent variables used in the analysis.

In order to measure the efficiency of the variables, the meaninglessness of the J test and the acceptance of the null hypothesis shows that the variables are sufficient and valid, but also gives more confidence about the model. Since the J-statistics probability value is insignificant in all of the models established, the independent variables used are considered to be significant.

Table 4: Results of Panel Data Analysis for Model 1

Variables	Coefficients	Std. Error	t-statistics	p Value
ROA(-1)	-0.024743	0.015700	-1.575987	0.1161
CEO	-1.733740	0.717272	-2.417130	0.0162*
OWN	-0.056611	0.028454	-1.989566	0.0475*
BOARD	1.407466	1.371534	1.026198	0.3056
WOMEN	0.766513	0.600511	1.276435	0.2028
LEV	-0.014299	0.001862	-7.679192	0.0000**
J-statistics	41.80727			
P Value (J-statistics)	0.199131			

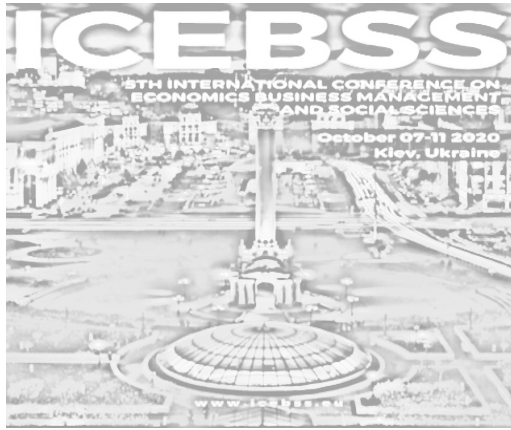
*, ** is statistically significant at 5% and 1% levels, respectively.



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As can be seen in Table 4, which includes the results of the analysis conducted to understand whether corporate governance practices have an effect on ROA, the significance value of the board size is $P(0.3056)$ and the significance value of the WOMEN is $P(0.2028)$ that are greater than the critical values. There is no statistically significant relationship between ROA, BOARD and WOMEN at both 1% and 5% significance levels. According to this result, any change in the size of the board of directors and in the female managers within the board members does not affect the return on assets. When the other results are examined, the variable that is associated with ROA at a statistical significance level of 1% is LEV, and the variables that have a significant relationship at the 5% level are CEO and OWN. The coefficient of a statistically significant negative relationship between OWN and ROA at the level of 5% is -0.056611 . When all other variables are considered constant, one unit increase in the OWN causes a decrease of 0.056611 units in the ROA ($p < 0.0475$). Accordingly, it can be said that the institutional investor ownership of the companies has a decreasing effect on the return on assets. The coefficient of a statistically significant negative relationship between CEO duality and ROA at the level of 5% is -1.733740 . When all other variables are considered constant, the increase in the CEO duality variable causes a decrease in ROA ($p < 0.0162$). Accordingly, it can be said that the fact that the general managers of companies are also the chairman of the board of directors has a decreasing effect on return on assets. The coefficient of the significant negative relationship at the 1% statistical level between the LEV and ROA is -0.014299 . When all other variables are considered constant, one unit increase in LEV causes a decrease of 0.014299 units in ROA ($p < 0.0000$). Accordingly, it can be said that the increase in total debts or the decrease in total assets while total debts are fixed have a decreasing effect on return on assets.

The results in Table 4 show that CEO, OWN and LEV play an important role in explaining the changes in return on assets. CEO and OWN have an adverse effect on ROA. Increase in CEO and OWN causes a decrease in ROA. In this context, the H1 hypothesis tested with Model 1 is accepted.



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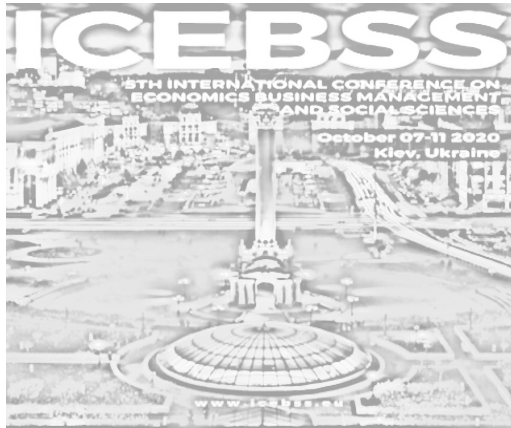
Table 5: Results of Panel Data Analysis for Model 2

Variables	Coefficients	Std. Error	t-statistics	p Value
ROE(-1)	-0.048015	0.006316	-7.602243	0.0000**
CEO	-8.488414	0.873850	-9.713809	0.0000**
OWN	-0.227765	0.078536	-2.900121	0.0040**
BOARD	-1.120046	2.245175	-0.498868	0.6182
WOMEN	4.198445	0.912587	4.600598	0.0000**
LEV	-0.025059	0.003158	-7.935849	0.0000**
J-statistics	37.43340			
P Value (J-statistics)	0.358038			

*, ** is statistically significant at 5% and 1% levels, respectively.

Since the J-statistic value for Model 2 is insignificant, according to the J test result, the independent variables are considered valid. In the model $ROE_{i(t-1)}$ is the lagged value of the ROE, and there is a significant negative correlation with ROE at a statistical level of 1%. The coefficient of the relationship has been realized as -0.048015. When all other variables are considered constant, one unit increase in $ROE_{i(t-1)}$ means a decrease of 0.048015 units in ROE ($p < 0.000$). Therefore, it can be said that there is a decreasing effect of ROE from the previous period on return on equity.

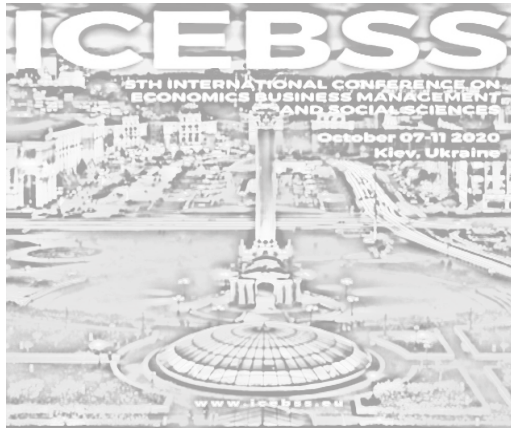
As can be seen in Table 5 where the results of the analysis made in order to understand whether corporate governance is effective on ROE or not, the significance value P (0.6182) of BOARD is greater than the critical values. In other words, there is no statistically significant relationship between return on equity and BOARD at both 1% and 5% significance levels. According to this result, any change in BOARD does not affect return on equity. When the other results are examined, the variable associated with ROE at a statistical significance level of 1% is the CEO, OWN, WOMEN and LEV. The coefficient of the significant negative relationship at the 1% statistical level between the CEO duality and the ROE is -8.488414. When all other variables are considered constant, the increase in CEO duality causes a decrease in ROE ($p < 0.0000$). Accordingly, it can be said that the fact that the general managers



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are also the chairman of the board of directors has a negative effect on the return on equity. The coefficient of a statistically significant relationship between the WOMEN and ROE at the level of 1% is 4.198445. According to this result, when all other variables are considered constant, it is concluded that the increase in the number of WOMEN positively affects the return on equity ($p < 0.0000$). It can be said that the increase in the number of female managers in the board of directors of companies positively affects return on equity. The coefficient of a statistically significant negative correlation between OWN and ROE at the level of 1% is -0.227765. When all other variables are considered constant, one unit increase in the OWN causes a decrease of 0.227765 units in ROE ($p < 0.0040$). Accordingly, ownership of institutional investors has a decreasing effect on return on equity. The coefficient of negative correlation at the 1% statistical significance level between LEV and ROE was calculated as -0.025059. When all other variables are considered constant, one unit increase in LEV means a decrease of 0.025059 units in ROE ($p < 0.0000$). Accordingly, it can be said that the increase in total debts or the decrease in total assets while total debts are constant decreases return on equity.

The results in Table 5 show that among the variables that are statistically significant, CEO and OWN have a decreasing effect on ROE. While CEO and OWN have a negative effect on ROE, WOMAN has a positive effect. A one-unit increase in CEO and OWN causes a decrease in ROE, while a one-unit increase in WOMEN means an increase in ROE. In addition, since all variables except BOARD play an important role in explaining the changes in return on equity. In this context, the H2 hypothesis tested with Model 2 is accepted.



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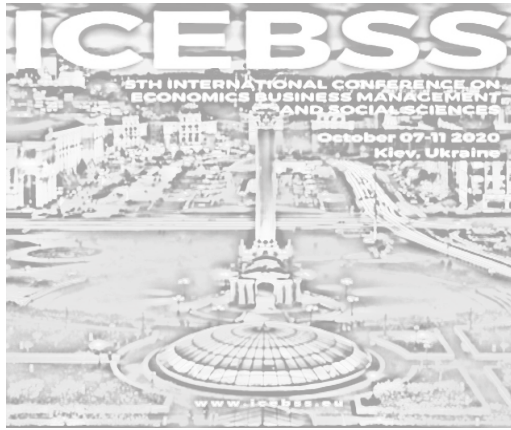
Table 6: Results of Panel Data Analysis for Model 3

Variables	Coefficients	Std. Error	t-statistics	p Value
P/E(-1)	0.142261	0.001354	105.0692	0.0000**
CEO	6.003687	1.352889	4.437679	0.0000**
OWN	0.387212	0.084459	4.584625	0.0000**
BOARD	-0.787730	1.307099	-0.602655	0.5472
WOMEN	-0.362024	0.742169	-0.487791	0.6260
LEV	-0.000891	0.000857	-1.040283	0.2990
J-statistics	31.87451			
P Value (J-statistics)	0.619783			

*, ** is statistically significant at 5% and 1% levels, respectively.

The J-statistic value for Model 3 is insignificant, so the independent variables are considered valid according to J test result. In the model $[[P/E]]_{(t-1)}$ is the lagged value of the P/E and there is a significant positive relationship with P/E at a statistical level of 1%, and the coefficient of this relationship is 0.142261. When all other variables are accepted as constant, one unit increase in $[[P/E]]_{(t-1)}$ means 0.142261 unit increase in P/E ($p < 0.0000$). Therefore, it can be said that P/E from the previous period has an increasing effect on price earnings ratio.

As can be seen in Table 6, where the results of the analysis made in order to understand whether corporate governance is effective on P/E or not, the significance value of BOARD is P (0.5472), the significance value of WOMEN is P. (0.6260) and the significance value of LEV is P (0.2990) that are greater than the critical values. That is, there is no statistically significant relationship between P/E, BOARD, WOMEN and LEV at both 1% and 5% significance levels. According to this result, any change in the size of the board of directors and the ratio of female managers in the board does not affect the price/earnings ratio. When the other results are examined, the variables associated with P/E at a statistical significance level of 1% were realized as CEO and OWN. The coefficient of the significant positive relationship at the 1% statistical level between CEO duality is 6.003687. When all other variables are considered



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constant, the increase in the CEO duality means an approximate increase in P/E ($p < 0.0000$). Accordingly, it can be said that the fact that the general managers of companies are also the chairman of the board of directors has an increasing effect on price/earnings ratio. The coefficient of the statistically significant positive relationship between OWN and P/E at the level of 1% was 0.387212. When all other variables are considered constant, one unit increase in OWN means 0.387212 units of increase in P/E ($p < 0.0000$). Accordingly, ownership of institutional investors positively affects the price/earnings ratio. A statistically significant relationship at 1% and 5% levels was not found between LEV ($p < 0.2990$). Accordingly, it can be stated that any change in total debts or total assets has no effect on price earning ratio.

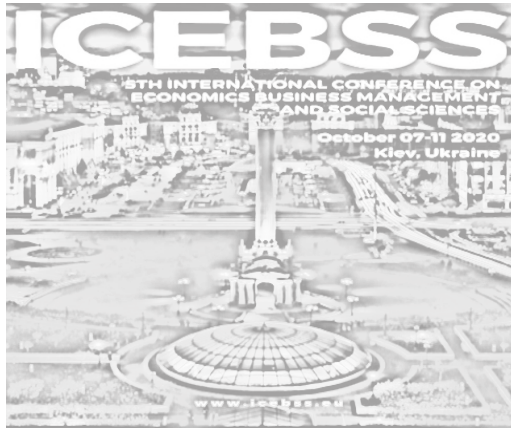
The results in Table 6 show that CEO and OWN play an important role in explaining the changes in price/earnings ratio. CEO and OWN have positive effect on price/earnings ratio. One unit increase in CEO and OWN means an increase in price/earnings ratio. In this context, the H3 hypothesis tested with Model 3 is accepted.

Table 7: Results of Panel Data Analysis for Model 4

Variables	Coefficients	Std. Error	t-statistics	p Value
MV/BV (-1)	-0.083679	0.018429	-4.540661	0.0000**
CEO	-0.128448	0.010171	-12.62931	0.0000**
OWN	-0.018792	0.002689	-6.988794	0.0000**
BOARD	0.579656	0.060137	9.638960	0.0000**
WOMEN	0.041057	0.058018	0.707664	0.4797
LEV	-0.000269	5.76E-05	-4.678226	0.0000**
J-statistics	42.12879			
P Value (J-statistics)	0.189767			

*, ** is statistically significant at 5% and 1% levels, respectively.

Since the J-statistic value for Model 4 is insignificant, the independent variables are considered valid. In the model, $[(MV/BV)]_{(t-1)}$ is the lagged value of the MV/BV and has a significant opposite relationship with MV/BV at a statistical level of 1%. The coefficient of this relationship was realized as -0.083679. When all other variables are considered constant, one unit increase in $[(MV/BV)]_{(t-1)}$ causes a decrease of 0.083679 units in MV / BV (p

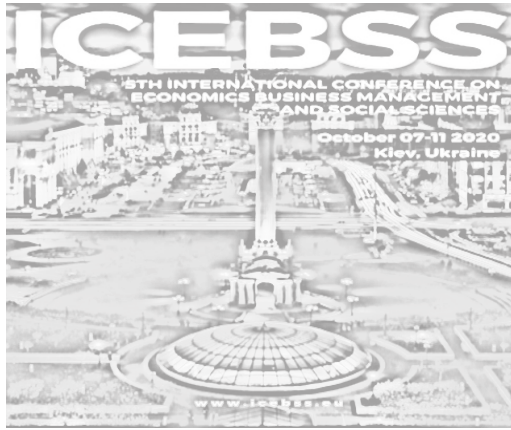


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<0.000). Therefore, the MV/BV from the previous period has a negative effect on the market value book value ratio. When Table 7 is analyzed, the variable associated with MV/BV at a statistical significance level of 1% occurred as CEO, OWN, BOARD and LEV. WOMEN, on the other hand, is not statistically significant with MV/BV. It can be said that the change in the ratio of female directors in the board of directors has no effect on MV/BV.

As can be seen in Table 7 where the results of the analysis made in order to understand whether corporate governance is effective on MV/BV, the significance value of BOARD P (0.0000) has the same directional relationship at the 1% statistical significance level. In other words, a 1% increase in the size of the board means an increase of 0.579656 units in MV/BV. Accordingly, the size of the board of directors positively affects MV/BV. The coefficient of a statistically significant 1% reverse relationship between OWN and MV/BV was -0.018792. When all other variables are considered constant, one unit increase in the OWN causes a decrease of 0.018792 units in the MV/BV ($p < 0.0000$). Accordingly, the ownership of institutional investors has a decreasing effect on the market value/book value ratio. The coefficient of the significant inverse relationship at the 1% statistical level between the CEO duality and the MV/BV was -0.128448. When all other variables are considered constant, the increase in CEO duality causes a decrease in MV/BV ($p < 0.000$). Accordingly, it can be said that the general managers of companies are also the chairman of the board of directors has a decreasing effect on the market value/book value ratio. The coefficient of the inverse correlation at the 1% statistical significance level between LEV and MV/BV is calculated as -0.000269. When all other variables are considered constant, one unit increase in LEV causes a decrease of 0.000269 units in MV/BV ($p < 0.000$). Accordingly, it can be said that the increase in total debts or the decrease in total assets when total debts are fixed, has a decreasing effect on the market value/book value ratio.

The results in Table 7 show that all of the corporate governance variables except WOMEN play an important role in explaining the changes in market value/book value ratio. While the CEO and the OWN have a negative effect on the market value/book value, BOARD has positive effect. In this context, the H4 hypothesis tested with Model 4 is accepted.



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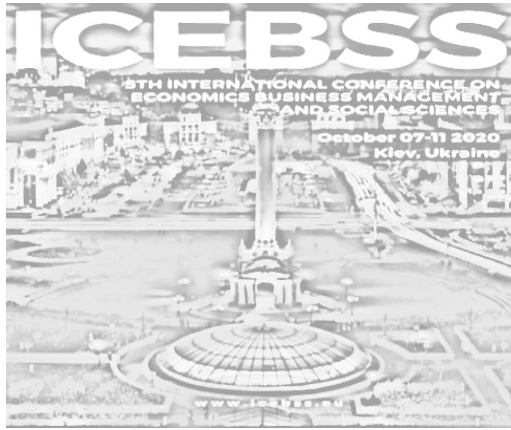
Table 8: Results of Panel Data Analysis for Model 5

Variables	Coefficients	Std. Error	t-statistics	p Value
TOBINQ(-1)	0.139233	0.007778	17.90090	0.0000**
CEO	0.052672	0.033388	1.577569	0.1157
OWN	-0.004055	0.001277	-3.174424	0.0017**
BOARD	0.288808	0.076009	3.799660	0.0002**
WOMEN	-0.067151	0.027459	-2.445497	0.0150*
LEV	-0.001250	3.156921	-39.60026	0.0000**
J-statistics	44.20772			
P Value (J-statistics)	0.136813			

*, ** is statistically significant at 5% and 1% levels, respectively.

Since the J-statistic value for Model 5 is insignificant, the independent variables are considered valid according to the J test result. In the model $[[TOBINQ]]_{(i(t-1))}$ is the lagged value of Tobin's Q and it has a significant positive relationship with Tobin's Q at the 1% statistical level, and the coefficient of this relationship is 0.139233. When all other variables are considered constant, one unit increase in $[[TOBINQ]]_{(i(t-1))}$ means 0.139233 units of increase in Tobin's Q ($p < 0.000$). Therefore, it can be mentioned that the Tobin's Q value from the previous period has a positive effect on the Tobin's Q.

In Model 5, except for the CEO duality, all variables are associated with Tobin's Q at a statistically significant level of 1% and 5%. The BOARD is related to the Tobin's Q at the 1% statistical significance level, has a coefficient of 0.288808. When all other variables are considered constant, 1% increase in BOARD means 0.288808 units increase in Tobin's Q ($p < 0.0002$). Accordingly, the size of the board of directors increases the Tobin's Q. The significance value of the CEO duality P (0.1157) is greater than the critical values. In other words, there is no statistically significant relationship between Tobin's Q and the CEO duality at 1% and 5% significance levels. According to this result, any change in the CEO duality does not affect the Tobin's Q. The coefficient of a statistically significant negative relationship at the 5% level between WOMEN and Tobin's Q is -0.067151. When all other variables are



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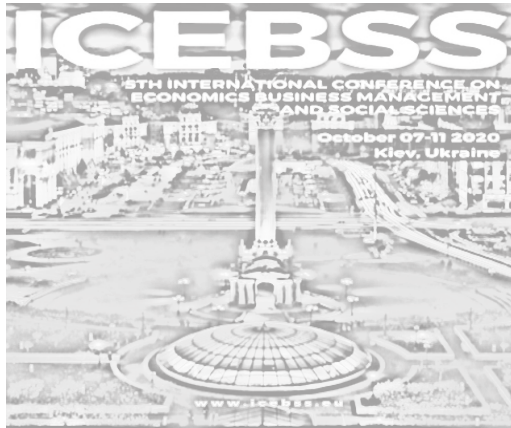
accepted as constant, 1% increase in WOMEN causes 0.067151 units of decrease in Tobin's Q ($p < 0.0150$). Accordingly, it can be said that the proportion of female managers on the board of directors of companies decreases Tobin's Q. The coefficient of a statistically significant 1% negative relationship between OWN and Tobin's Q is -0.004055. When all other variables are considered constant, one unit increase in OWN means a decrease of 0.004055 units in Tobin's Q ($p < 0.0017$). Accordingly, the ownership of institutional investors affects the Tobin's Q in a decreasing way. The coefficient of the negative correlation at the 1% statistical significance level between LEV and Tobin's Q is calculated as -0.001250. When all other variables are considered constant, one unit increase in LEV causes a decrease of 0.001250 units in Tobin's Q ($p < 0.000$). Accordingly, it can be said that the increase in total debt or the decrease in total assets while total debt is fixed, has a decreasing effect on Tobin's Q.

The results in Table 8 show that all of the corporate governance variables except the CEO duality play an important role in explaining the changes in Tobin's Q. While OWN and WOMEN have negative effects on Tobin's Q, BOARD has positive effect. In this context, the H5 hypothesis tested with Model 5 is accepted.

5. CONCLUSION

Considering the importance of corporate governance, the purpose of this study is to examine the effect of corporate governance practices on financial performance of manufacturing industry firms that are traded on Borsa Istanbul (BIST). 76 companies that were continuously included in the BIST manufacturing industry between 2008 and 2017 and whose annual reports and data can be accessed were included in the research. As corporate governance practices, the relationships between firms' board size, female board members ratio, CEO duality and corporate investor ownership were chosen. As performance variables, return on assets, return on equity, price/earning ratio, market value/book value ratio and Tobin's Q ratio were tested. In this context, as the data can be observed exactly, balanced panel data analysis was performed in the analysis in order to reach more accurate results.

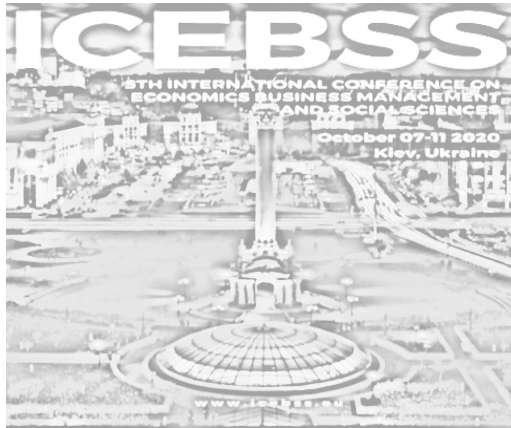
Due to the fact that the data has time series feature and does not include biased results, a dynamic panel estimation method proposed by Arellano-Bond (1991) and later developed by Arellano-Bover (1995) was preferred to test the effects of independent variables on firm performance. The system GMM approach, which does not need to control variance, inter-unit correlation and autocorrelation problems, was used. The meaninglessness of the J test and the acceptance of the null hypothesis, shows that the variables are sufficient and valid, but also gives more confidence about the model. Five regression models have been developed within the scope of the research. Since the J-statistics probability value is insignificant in all of



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the models established, it is accepted that the independent variables are valid. When the results of the models are examined, among the variables related to the structure of the board of directors, it is seen that the size of the board of directors is effective on the market value/ book value ratio and the Tobin's Q ratio. There is a positive and statistically significant relationship between board size and market value/ book value and Tobin's Q. In other words, the increase in the number of board members increases the market value / book value ratio and Tobin's Q ratio of the companies. This result shows that the board members are composed of coherent, large and focused members and the existence of such a board can significantly increase the value of the firm. More board members can also increase communication between all shareholders. This can have a positive effect on the performance of the company. In addition, this situation can be explained by the fact that boards with a higher number of board members provide more connections with the outside of the company and thus it is easier to reach critical resources. However, it is also difficult to put larger boards under administrative pressure. Apart from this, large boards of directors can also provide different advantages in obtaining information that can positively affect company performance, such as company mergers and acquisitions. As a result, it can be said that there is a positive relationship between OWN and MV/BV and Tobin's Q in this study. In addition, board size does not have an effect on ROA, ROE and P/E. As a result, while any change in board size has an impact on MV/BV and Tobin's Q, it does not affect ROA, ROE and P/E.

A statistically significant relationship was determined between WOMEN, ROE and Tobin's Q. This result shows that female managers in the board of directors have an effect on ROE and Tobin's Q. It is seen that this effect is positive on WOMEN and negative on Tobin's Q. In other words, if the ratio of female in the board of directors increases, ROE increases and Tobin's Q decreases. If there are female members on the board of directors, the independence of the board will increase. This situation will positively affect ROE. However, gender diversity can be seen as the process of presenting the different characters and abilities of male and female board members to the firm. In addition, companies can create a wider talent pool and increase the efficiency of their boards of directors by recruiting women board members. As a result, the presence of female members in the board of directors can positively affect the ROE by ensuring the better functioning of the board. Concerning female members in Turkey Serial: IV, No: 57 on "Corporate Governance Principles Communiqué on Amending the Communiqué on the Determination and Implementation" 2/11/2012 date and 28201 numbered Official Gazette and entered into force. According to this statement, although there is no compulsory practice, the principle of "at least one female member in the board of directors" was introduced. This principle is advisory in accordance with the principle of "apply, explain if not" (Karayel and Doğan, 2014: 76). This result supports this communiqué, and it is recommended

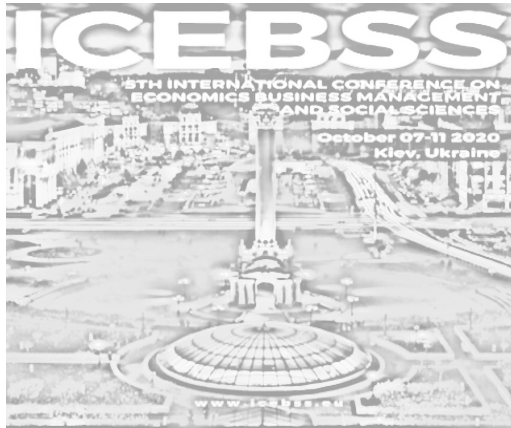


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to increase the number of female members in the boards of directors, as it increases ROE of the companies traded in BIST.

Different results have been determined between OWN and financial performance indicators. A statistically significant relationship was found between OWN and ROA, ROE, P/E, MV/BV and Tobin's Q. As a result of the models, while a negative and statistically significant relationship was determined between OWN and ROA, ROE and Tobin's Q. A positive and statistically significant relationship was found between OWN and P/E and MV/BV. When these results are evaluated, when OWN increases, P/E and MV/BV increase; ROA, ROE and Tobin's Q decrease. This shows that the presence of institutional investor's potential has a positive effect on the market value of the firm. As a result, the increase in institutional shareholders will increase the reliability of the company in the eyes of the investors, and this will affect the performance of the firm positively. The institutional investor asset has a positive effect on them as they have internal control power and try to maximize their own interests. However, an increase in OWN may mean that the firm has a risk-reducing effect or adopts a more risk-free policy than other firms. Firms that take less risk may experience an increase in their performance, as well as a decrease in performance because they cannot utilize opportunities. When the models are examined in this context, the increase in the share of institutional investor capital has both an increasing and a decreasing effect on the performance of companies.

When the effect of the general manager being the chairman of the board of directors on firm performance is examined, it has been observed that the CEO duality has different effects on accounting and market-based performance indicators. There was no significant relationship between CEO duality and Tobin's Q. In contrast, the CEO duality has an effect on ROA, ROE, P/E and MV/BV. There is a negative and statistically significant relationship between CEO duality and ROA, ROE, MV/BV and P/E. In other words, there is no change in Tobin's Q ratios of companies in case of CEO duality. However, while CEO duality is negatively affected by ROA, ROE and MV/BV is positively affected. As a result, it is seen that the ratio of the stock price to the earnings per share performs well in the companies with the CEO duality practice. In other words, in companies with CEO duality practice, investors can achieve better results in terms of capital gain. According to the resource dependency theory, the fact that CEO duality may lead to a decrease in resource connections outside the firm and thus a decrease in firm performance. In this context, the results obtained in ROA, ROE and MV/BV support the resource dependency theory. When assessing the implementation of CEO duality in terms of Turkey CEO, it is becoming more difficult to check the general manager. One of the duties of the board of directors is to supervise the general manager. The fact that the supervisor and the auditee consist of the same person and such strong leadership structure will prevent the



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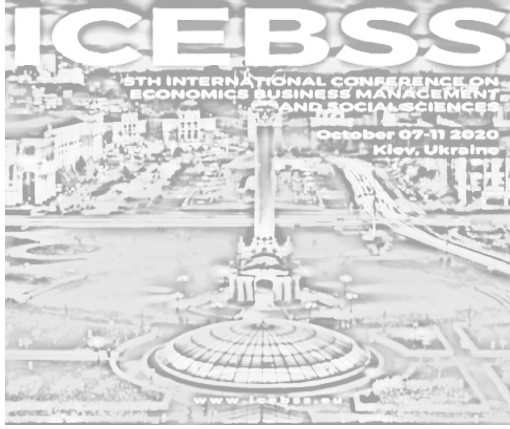
firm from showing high performance. In other words, as a result of the separation of the two duties, the general manager will be able to manage the company effectively, while the chairman of the board of directors will be able to supervise the management's work. In addition, the separation of the duties of the general manager and the chairman of the board enables the board of directors to act more effectively and transparently. However, the CEO duality can result in the concentration of authority in one person and the general manager to act improperly. This situation can create problems for the company, and with the excessive increase in authority, it can prevent the independent decision-making ability of the board of directors and make strategic decision-making difficult. In this context, as a result of this study, it is seen that the CEO duality has a positive effect on P/E, but a negative effect on other performance indicator.

The results of this study will make it easier for investors to make decisions by determining the effect of corporate governance practices on the long-term value of the firm. In addition, the results will contribute to top management focusing on corporate governance reforms. It will also shed light on firms to make better decisions about their future in terms of management and ownership structures.

In future studies, the relationship between corporate governance practices and financial performance can be examined in terms of different sectors. In addition, the effect of the number of committees and the presence of committees such as audit and corporate governance on financial performance can be examined.

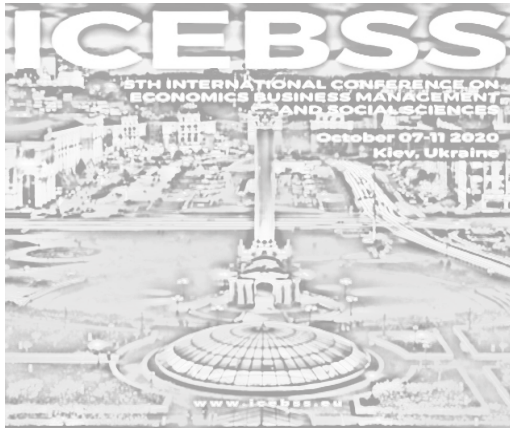
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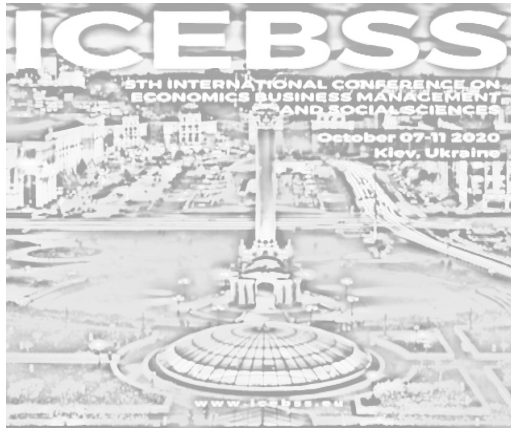
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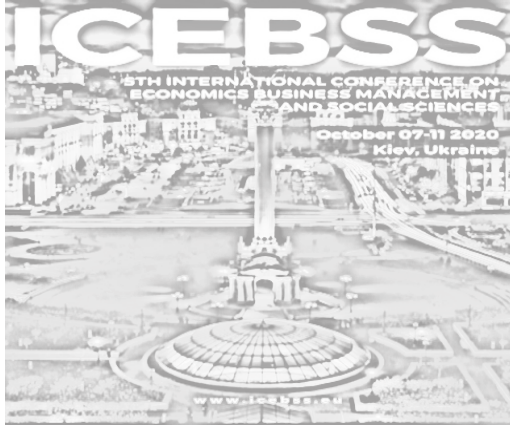
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**AN ANALYSIS OF THE RELATIONSHIP BETWEEN ELECTRICITY CONSUMPTION AND
MACROECONOMIC INDICATORS BY MULTIDIMENSIONAL SCALING ANALYSIS: THE CASE OF
TURKEY***

İbrahim ÇITLIK¹, Melek ACAR²

Abstract

With the development of technology, energy has become an effective and important factor both in production and input costs as well as in all areas of life. The sources of energy are basically divided into non-renewable and renewable. There are great differences between countries in terms of the distribution of energy resources. Therefore, some countries are energy exporters, while others are importers. Turkey is one of the energy importing countries and especially the high current account deficit in recent years is mainly driven by energy expenditures. In this study, it has been searched whether energy consumption affects economic growth and hence the indicators used to measure economic growth such as stock market index, exchange rate, inflation rate, unemployment rate and interest rate. In this context, the state of the relationship between the variables was tried to be determined according to their proximity by reducing the variables to one dimension by means of multidimensional scaling analysis. As a result of the analysis, gross domestic product was observed as the closest variable to electricity consumption. In the second place, public expenditures are followed by the stock market index, exchange rate, inflation rate, unemployment rate and interest rate which are very close to each other. The variable with the weakest relationship with electricity consumption is the current account.

Keywords: Electricity Consumption, Current Account Deficit, Inflation, GDP, Unemployment, Public Expenditures, Interest Rate, Exchange Rate, Multidimensional Scaling Analysis.

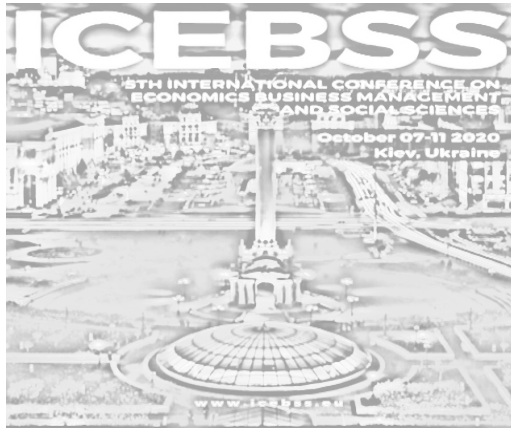
1. INTRODUCTION

In our world today, need of the energy is increasing day by day due to accelerating industrialization and rising population density. Energy, especially electrical energy, has priority in human life. In developing and less developed countries, amount of energy requirement is

* This study is derived from İbrahim ÇITLIK's master thesis titled "The Analysis of Relationship between Turkey's Electricity Consumptions and Macroeconomic Indicators".

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rising. Rapid economic growth and industrial enhancement, over population, urbanization and replacing non-commercial fuels with commercial energy could be possible reasons for current situation. In this context, the need for energy, which is one of a limited resource on earth, is growing rapidly in production and consumption. Issues such as energy supply, energy security and efficient use of energy and prevention of environmental pollution are most important ones for countries each year and constantly on their agenda to find solutions for these problems.

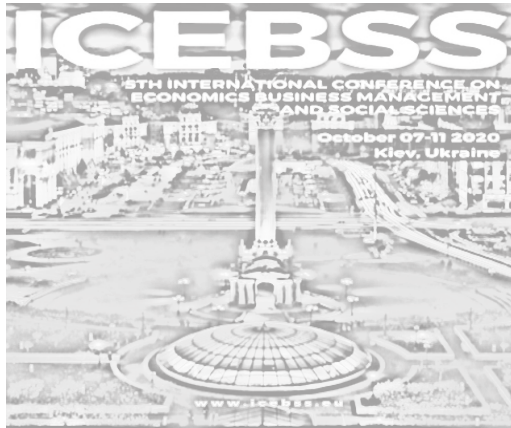
Energy consumption is considered as main element to provide sustainability during economic development of countries. Energy is the basic element for daily activities and required for individuals, nations and countries' production inputs. The most important factors in formation of energy prices are considered as non-renewable and renewable sources of countries. In respect to this, countries are responsible to produce the energy they need in a sufficient, sustainable, quality, minimum cost and environmentally friendly way. Since the resources, which are required for energy production are not homogenous on earth, are limited and use of this resource are provided mostly by non-renewable energy, it make countries energy importers and exporters. Because of the fact that technology and resources of Turkey are inadequate to meet its energy demand, Turkey is an energy importer country.

The economic performance of countries is measured by economic growth. The most important criterion of economic growth is the change in gross domestic product. However, the stock market index, current account deficit, exchange rate, inflation rate, interest rate, unemployment rate and public expenditures are also among the important macroeconomic indicators. The current account deficit has another importance for Turkey among these indicators, since energy importation has crucial place in current account balance of Turkey. In this regard, this study firstly provides information about Turkey's energy profile, reviews relevant literature and evaluates data set, method and findings.

2. TURKEY'S ENERGY PROFILE

Turkey is located in a region close to Middle East and Caspian Basin where are proven to have 71,8% natural gas and 72,7% oil reserves of world. Turkey can be considered as a natural bridge between energy producer and consumer countries. It stands out as an important country in ensuring energy security through resource and route diversification.

Turkey's limited energy resources, especially oil and natural gas, causes dependence on the import of energy resources. In current situation, Turkey meets about 30 percent of energy



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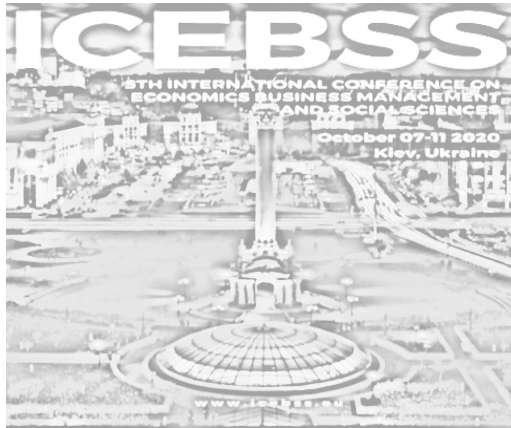
demand through national resources and rest of its need supplied by importation. In this regard, policies and national moves to meet energy demand of country have great importance for Turkey. In this framework, exploration, production and diversification activities are also intensified. In addition to this, Turkey's energy policy made great progress since the time which Turkey was accepted as European Union candidate country in 1999 at Helsinki Summit. The main objective of Turkey's energy policy is supplying the energy need in desired time and in a way that is safe, cost effective, low priced and environmentally friendly.

In order to provide energy demand in sustainable way, Turkey is aimed encouragement and dissemination of using renewable resources such as local reserves of hard coal and lignite, hydroelectric, wind and solar energy. On the other hand, in the Eastern Mediterranean and the Black Sea, exploration and drilling activities are intensified and continue with two seismic and three deep water drilling vessels which belongs Turkey's inventory. In this context, as a result of the exploration in the region called Sakarya Gas Field, 405 billion cubic meters of natural gas reserves were found. The discovery made in this area, located approximately 170 kilometers north of Karadeniz Ereğli, and is described as the largest natural gas field in the Black Sea until now. As a result of natural gas exploration in Black Sea which has approximately 80 billion dollars of potential economic value, the existing potential natural gas reserve of Turkey was increased hundredfold. Consequently, recent events will help to reduce the effect of energy costs pressure for Turkey.

Moreover, the inclusion of nuclear energy in the national energy share will make a great contribution to reduce the dependency on imported fuels. Law No. 5710 on the "Establishment and Operation of Nuclear Power Plants and Energy Sales" was accepted in November 21, 2007. Akkuyu Nuclear power plant with a capacity of 4800 MW was signed with Russia in 2010 and an agreement was signed with Japan for the establishment of a 4480 MW nuclear power plant in Sinop in 2013.

3. LITERATURE REVIEW

In the relevant literature, Kraft and Kraft (1978) made analyses with data of 27 years for American economy and indicated economic growth increases energy consumption as a result of their study. A similar study for Greece was conducted by Hondroyiannis et al. (2002) and demonstrated proofs for energy consumption effects on economic growth. Paul and Bhattacharya (2004) found bidirectional causality between energy consumption and economic growth in their study for India between 1950 and 1996. Akinlo (2008), in his



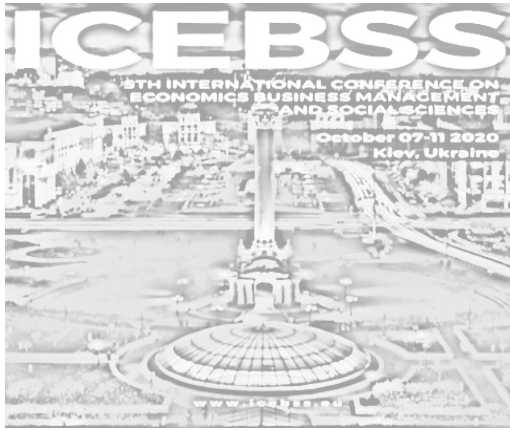
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research covering 11 African countries, concluded that electricity consumption and economic growth in 7 countries were co-integrated, were bidirectional in 3 countries, and electricity consumption was the cause of economic growth in 2 countries. Odhiambo (2009) concluded that electricity consumption is the cause of economic growth with the data of Tanzania from 1971 to 2006.

Looking at the national literature on this subject, Şengül and Tuncer (2006) concluded that energy consumption was the reason for the increase in gross domestic product (GDP) in their studies covering the years 1960-2000. Ulusoy (2006) stated that energy use indirectly affects growth by increasing the share of investments in the national product, though not directly. The study of Jobert and Karanfil (2007), contrary to the others, did not detect any long-term relationship between GDP and energy consumption. Lise and Montfort (2007) determined a long-term relationship between GDP and energy consumption for the period of 1970-2003, reported that causality was from GDP to energy consumption. Erdal et al. (2008), in their analysis with the data of the years 1970-2006, determined bidirectional causality between energy consumption to GDP. Kar and Kınık (2008) determined that there was a long-term relationship between electricity consumption and GDP for the period of 1975-2005, while the causality was bidirectional in residential electricity consumption and was from electricity consumption to economic growth in total electricity consumption and industrial electricity consumption.

Koç and Gümüs (2015) investigated the financial development and energy consumption of 57 countries including Turkey through subdividing into 4 continents. As a result of the research, they stated that there is a relationship between energy consumption and financial development, but the intensity of the relationship varies. The least relationship is in the African continent, the second is in Europe, the third is in Asia, and the highest level is in the American continent. In addition, it has been determined that the Asian continent stands out in the causality from energy consumption to the level of financial development, while the American continent for opposite condition.

Another study including Turkey, Kapusuzoğlu (2011) was investigated the relationship among stock index, interest rate and prices of crude oil, electricity, natural gas and coal in 24 OECD countries. In the study, it was found that the relationship between variables was very complex and different results were obtained in the same region or countries with the same economic development. But there was a strong relationship between energy prices and macroeconomic variables in all countries.



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4. DATA SET METHOD AND FINDINGS

4.1. Data Set and Variables

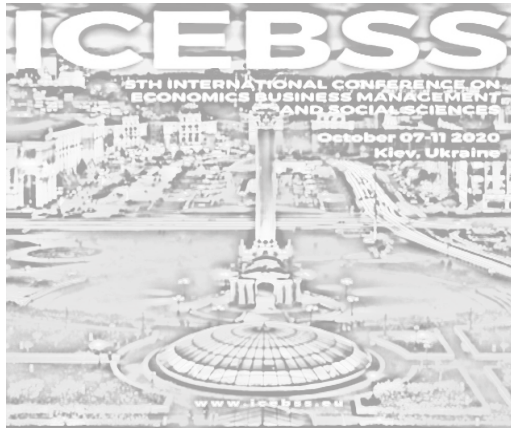
In this study, the relationship between Turkey's electricity consumption and macroeconomic indicators was investigated by using 30 years of data. In this respect, research was conducted for GDP and the other macroeconomic variables such as stock exchange index, current account balance, exchange rate, inflation rate, interest rate, unemployment rate and public expenditures. In order to do this research, firstly, data were collected from official sources. Although some of data such as electrical energy in gigawatts hours not affected by value changes in currency unit, while others, such as GDP, were affected. To hamper influence of currency unit, the data were adjusted for inflation. Data were gathered for annual frequency because of two main reasons. Firstly, it is more convenient to obtain some of data annually, such as electricity consumption and GDP. Secondly, in order to adjust data of energy consumption, public expenditures, inflation and current account balance seasonally. The data set covers a long 30-year retrospective period between 1987 and 2016. Descriptive information about the variables is included in Table 1.

Table 1: Information on Variables

<i>Variable</i>	<i>Unit</i>
Electricity Consumption	Gigawatt hours
Stock Exchange Index	BIST 100 closing price (inflation-free)
Current Account Balance (USD)	USD
Exchange Rate (Basket)	Inflation-free
Inflation Rate	%
Interest Rate	%
GDP	Inflation-free (TL)
Unemployment Rate	%
Public Expenditures	Inflation-free (TL)

Preparation procedure for variables in Table 1 is explained below:

Electricity Consumption: Data were obtained from the official website of the Turkey Statistical Institute. The data are in Gigawatt hours and were used in analyzes without further processing.



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Stock Exchange Index: Data were obtained from Borsa Istanbul (BIST) official website. BIST National 100 Index is based on year-end closing data. The data were adjusted from inflation based on 1987.

Current Account Balance: Data were obtained from Electronic Data Distribution System of the Central Bank of Turkish Republic in US Dollars.

Exchange Rate: Data were taken from Electronic Data Distribution System of the Central Bank of Turkish Republic in US Dollars and German Mark/Euro and a basket was prepared to be free from fluctuations in the US Dollar. The data were adjusted from inflation based on 1987.

Inflation Rate: Data were obtained from the data base of Biruni Turkey Statistical Institute. A new index was created by using the wholesale price index based on 1968, 1987, 1993 and 2003 and the inflation rates calculated according to this index were used in the analysis.

Interest Rate: Data were taken from Electronic Data Distribution System of the Central Bank of Turkish Republic and were included in analysis without further processing. Interest rates were used in the analysis by considering the average compound interest rates of ten-year Treasury bond.

Gross Domestic Product: Data was prepared using Turkey Statistical Institute and OECD data and were adjusted from inflation based on the 1987.

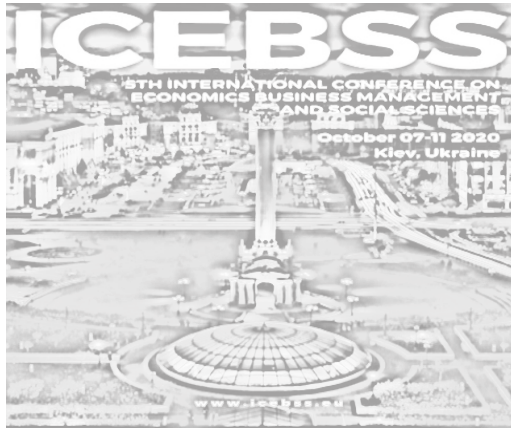
Unemployment Rate: Data were taken from Electronic Data Distribution System of the Central Bank of Turkish Republic and were included in analysis without further processing.

Public Expenditures: Data were obtained from official website of General Directorate of Budget and Finance Control of The Ministry of Finance in Turkish Liras and adjusted from inflation based on the 1987.

4.2. Method

In this study, multidimensional scaling analysis (MDS) was applied to data. Hence, an idea about the strength of the relationship between variables was obtained by reducing them from a large number of dimensions to a two-dimensional plane. MDS analysis was carried out by SPSS Statistics 2.0 software.

MDS analysis aims to represent objects in a k -dimensional space ($k < p$) based on the distances determined according to the p number of variables between n number of objects, units or observations. In this way, it is a method that determines the relationships between objects according to the distance between their appearance in space (Kalaycı, 2009: 2). MDS analysis is used to determine relationship between objects by showing objects that can be shown in a multidimensional space, very close to their real positions, in a less dimensional conceptual space such as two or three. Analysis aims to determine the distances between objects with minimum number of dimensions and close to the original positions (Kalaycı, 2009: 379). In



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order to do that, real distances among objects or units are calculated and then less dimensional geometric demonstration was tried to be constructed in accordance with determined distances. The coherence of distances between real and demonstrated ones is measured by stress statistic. If the stress is greater than or equal to 0.2, there is no fit, if between 0.2-0.1, there is good fit, if between 0.1-0.05, there is perfect fit, if less than 0.025, there is complete harmony (Ersöz, 2008: 100).

4.3. Findings

Whether the positions of the observations calculated on the two-dimensional plane are in full compliance with their actual positions and the stress and compliance measures calculated to determine the level of deviations are included in Table 2.

Table 2: Stress and Compliance Measures

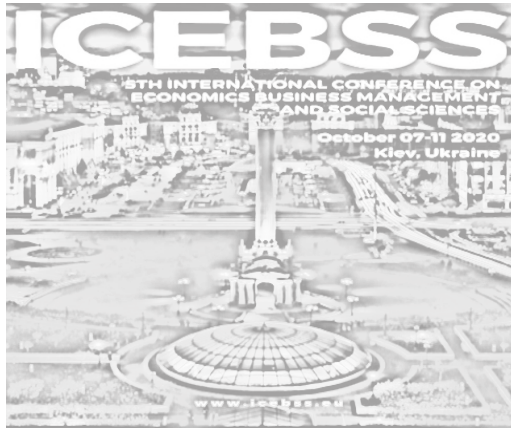
Normalized Unprocessed Stress	,00028
Stress-I	,01668 ^a
Stress-II	,02439 ^a
S-Stress	,00038 ^b
Dispersion Accounted For	,99972
Tucker congruence coefficient	,99986

a. Optimal scale factor: 1,000.

b. Optimal scale factor: 1,001.

As indicated in Table 2, the stress values are below 0.025 which points out complete harmony. Therefore, the positions of observations, which were calculated in two dimensions, are in full compliance with the real positions and deviations are minimal.

Electricity consumption and representation of calculated coordinates belongs to macroeconomic variables are given in Table 3.

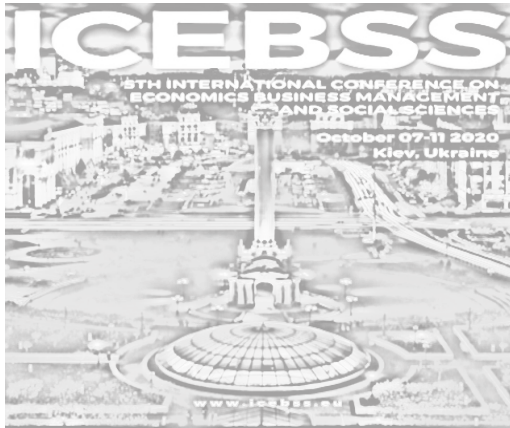


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Table 3: Representation Coordinates

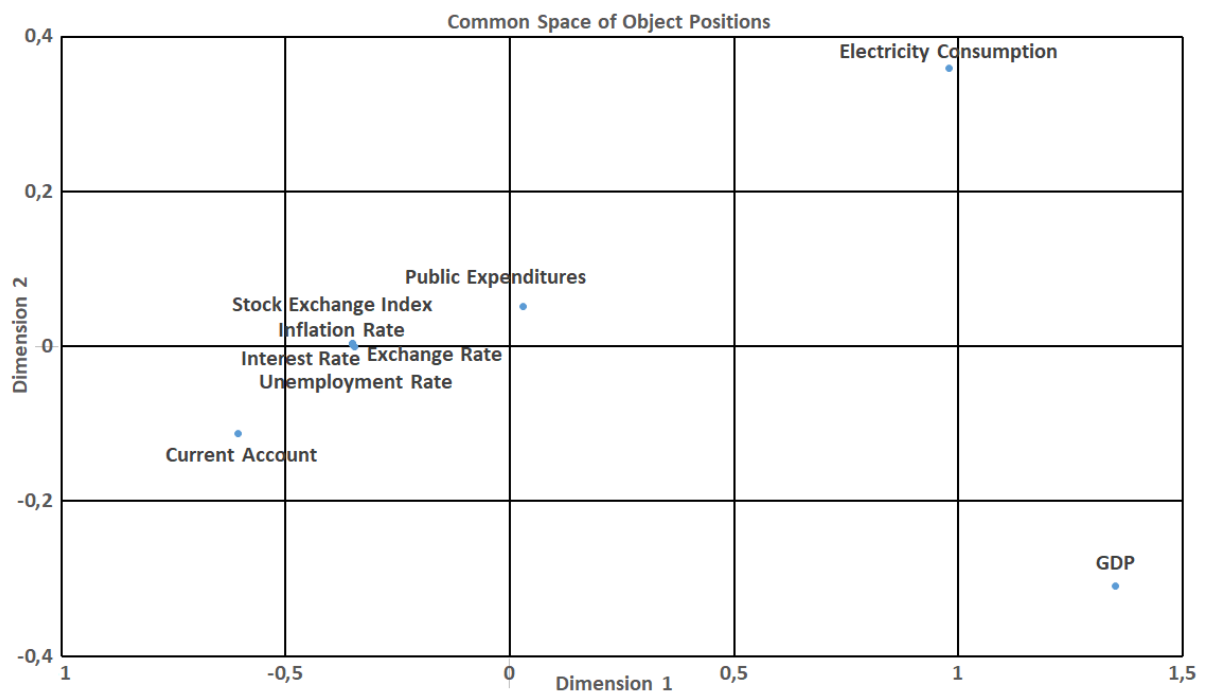
	Dimension	
	1	2
Electricity Consumption	,978	,359
GDP	1,349	-,309
Stock Exchange Index	-,351	,003
Inflation Rate	-,351	,003
Unemployment Rate	-,351	,003
Interest Rate	-,351	,002
Current Account Balance	-,606	-,112
Exchange Rate	-,346	,000
Public Expenditures	,029	,051

Appearance of coordinates in two dimensional planes is given in Figure 1.

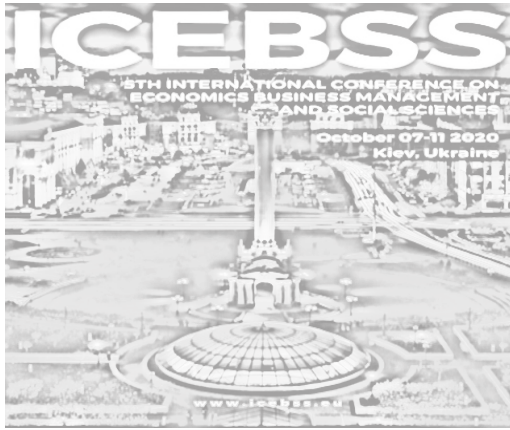


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Figure 1: Representation Obtained by MDS Analysis



Although it is not visible in Figure 1 due to the fact that the points are very close to each other, when the coordinates in Table 3 are controlled, it is seen that the interest rate is very close to the point where it is located. When Figure 1 and Table 3 are evaluated together, it is seen that the stock market index, exchange rate, inflation rate, interest rate and unemployment rate are almost at the same point, current account and public expenditures are separate but still close, and electricity consumption and GDP are at a more distant position.



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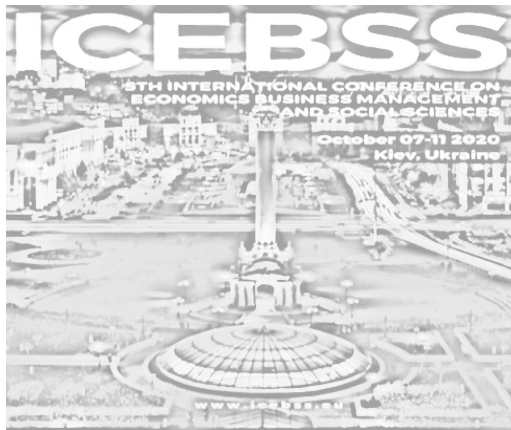
Table 4: Euclidian Distances between Points

Variable	Distance to Electricity Consumption
Stock Exchange Index	1,375
GDP	0,764
Inflation Rate	1,375
Unemployment Rate	1,375
Interest Rate	1,376
Current Account Balance	1,652
Exchange Rate	1,372
Public Expenditures	0,998

In Table 4, the GDP is the closest to the electricity consumption, while the second closest is the public expenditure and then, stock exchange index, the exchange rate, the inflation rate, the interest rate and the unemployment rate which shares approximately the same point. Lastly, current account balance is relatively farthest one. Therefore, GDP at 0.764 Euclidean distance has the strongest relationship with electricity consumption. In the second place, public expenditures come with a distance of 0.998. This is followed by the stock market index, exchange rate, inflation rate, unemployment rate and interest rate, whose distance to electricity consumption varies between 1,372 and 1,376. The weakest relation with electricity consumption is the current account balance with 1,652 distances.

5. CONCLUSION

Energy has become an effective and important factor in both production and input costs and in all areas of life with the development of technology. Since, there are big differences between countries in terms of energy distribution. Some countries are energy exporters while others are importers. Turkey is an energy importer country, because of the fact that being lack



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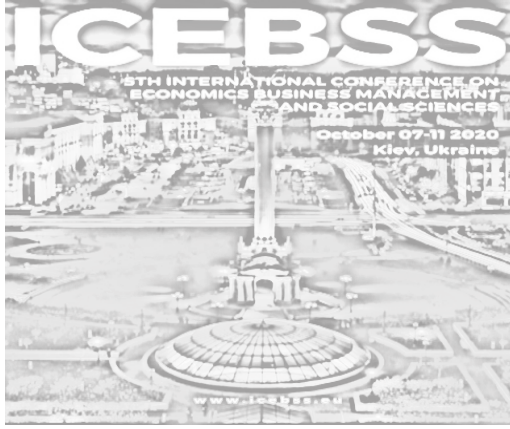
of oil reserves, the absence of necessary gas assets, and due to inability to produce enough energy from other sources. Energy expenditures constitute a significant part of the high current account deficit especially in recent years.

Energy is the main sustainable development objective of developing countries, notably Turkey. With the energy supply, countries could have rapid economic development and solid growth goals. The role of energy, whose strategic importance is increasing day by day, at the development level of countries is increasing. In this context, consumption of energy resources per capita is an important factor in comparing the welfare level of countries. Within the scope of sustainable development goals, country policies and incentive investments for the use and dissemination of alternative and sustainable renewable energy sources instead of fossil fuels, which are limited in the world, have gained great importance.

Countries want to know whether the energy they bought at high prices contributes to economic growth. Economic performance of countries is measured by economic growth and economic growth is also measured by the increase in real gross domestic product per capita. However, the economy also has other macro variables. The main ones are: stock index, current account balance, inflation rate, interest rate, unemployment rate and public expenditure. Each of these variables affect or provide insight into economic growth.

In this study, effects of energy consumption on economic growth and thus its' effects on macroeconomic indicators related to economic growth were investigated. In order to determine relationship between variables, multi-dimensional scaling analysis was applied which measures distances between variables by reducing them into one dimension. According to results of multi-dimensional scaling analysis, GDP was the closest variable to electricity consumption, while public expenditures were second which was followed by stock market index, exchange rate, unemployment rate and interest rate. Current account balance has the weakest relation between electricity consumption compared to other indicators.

Turkey has increased energy expenditure in the last 30 years. Since Turkey has the resources that meet the energy demand of about 30% and due to the import 70% of demand, energy has great importance for economic growth. In order to supply energy demand and to reduce current account deficit based on energy input, which is main reason for current deficit of Turkey, two nuclear energy plants were planned to be installed in following years. In addition, it is necessary to focus on the concept of renewable energy, which has been of great importance in recent years. Turkey could afford one third of its energy production through hydroelectric energy dams. Improving hydro electrical energy potential is important for Turkey beside the current dams' potentials. On the other hand, solar and wind energy investments are inadequate yet and still improving regarding renewable resources. In the framework of alternative energy production, investments for hydrogen energy and biomass energy by recycling needed to be accelerated. The fact that energy is cheap and easily



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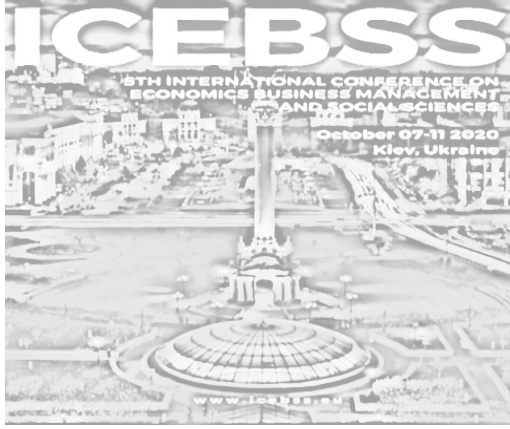
accessible is an important factor for the development of the economy. For this reason, the increase in renewable energy resources may result in reducing the external dependency and the disruptions caused by this dependency, as well as reducing the costs by turning to country resources.

One of the most important issues to be addressed regarding energy and energy costs is energy efficiency. This concept refers to the same amount of production and to maintain the same welfare through using less energy. Imported energy load for Turkey and energy costs for individuals will be decreased by efficient use of energy. For energy efficiency, important duties fall on both the regulatory state, individuals and companies. Newly discovered natural gas reserve in Black see could meet the energy demand of Turkey for 7-8 years, while it is planned to be taken out and used in a specific amount each year. Turkey imports 45 billion cubic meters currently. 20% of natural gas demand could be meet by extracting 10 billion cubic meters annually for 32 years in accordance with regional conditions. Thanks to this reserve that will contribute to the reduction of natural gas imports, the foreign currency paid for natural gas will remain in the country and contribute to the growth of GDP and the increase of per capita income. On the other hand, a price advantage will be provided in individual spends by decreasing costs in energy-intensive sectors, decreasing production costs and suppressing the increase in prices. Turkey's competitive power will be increased thanks to having a cost advantage caused by new discovered natural gas reserve.

In literature, few studies were investigated the relationship between macroeconomic indicators other than economic growth and electricity consumption. In this kind of studies, it recommended to be done in comparison with Turkey and other countries.

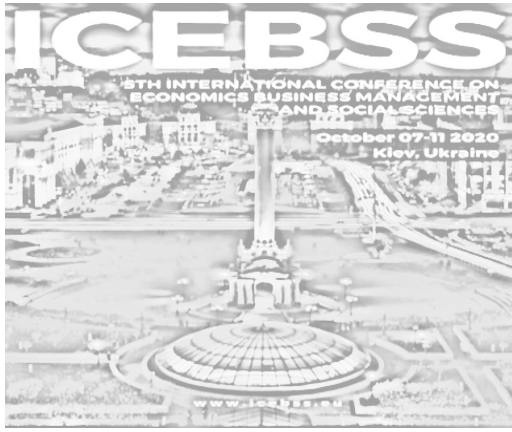
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