THE RELATIONSHIP BETWEEN SUSTAINABILITY AND EARNINGS MANAGEMENT:

A STUDY ON OECD COUNTRIES[*]

Dr. Öğr. Üyesi Neriman YALÇIN[**]

Dr. Öğr. Üyesi Mehmet GÜNEŞ[***]

ABSTRACT

This study aims to investigate the relationship between earnings management and sustainability performance of publicly traded (other than financial companies) companies in OECD countries. We analysed this in two periods, specifically 2000-2009 and 2010-2020 in founding member countries of OECD by using Panel Data Analysis techniques. The increase in sustainability performance data led to a natural break point in the analysis. The findings show that there is a statistically significant relationship between sustainability performance and earnings management with all its sub-components revealing that an increase in sustainability performance leads to a decrease in earnings management.

Keywords: Sustainability, Earnings management, OECD countries

JEL Code: M41, Q56

[**]Adana Alparslan Türkeş Bilim ve Teknoloji Üniversitesi, İşletme Fakültesi, nerimanyalcin@atu.edu.tr Orchid: 0000-0002-2196-4779

[***]Adana Alparslan Türkeş Bilim ve Teknoloji Üniversitesi, İşletme Fakültesi, mtgunes@atu.edu.tr Orchid: 0000-0002-1938-6914

SÜRDÜRÜLEBİLİRLİK İLE KAZANÇ YÖNETİMİ ARASINDAKİ İLİŞKİ: OECD ÜLKELERİ ÜZERİNE BİR ARAŞTIRMA

ÖZET

Bu çalışma, OECD ülkelerinde faaliyet gösteren halka açık (finansal şirketler dışında) işletmelerin sürdürülebilirlik performansları ile kazanç yönetimi arasındaki ilişkinin araştırılmasını amaçlamaktadır. Bu ilişki, 2000-2009 ve 2010-2020 yılları olmak üzere iki dönem halinde, 21 yıllık bir zaman serisinde, kurucu OECD ülkeleri örnekleminde, Panel Veri Analizi teknikleri kullanılarak analiz edilmiştir. Sürdürülebilirlik performansı verilerine erişimin 2010 yılından itibaren artması nedeniyle çalışma 2010 yılı öncesi ve sonrası olmak üzere iki ayrı dönemde gerçekleştirilmiştir. Araştırma bulguları, tüm alt bileşenleri ile birlikte sürdürülebilirlik performansı ile kazanç yönetimi arasında istatistiki olarak anlamlı bir ilişki olduğunu göstermiştir. Sonuç olarak, sürdürülebilirlik performansının kazanç yönetimini azaltıcı bir etkisi olduğu ortaya konmuştur.

GENİŞLETİLMİŞ ÖZET

AMAÇ VE MOTİVASYON

Son yıllarda küresel ısınma, iklim değişikliği ve çevresel bozulmaların yarattığı zorluklar, toplumun tüm kesimlerinin olduğu gibi işletmelerin de sürdürülebilirliğe olan ilgisini artırmıştır. Birleşmiş Milletler tarafından 2015 yılında açıklanan Sürdürülebilir Kalkınma Hedefleri doğrultusunda, şirketlerin sürdürülebilirlik bilgilerinin raporlanması gerekli hale gelmiştir. Global Reporting Initiative- Küresel Raporlama Girişimi (GRI) başta olmak üzere birçok finansal olmayan raporlama rehberi yayınlanmıştır. İşletmeler bu rehberleri esas alarak finansal olmayan bilgilerini raporlamaya başlamışlardır. Finansal olmayan bilgilerin raporlandığı sürdürülebilirlik raporları, işletme yönetimlerinin daha şeffaf olmasını ve paydaşlar arasındaki asimetrik bilgi akışını ortadan kaldırılmayı amaçlamaktadır. Bu sayede işletmelerin, kazanç yönetimi gibi manipülasyon ve hile yöntemlerine daha az eğilim göstermeleri beklenmektedir (Bozzolan vd. 2015). İşletmelerin en çok başvurduğu manipülasyon yöntemlerinden biri kazanç yönetimi teknikleridir. Şirketlerin mali durumlarını iyileştirmek veya olduğundan daha olumsuz göstermek için muhasebe tekniklerini kullanması ise kazanç yönetimi olarak tanımlanmaktadır.

Bu kapsamda, işletmelerin sürdürülebilirlik performanslarının kazanç yönetimi ile arasındaki ilişkinin araştırılması bu çalışmanın araştırma motivasyonunu oluşturmaktadır.

Araştırmada, kurumsal sürdürülebilirliği yüksek işletme yönetimlerinin kazanç yönetiminden kaçınması varsayımıyla; sürdürülebilirlik performansı ile kazanç yönetimi arasındaki ilişki incelenmiştir. Bu ilişki 2000-2009 ve 2010-2020 yılları olmak üzere iki dönem halinde 21 yıllık bir zaman serisinde kurucu OECD ülkeleri örnekleminde, Panel Veri Analizi teknikleri kullanılarak analiz edilmiştir. Araştırma bulguları, tüm alt bileşenleri ile birlikte toplam sürdürülebilirlik performansının kazanç kalitesi ile istatistiki olarak pozitif ve anlamlı bir ilişkisinin olduğunu ortaya koymuştur.

ARAŞTIRMA STRATEJİSİ VE YÖNTEMİ

Kazanç yönetimi ile sürdürülebilirlik performansı arasındaki ilişkinin araştırıldığı bu çalışmada, OECD kurucu ülkeleri örneklem olarak seçilmiştir. OECD'nin görevlerinin başında "Çevre, tarım, teknoloji ve ticaret politikaları ile mali politikalarda meydana gelen değişiklikleri ve gelişmeleri takip etmek, araştırmak ve gözlemlenen ortak sorunlara çözüm arayışında bulunmak, iyi uygulamaları tanımlamak, ulusal/uluslararası politikaların koordinasyonu konusunda OECD üyesi ülkelere yardımcı olmak" gelmektedir. Dolayısı ile Türkiye'nin de kurucu üyeleri arasında bulunduğu OECD ülkeleri, kuruluş amacı ve görevleri nedeniyle sürdürülebilirlik araştırması açısından doğal bir örneklem oluşturmaktadır.

Çalışmada, 17 OECD ülkesinden beş yüz seksen beş (N=585) firma, 2000-2009 (T1=10 yıl) ve 2010-2020 (T2=11 yıl) yılları arasında incelenmiştir. Yapılan incelemede, firma bileşenlerinin tahakkuk esaslı kâr yönetiminin göstergesi olan ihtiyari tahakkuklar ile ilişkisi analiz edilmiş ve toplam beş adet model kurulmuştur. Kurulan bu modellerin ilki, 2000-2009 yılları arası firma bazında ölçülen değişkenler üzerinden elde edilirken, son dört model ise 2010-2020 yılları arası firma bazında ölçülen değişkenler ve sürdürülebilirlik verileri üzerinden elde edilmiştir.

Araştırmada bağımlı değişken olarak seçilen ihtiyari tahakkuk değişkeni Düzeltilmiş Jones modeli kullanılarak hesaplanmıştır. İlk model için (Model 1) bağımsız değişkenler; toplam aktiflerin logaritması (TAL), büyüme (BYM), aktif karlılık oranı (AKO), piyasa değeri/defter değeri (PD/DD), kaldıraç (KALD) ve net kar (NK) değişkenleridir. Son dört model için bağımsız değişkenler incelendiğinde; ikinci modelde (Model 2) Refinitiv veri tabanı tarafından hesaplanan çevresel, sosyal ve yönetişim performans puanı (SURD), üçüncü modelde (Model 3) çevresel performans puanı (CEV), dördüncü modelde (Model 4) sosyal performans puanı (SOS), beşinci modelde ise (Model 5) yönetişim performans puanı (YON) bağımsız değişken olarak alınmıştır. Bağımsız değişkenler ile birlikte birinci modelde bulunan kontrol değişkenleri diğer dört modelde de kullanılmıştır.

İlk aşamada 2000-2009 ve 2010-2020 yılları arasında elde edilen değişkenler için tanımlayıcı istatistikler sunulmuştur. İkinci aşamada Panel regresyon modeli oluşturulurken kullanılacak Havuzlanmış en küçük kareler (EKK) etki, rassal etki ve sabit etki türü arasında seçim yapabilmek için, F testi, Breusch-Pagan LM testi ve Hausman testi kullanılmıştır (Baltagi, 2008; Hausman, 1978; Hausman ve Taylor, 1981). Etki türü seçimi için testler kullanıldıktan sonra heteroskedastisite ve otokorelasyon problemlerinin var olup olmadıkları

incelenmiştir. Panel regresyon analiz aşamasında, değişen varyans probleminin sınanmasında Breusch-Pagan (BP) testi, otokorelasyon probleminin sınanmasında ise Breusch–Godfrey (BG) testi kullanılmıştır (Torres-Reyna, 2010). Uygulamada yatay kesit bağımlığı, otokorelasyon veya değişen varyans probleminin var olduğu durumlarda kullanılabilen dirençli Driscoll-Kraay (Driscoll- Kraay, 2008) kovaryans tahmincilerine başvurularak, son aşamadaki panel regresyon modeli tahmin edilmiştir (Hoechle, 2007).

Ekonometrik analiz bulgularının değerlendirilmesinde test istatistikleri, parantez içinde anlamlılık değerleri ile bir arada sunulmuştur. Test sonuçları için hata payı %1, %5 ve %10 olarak belirlenmiştir. Analizlerin tamamı R-Project programında bulunan plm ve lmtest paketleri üzerinden gerçekleştirilmiştir (Croissant ve Millo, 2018; Zeileis ve Hothorn, 2002).

BULGULAR VE TARTIŞMA

Yapılan analizler sonucunda elde edilen bulgular aşağıda ifade edilmiştir; firmalar bazında 2000-2009 ve 2010-2020 yılları arası ölçülen kazanç kalitesine ait tanımlayıcı istatistik bulgularının, iki dönem içinde ortalamalar bakımından bir fark göstermediği belirlenmiştir. Ancak yıllar bazında tek tek inceleme yapıldığında ihtiyari tahakkuklar ile temsil edilen kazanç kalitesinin fark ortaya koyduğu görülmüştür. Ardından yapılan regresyon analizi sonuçları ise;

Model 1; Sürdürülebilirlik performansı etkisi olmaksızın 2000-2009 yılları arasında kazanç kalitesi ile kontrol değişkenleri arasındaki ilişkiyi göstermektedir. Bulgular, TAL, BYM ve NK değişkenlerinin KAZKAL sonucunu anlamlı ölçüde etkilediğini göstermektedir (p<0.05).

Model 2; 2010-2020 yılları arasında KAZKAL bağımlı, SURD bağımsız ve kontrol değişkenleri ile elde edilmiş panel regresyon bulgularını göstermektedir. Bulgular, KALD, NK ve SURD değişkenlerinin KAZKAL sonucunu anlamlı ölçüde etkilediğini göstermiştir (p<0.05).

Model 3; 2010-2020 yılları arasında KAZKAL bağımlı, CEV bağımsız ve kontrol değişkenleri ile elde edilmiş panel regresyon bulgularını göstermektedir. Bulgular, KALD, NK ve CEV değişkenlerinin KAZKAL sonucunu anlamlı ölçüde etkilediğini göstermiştir (p<0.05).

Model 4; 2010-2020 yılları arasında KAZKAL bağımlı, SOS bağımsız ve kontrol değişkenleri ile elde edilmiş panel regresyon bulgularını göstermektedir. Bulgular, KALD, NK ve SOS değişkenlerinin KAZKAL sonucunu anlamlı ölçüde etkilediğini göstermiştir (p<0.05).

Model 5; 2010-2020 yılları arasında KAZKAL bağımlı, YON bağımsız ve kontrol değişkenleri ile elde edilmiş panel regresyon bulgularını göstermektedir. Bulgular, KALD, NK ve YON değişkenlerinin KAZKAL sonucunu anlamlı ölçüde etkilediğini göstermiştir (p<0.05).

Özetle, Model 1'in katsayıları incelendiğinde TAL (0,001), BYM (0,015) ve NK (0,010) değişkenlerinin KAZKAL sonucunu anlamlı ölçüde etkilediği görülmektedir (p<0,05). TAL, BYM ve NK değişkenlerinin

regresyon katsayıları pozitif olduğu için, bu kontrol değişkenlerinin ihtiyari tahakkukları katsayıları oranında arttırdıkları tespit edilmiştir. İhtiyari tahakkuklardaki bu artış, kazanç yönetiminde artışa ve dolayısıyla kazanç kalitesinde azalışa işaret etmektedir.

Model 2'nin katsayıları incelendiğinde KALD (0,001), NK (0,017) ve SURD (0,010) değişkenlerinin KAZKAL sonucunu anlamlı düzeyde etkilediği belirlenmiştir (p<0,05). Model 3'ün katsayıları incelendiğinde KALD (0,001), NK (0,018) ve CEV (0,005) değişkenlerinin KAZKAL sonucunu anlamlı olarak etkilediği tespit edilmiştir (p<0,05). Model 4'ün katsayıları incelendiğinde KALD (0,001), NK(0,017) ve SOS (0,007) değişkenlerinin KAZKAL sonucunu anlamlı düzeyde etkilediği görülmüştür (p<0,05). Model 5'in katsayıları değerlendirildiğinde KALD (0,001), NK (0,018) ve YON (0,004) değişkenlerinin KAZKAL sonucunu anlamlı olarak etkilediği tespit edilmiştir (p<0,05).

Model 2, 3,4 ve 5'in bulgularından elde edilen sonuçlar, istatistiki olarak anlamlı ilişki tespit edilen ve yukarıda ifade edilen değişkenlerin katsayıları oranında ihtiyari tahakkukları ve buna bağlı olarak kazanç yönetimini arttırdığını ve nihai olarak kazanç kalitesini azalttığını göstermiştir.

SONUÇ VE ÖNERİLER

Yapılan analizler sonucunda, sürdürülebilirlik performansının kazanç yönetimi ile ilişkisini araştıran bu çalışmanın bulguları, sürdürülebilirlik performansı ile kazanç kalitesini temsil eden ihtiyari tahakkuklar arasında pozitif yönlü bir ilişki göstermiştir. Toplam sürdürülebilirlik performansında %1'lik artış, 0.010 oranında; sosyal sürdürülebilirlik performansındaki %1'lik artış, 0.007 oranında; çevre sürdürülebilirlik performansında %1'lik artış, 0.005 oranında ve son olarak yönetişim sürdürülebilirlik performansında %1'lik bir artış, 0.004 oranında olmak üzere ihtiyari tahakkuklarda artışa neden olmuştur. Sonuç olarak, araştırma bulguları, tüm alt bileşenleri ile birlikte toplam sürdürülebilirlik performansının kazanç kalitesini temsil eden ihtiyari tahakkuklar üzerinde istatistiki olarak pozitif ve anlamlı sonuçlar ortaya koymuştur. Bu sonuçlar, sürdürülebilirliğin ihtiyari tahakkuklar üzerinde artıcı bir etkiye neden olduğu dolayısı ile kazanç kalitesini de azaltıcı yönde etkilediğini göstermektedir.

Çalışma, örneklemin OECD kurucu ülkelerinden oluşması ve kazanç yönetimi çeşitlerinden yalnızca ihtiyari tahakkukların seçilmiş olması yönleri ile sınırlandırılmıştır. Ayrıca araştırma verileri Refinitiv Eikon Datastream Programından temin edildiği için, söz konusu veri programında (geniş veri kapsama kapasitesine rağmen) listelenemeyen veriler nedeni ile örneklem zaman serisi 21 yıl ile sınırlandırılmıştır.

1. INTRODUCTION

Companies that value the sustainability approach are expected to disclose non-financial information in addition to the financial information available in traditional financial statements to facilitate the decision-making process of stakeholders. It is important that companies that display social responsibility through non-

financial reporting act appropriately to restrict earnings management; and thus, offer more transparent and reliable financial information (Kim, Park & Wier, 2012). Therefore, the assumption that managers participating in sustainability reporting are less likely to participate in earnings management is supported (Kim, Park, & Wier, 2012; Velte, 2019; Buertey, Sun, Lee, & Hwang, 2020).

This study investigates whether there is a relationship between sustainability performance and earnings management in OECD (The Organisation for Economic Co-operation and Development) countries because OECD works to create better policies in environmental, social, economic, and technological developments.

The founding member countries of OECD form the sample of the study. The social, economic and environmental problems that OECD seeks to solve are closely related to sustainability. As an intergovernmental organization, OECD works closely with governments, policy makers, and citizens to find solutions to the social, economic, and environmental challenges by setting international standards.

This study aims to determine whether a relationship exists between sustainability performance and earnings management in companies that operate in OECD countries, and if there is a statistically significant relationship between these variables, this study aims to find out the direction of the relationship.

To this end, first the existence and level of earnings management are going to be tested in publicly- traded firms (except for financial companies) in OECD countries. We are going to use a discretionary accrual-based earnings management indicator model as the earnings management indicator. Secondly, we are going to determine the sustainability scores of the companies calculated according to the global scoring system. These sustainability scores consist of total sustainability score, environmental sustainability score, social sustainability score, and governance sustainability score. We are going to calculate social, environmental, and governance (ESG) scores separately as sub-components of total sustainability since their impacts on total sustainability are not equal. For this reason, the sustainability total score and its sub-components are to be tested separately through models. The final findings of the study are to create social and economic awareness in terms of restricting the earnings management practices of companies and increasing sustainability-related activities. Furthermore, we are going to make an additional contribution by comparing the data for the pre-ESG period (2000-2009) and the post-ESG period (2010-2020).

Within the given framework above, the following research question was asked:

- Does increased sustainability performance limit earnings management and improve earnings quality?

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

There are studies on whether companies that exhibit social responsibility through non-financial reporting provide more transparent and reliable financial information. For this reason, we have examined studies that address the relationship between sustainability and earnings management in both national and international literature.

Literature review shows that the relationship between sustainability and earnings management is tested with discretionary accruals. These studies reveal that positive impact of sustainability on discretionary accruals affect earnings management negatively. When the statistical sign of the effect is negative, earnings management is positively affected. In this context, there are studies in the literature suggesting that there is a statistically significant relationship between earnings management and sustainability. These studies reveal that the increase in sustainability performance improves earnings quality by restricting earnings management.

For example, Kim, Park, and Wier (2012) found that highly socially responsible firms are less likely to manage earnings with discretionary accruals, manipulate real company operations, and be the subject of senior executives' earnings management investigations. Muttakin, Khan, and Azim (2015) established that earnings quality improves when managers in a developing economy provide more corporate social responsibility disclosures. In their study on the companies listed on the Indonesian Stock Exchange, Trisnawati and Setiawati (2016) revealed that all dimensions of sustainability reporting leads to reduction earnings management. Farhan (2018) found that the relationship between the sustainability reports and earnings management of companies that operate in the energy and mining sectors in the Indonesian Stock Exchange causes a moderate decrease.

Buertey, Sun, Lee, and Huwang (2020) found that there is a significant positive relationship between sustainability and earnings quality and that sustainability reporting prevents managerial opportunism. Grimaldi, Caragnano, Zito, and Mariani (2020) found a small negative relationship between sustainability performance and earnings management practices in their study on companies in the Italian Stock Exchange. They also found that companies characterized by higher levels of sustainability involvement are less inclined to advance earnings management practices. In the study where the effect of sustainability performance score on earnings quality was investigated collectively and separately as three sub-elements, Velte (2019) found that sustainability performance (collectively and separately) negatively impacted accrual-based earnings quality. According to Şeker (2020), it can be said that the ESG performance of the companies positively affects the financial reporting quality. In other words, rising ESG scores increase the quality of financial reporting. Gonçalves, Gaio, and Ferro (2021) found that the managers of socially-responsible companies have more ethical behavior; and therefore, they use financial reporting more effectively. In their study, Akter and Toha (2021) revealed that earnings management has an important relationship with the economic and environmental dimensions of sustainability. In their study on mining and chemical industry companies which are traded on the Indonesian Stock Exchange, Indy, Uzliawati, and Mulyasari (2022) determined that sustainability reporting

restricts earnings management. Sumritsakun (2022), in his study on companies in the Thai stock market, found that companies that report on sustainability have lower earnings management.

On the other hand, there are studies that revealed different results on the relationship between total performance of sustainability and its sub-components. Although Yalçın (2022) showed that sustainability affects earnings quality positively in his study on companies in the sustainability index of the Istanbul Stock Exchange, the said effect occurred at quite a low level. On the other hand, in the additional regression analyses, no statistically-significant relationship was found between earnings quality and the social, environmental, and governance elements of sustainability.

While most of the studies investigated the impact of sustainability on earnings management, Ferrero, Sanchez, and Ballesteros (2015) concluded that conservative companies with high accrual quality or fewer earnings management practices report high-quality financial information as well as high-quality sustainability information.

In the national literature, qualitative research on the relationship between sustainability and earnings management is also available. In his study, Ertan (2018) examined the sustainability reports published between 2005 and 2017 in Turkey and analysed 391 sustainability reports published by 120 companies. The research reveals that the number of sustainability reports published in Turkey has increased over the years and that the most widely-used guide in the preparation of sustainability reports in Turkey is the guide created by the Global Reporting Initiative. In his study, Aksoy (2019) conducted a literature review within the framework of the publications of standard-setting institutions and generally-accepted practice principles on related issues and made explanations by addressing different reporting frameworks on sustainability reporting. Sultanoğlu and Akdoğan (2020), examined the reports of companies that prepare integrated reports in the world and in Turkey. They determined that Turkey's practices are not yet at a sufficient level compared to international practices, provision of information for the future is limited. There is a small number of Turkish companies that prepare integrated reports. Güneş and Yalçın (2022) revealed the trend of reporting framework in non-financial reporting of companies listed in the Istanbul Stock Exchange Corporate Governance Index. The study discusses the importance of sustainability reporting.

As seen in the literature above, the relationship between sustainability and earnings management in various economies and time periods has been examined. The main duties of the OECD are to develop environmental, agricultural, technology, and trade policies and fiscal policies to follow developments, to find solutions to problems, and to identify good practices. Therefore, OECD countries, of which Turkey is among the founding members, are accepted as a natural sample in terms of sustainability research due to their founding purpose and duties.

In terms of the time frame of the research, we took 2010, when ESG data began to be widely reported, initially as a basis. In addition, we included the 10-year time series before 2010 in the study because earnings

management situations before participating in the ESG reporting of the companies in the sample should also be investigated. In this way, we also aimed to determine the earnings management trends of the enterprises before we included them in the non-financial reporting processes. For this reason, as a contribution to the literature, the study also tested whether the findings that transparency and information symmetry brought by sustainability had positive effects on the earnings management of enterprises in the OECD sample in previous studies.

The study made an additional contribution by comparing the data for the pre-ESG period (2000-2009) and the post-ESG period (2010-2020).

The hypothesis of the research carried out to achieve these goals is:

H_0: *There is no statistically significant relationship between sustainability performance and earnings management.*

3. RESEARCH METHODOLOGY

The aim of the research is to determine whether there is a relationship between sustainability performance and earnings management in companies in OECD countries, and if there is a statistically significant relationship, the direction of the relationship is concerned. For this purpose, founding member countries of OECD constituted the sample and this study investigated the relationship between earnings management and sustainability performance.

The primary duties of the OECD are to "follow and research the changes and developments in environmental, agricultural, technologic, trade, and financial policies, seek solutions to commonly observed problems, identify good practices, and help OECD member countries in the coordination of national/international policies". Therefore, OECD countries, of which Turkey is among the founding members, are accepted as a natural sample in terms of sustainability research due to their founding purpose and duties.

The study examined five hundred and eighty-five (N=585) companies from 17 OECD countries between 2000 and 2009 (T1=10) and 2010-2020 (T2=11). Since access to sustainability performance data has increased since 2010, the study was modeled in two separate periods: before and after 2010. According to the Refinitiv Eikon database, the number of companies with a sustainability score in 2010 is approximately 33% more than the number of companies in 2009 (Şeker, 2020).

The study analysed the effect of discretionary accruals, which is an indicator of accrual-based earnings management, and established a total of five models. While it obtained the first of these models based on the

variables measured on a firm basis between the years 2000 and 2009, the last four models were obtained based on the variables and sustainability data measured on a firm basis between the years 2010 and 2020.

We calculated the discretionary accrual variable selected as the dependent variable in the study by using the Adjusted Jones model. The independent variables for the first model (Model 1) were the logarithm of total assets (LTA), growth (SIZE), return on assets (ROA), market value/book value (MV/BV), leverage (LEV), and net profit (NP) variables. When independent variables for the last four models were examined, environmental, social, and governance performance score (ESG) calculated by the Refinitiv Eikon database was taken as the independent variable in the second model (Model 2), environmental performance score (ENV) in the third model (Model 3), social performance score (SOC) in the fourth model (Model 4), and governance performance score (GOV) in the fifth model (Model 5). We used the control variables contained in the first model together with the independent variables in the other four models as well.

In the first stage, we presented descriptive statistics for the variables obtained between 2000-2009 and 2010-2020. In the second stage, Pooled least squares (LS) to be used while creating the Panel regression model were used with the F test, Breusch-Pagan LM test, and Hausman test to choose between effect, random effect, and fixed effect type (Baltagi, 2008; Hausman, 1978; Hausman & Taylor, 1981). After using tests for effect type selection, we investigated the existence of heteroscedasticity and autocorrelation problems. In the panel regression analysis phase, we used the Breusch-Pagan (BP) test in order to analyse the variable variance problem, and the Breusch–Godfrey (BG) test to test the autocorrelation problem (Torres-Reyna, 2010). In practice, the final stage panel regression model was estimated by applying the resistant Driscoll-Kraay (Driscoll -Kraay, 2008) covariance estimators, which can be used in cases where cross-section dependence, autocorrelation, or varying variance problems exist (Hoechle, 2007).

4. ANALYSIS AND FINDINGS

In the presentation of the findings, we displayed test statistics together with the significance values in parentheses. The margin of error for the test results was determined as 1%, 5%, and 10%. We conducted all of the analyses through the "plm" and "lmtest" packages in the R-Project program (Croissant & Millo, 2018; Zeileis & Hothorn, 2002).

In the analysis phase, we studied the effect of discretionary accruals, which was the indicator of accrual-based earnings management measured between 2000-2009 (T1=10) and 2010-2020 (T2=11) within the scope of a total of five hundred and eighty-five different (N=585) companies. Within the scope of this study, a total of five models were established. We obtained the first of these established models based on the variables

measured on a firm basis in the years 2000-2009 while the last four models were obtained based on the variables measured on a firm basis in 2010-2020. In this study, discretionary accruals were taken as the dependent variable. The below-mentioned steps were followed in obtaining discretionary accrual values.

In the first step, the total accrual values of the companies were obtained. Total accrual values were calculated as follows:

Total accruals = Operating profit + Net cash flows resulting from operations

After obtaining of the total accrual values, non-discretionary accrual values should be obtained in order to calculate the discretionary accrual values. By subtracting the obtained values from the total accrual values, the discretionary accruals were found as follows:

Discretionary accruals = Total accruals/A_{it-1} – Non-discretionary accruals   (Formula 1)

In the formula:

A_{it-1} = refers to total assets of i company in t-1 year   (Formula 2)

We calculated total accrual values in order to obtain discretionary accrual values. Finally, non-discretionary accrual values were obtained. For this purpose, Adjusted Jones model was established and predictive values were obtained. We can formulate the corrected Jones model as follows (Dechow et al., 1995):

$TA_{it}/A_{it}-1 = \alpha i \ [1/TA_{it-1}] + \beta_{1i}[\Delta SAL_{it} - \Delta REC_{it}/ A_{it}-1] + \beta_{2i} [TFA_{it}/A_{it-1}] + \beta_{3i}[ROA_{it-1}]$ *(Formula 3)*

In the formula;

TA$_{it,}$ refers to the total accruals of i company in t year,

TA$_{it-1,}$ refers to the total assets of i company in t-1 year,

ΔSAL, refers to changes in net sales of i company in t year,

ΔREC*i*, refers to changes in net trade receivables of i company in t year,

TFA $_{it}$, refers to tangible assets of i company in t year,

ROA$_{it-1}$, refers to return on assets of i company in t-1 year.

In the model above, the study applied the Pooled Least Squares (LS) method, and ai, B1i, B2i and B3i values were obtained. Estimation values calculated by using these coefficients gave non-discretionary accrual values. When the estimated values which we obtained were subtracted from the actual values, discretionary accrual values were calculated (Aslanoğlu et al., 2016; Ocak, 2018; Çetin & Yaşar, 2021).

Obtained discretionary accrual values (EM) were addressed as dependent variables in five models. The independent variables for the first model (Model 1) are LTA, SIZE, ROA, MV/BV, LEV, and NP. In the examination of independent variables for the last four models, environmental, social, and governance performance score (ESG) calculated by the Refinitiv Eikon database was taken as the independent variable in the second model (Model 2), environmental performance score (ENV) in the third model (Model 3), social performance score (SOC) in the fourth model (Model 4), and governance performance score (GOV) in the fifth model (Model 5). Examination of the control variables included in the model together with the independent variables demonstrated that logarithm of total assets (LTA), change in sales (SIZE), return on assets (ROA), market value/book value ratio (MV/BV), total debt/total assets ratio (LEV), and net profit (NP) were taken as control variables for the last four models. The natural logarithms of the control variables in question were taken and included in the models.

In the first stage, we gave descriptive statistics for the variables measured between 2000-2009 and 2010-2020. In addition, we presented the descriptive statistics of the discretionary accrual values of the companies measured on the basis of the years 2000-2009 and 2010-2020. The cross-section dependence of the models and research variables established within the scope of the research were evaluated with the Peseran (2004) Cross-Section Dependence (CD) test since the panel data structure was T1<N and T2<N. In the stationary phase of the research variables, Hansen's Covariance-Extended Dickey-Fuller (CADF-Cross-Sectionally Augmented Dickey-Fuller) test, which is one of the 2nd generation unit root tests under cross-section dependence, was used (Hansen, 1995; Kabadayı et al., 2012).

Pooled least squares (LS) effect, random effect, and fixed effect type to be used while creating the panel regression model were performed with the F test, Breusch-Pagan LM test, and Hausman test (Baltagi, 2008; Hausman, 1978; Hausman & Taylor, 1981). After performing the tests for the selection of the effect type, we investigated the existence of heteroscedasticity and autocorrelation problems. In the panel regression analysis phase, the heteroscedasticity problem was tested by using the Breusch-Pagan (BP) test, and the Breusch–Godfrey (BG) test was used to test the autocorrelation problem (Torres-Reyna, 2010).

In practice, the final stage panel regression model was estimated by referring to the resistant Driscoll-Kraay (Driscoll-Kraay, 2008) covariance estimators, which can be used in cases where cross-sectional dependence, autocorrelation, or heteroscedasticity problems exist (Hoechle, 2007).

In the presentation of statistical findings, we displayed test statistics together with significance values in parenthesis. The margin of error for the test results was determined to be 1%, 5%, and 10%. We carried out all of the analyses through the "plm" and "lmtest" packages in the R-Project program (Croissant & Millo, 2018; Zeileis & Hothorn, 2002).

Table 1: Descriptive Statistics Of The Variables Measured Between The Years 2000-2009 On The Basis Of Companies

Variable	Av	Median	SD	Min	Max	Ske	Kur
EM	0.00	0.00	0.05	-2.24	0.90	-25.74	1264.71
LTA	10.23	7.95	4.38	0.00	19.03	0.30	-1.44
SIZE	19.56	19.55	0.25	0.69	20.23	-72.71	5463.68
ROA	6.55	6.55	0.09	0.69	8.77	-44.43	2862.45
MV/BV	6.60	6.60	0.08	0.69	7.84	-64.48	4718.84
LEV	2.99	3.29	1.19	-13.82	7.60	-3.25	21.16
NP	17.22	17.19	0.25	0.69	18.75	-48.66	3253.77

Av: Average, SD: Standard deviation, Min: Minimum, Max: Maximum, Ske: Skewness, Kur: Kurtosis

Table 1 shows the descriptive statistics values of the variables measured between the years 2000-2009 on the basis of companies. Examination of descriptive statistics shows that the EM average of the companies is 0.00, the LTA average is 10.23, the SIZE average is 19.56, the ROA average is 6.55, the MV/BV average is 6.60, the LEV average is 2.99, and the NP average is 17.22.

Table 2: Descriptive Statistics For The Variables Measured Between 2010-2020 On The Basis Of Companies

Variable	Av	Median	SD	Min	Max	Ske	Kur
EM	0.00	0.00	0.04	-2.17	0.82	-29.93	1955.05
ESG	3.88	4.03	0.52	-0.46	4.60	-1.81	5.70
ENV	3.78	4.04	0.81	-2.04	4.72	-2.17	5.94
SOC	3.88	4.07	0.63	-0.84	4.59	-2.00	6.63
GOV	3.91	4.04	0.51	-0.13	4.59	-1.69	5.07
LTA	10.66	7.79	4.56	2.78	20.25	0.34	-1.59
SIZE	18.84	18.81	0.25	0.69	20.18	-58.86	4278.08
ROA	7.00	7.00	0.08	0.69	7.11	-78.10	6201.05
MV/BV	5.35	5.35	0.20	0.69	11.82	24.82	874.21
LEV	3.03	3.32	1.15	-4.61	5.48	-2.75	10.65
NP	17.48	17.44	0.25	0.69	19.21	-46.56	3192.35

Av: Average, SD: Standard deviation, Min: Minimum, Max: Maximum, Ske: Skewness, Kur: Kurtosis

Table 2 shows the descriptive statistics values of the variables measured between the years 2010-2020 on the basis of companies. Examination of descriptive statistics shows that the EM average of the companies is

0.00, the ESG average is 3.88, the ENV average is 3.78, SOC average is 3.88, GOV average is 3.91, LTA average is 10.66, SIZE average is 18.84, ROA average is 7.00, MV/BV average is 5.35, LEV average is 3.03, and NP average is 17.48.

Table 3: Descriptive Statistics Of Discretionary Accrual Values Of Companies Measured On The Basis Of 2000-2009

Year	n	Av	Median	SD	Min	Max
2000	585	-0.0015	-0.0011	0.0184	-0.1123	0.1067
2001	585	-0.0014	-0.0012	0.0182	-0.1037	0.1325
2002	585	-0.0030	-0.0011	0.0913	-1.9532	0.8887
2003	585	-0.0004	-0.0010	0.0197	-0.0822	0.1996
2004	585	0.0009	-0.0007	0.0204	-0.0909	0.1507
2005	585	0.0015	-0.0007	0.0222	-0.1244	0.1651
2006	585	0.0023	-0.0006	0.0252	-0.1162	0.1797
2007	585	0.0036	-0.0008	0.0485	-0.2286	0.8962
2008	585	-0.0010	-0.0009	0.0967	-2.2449	0.1987
2009	585	-0.0010	-0.0024	0.0304	-0.3171	0.2492

Av: Average, SD: Standard Deviation, Min: Minimum, Max: Maximum

Table 3 shows the descriptive statistics of the discretionary accrual values of the companies measured on the basis of the years 2000-2009. Examination of the average discretionary accrual values of the companies in the years 2000-2009 demonstrates that the average is -0.0015 in 2000, -0.0014 in 2001, -0.0030 in 2002, -0.0004 in 2003, 0.0009 in 2004, 0.0015 in 2005, 0.0023 in 2006, 0.0036 in 2007, -0.0010 in 2008, and -0.0010 in 2009.

Table 4: Descriptive Statistics Of Discretionary Accrual Values Of Companies Measured On The Basis Of 2010-2020

Year	n	Av	Median	SD	Min	Max
2010	585	0.0005	-0.0041	0.0223	-0.1634	0.1660
2011	585	-0.0039	-0.0040	0.1040	-2.1628	0.1725
2012	585	0.0006	-0.0043	0.0213	-0.0697	0.1704
2013	585	0.0007	-0.0043	0.0232	-0.0742	0.2080
2014	585	0.0004	-0.0042	0.0229	-0.0777	0.2086
2015	585	-0.0051	-0.0043	0.0961	-2.0661	0.2487
2016	585	0.0006	-0.0041	0.0247	-0.0796	0.2879

Table 4: Descriptive Statistics Of Discretionary Accrual Values Of Companies Measured On The Basis Of 2010-2020

2017	585	0.0012	-0.0040	0.0249	-0.1601	0.2699
2018	585	0.0006	-0.0039	0.0305	-0.3573	0.2785
2019	585	0.0039	-0.0036	0.0383	-0.0821	0.6257
2020	585	0.0003	-0.0040	0.0243	-0.0815	0.3059

Av: Average, SD: Standard Deviation, Min: Minimum, Max: Maximum

Table 4 shows the descriptive statistical values of the discretionary accrual values of the companies measured on the basis of the years 2010-2020. Upon examination of the average discretionary accrual values of the companies in the years 2010-2020, an average of 0.0005 is found in 2010, -0.0039 in 2011, 0.0006 in 2012, 0.0007 in 2013, 0.0004 in 2014, -0.0051 in 2015, 0.0006 in 2016, 0.0012 in 2017, 0.0006 in 2018, 0.0039 in 2019, and 0.0003 in 2020.

Table 5: Cross-Section Dependency Test Results (2000-2009)

	CD test
Model 5	62.539*** (0.000)
EM	66.030*** (0.000)
LTA	145.310*** (0.000)
SIZE	117.820*** (0.000)
ROA	33.366*** (0.000)
MV/BV	9.741*** (0.000)
LEV	72.308*** (0.000)
NP	107.960*** (0.000)

Note: Test statistics are given in parenthesis together with significance value *$p<0.10$, **$p<0.05$, ***$p<0.01$

Table 5 shows the results of the cross-section dependency test for the model established and variables measured and calculated between the years 2000-2009. According to the test findings, cross-sectional dependence is significant in the data for the established model and research variables ($p<0.01$). Since there is a cross-section dependency in the research data, the CADF test, which is one of the 2nd generation unit root tests, was applied at the stationarity stage.

Table 6: Cross-Section Dependency Test Results (2010-2020)

Models	CD test
Model 2	85.201*** (0.000)
Model 3	85.577*** (0.000)

Table 6: Cross-Section Dependency Test Results (2010-2020)

Model 4	85.406*** (0.000)
Model 5	84.790*** (0.000)
EM	107.890*** (0.000)
ESG	141.610*** (0.000)
ENV	110.830*** (0.000)
SOC	133.550*** (0.000)
GOV	109.670*** (0.000)
LTA	177.190*** (0.000)
SIZE	135.070*** (0.000)
ROA	58.431*** (0.000)
MV/BV	49.441*** (0.000)
LEV	97.943*** (0.000)
NP	127.170*** (0.000)

Note: Test statistics are given in parentheses with their significance values. *p<0.10, **p<0.05, ***p<0.01

Table 6 shows the results of the cross-section dependency test for four different models and research variables which are based on the variables measured and calculated between the years 2010 and 2020. The test reveals that cross-sectional dependence of the data for the four different models and research variables is significant (p<0.01). Since there is a cross-section dependency in the research data, the CADF test, which is one of the 2nd generation unit root tests, was used in the stationary phase.

Table 7: Results Of Stationarity Analysis With CADF Test (2000-2009)

	CADF test	
	Fixed	Fixed+Trend
EM	-73.318*** (0.000)	-73.338*** (0.000)
LTA	-59.0334*** (0.000)	-59.042*** (0.000)
SIZE	-76.059*** (0.000)	-76.060*** (0.000)
ROA	-69.890*** (0.000)	-69.900*** (0.000)
MV/BV	-66.306*** (0.000)	-66.310*** (0.000)
LEV	-67.559*** (0.000)	-67.556*** (0.000)
NP	-70.434*** (0.000)	-70.433*** (0.000)

Note: Test statistics are given in parentheses with their significance values. *p<0.10, **p<0.05, ***p<0.01

Table 7 shows the results of the stationarity analysis of the companies for the variables measured and calculated between the years 2000-2009. Analysis of the findings shows that the variables measured and

calculated between the years 2000-2009 of the companies are stationary at their own level ($p < 0.05$). In the light of these findings, we applied panel regression analyses with the variables' own levels.

Table 8: Results Of Stationarity Analysis With CADF Test (2010-2020)

	CADF test	
	Fixed	Fixed+Trend
EM	-78.641*** (0.000)	-78.741*** (0.000)
ESG	-32.956*** (0.000)	-70.561*** (0.000)
ENV	-34.987*** (0.000)	-70.750*** (0.000)
SOC	-31.663*** (0.000)	-34.589*** (0.000)
GOV	-27.518*** (0.000)	-69.381*** (0.000)
LTA	-38.731*** (0.000)	-38.794*** (0.000)
SIZE	-79.505*** (0.000)	-79.536*** (0.000)
ROA	-79.850*** (0.000)	-79.848*** (0.000)
MV/BV	-79.949*** (0.000)	-79.965*** (0.000)
LEV	-75.633*** (0.000)	-75.800*** (0.000)
NP	-78.593*** (0.000)	-78.627*** (0.000)

Note: Test statistics are given in parentheses with their significance values. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

Table 8 demonstrates the results of the stationarity analysis for the variables of the companies measured and calculated between years 2010-2020. When the CADF test results were examined, it was determined that the variables measured and calculated between the years 2010-2020 of the companies were stationary at their own level ($p < 0.05$). According to these findings, panel regression analyses were applied to the variables' own levels.

Table 9: Results Of F Test, Breusch-Pagan LM Test And Hausman Test (2000-2009)

Test	Model 1
F test	1.004 (0.434)
Breusch-Pagan LM test	0.047 (0.828)
Hausman test	8.561 (0.200)

Note: Test statistics are given in parentheses with their significance values. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

Tables 9 and 10 show the results of F test, Breusch-Pagan LM test, and Hausman test applied to select the effect type among the pooled least squares (LS), random effect, and fixed effect type for the panel regression model that will be built on the variables measured and calculated between the years 2000-2009 and 2010-2020. Analyses of the results of the F test and Breusch-Pagan LM test show that the Pooled LS effect type should be preferred in the panel regression model to be established. Hausman test results reveal that the random effect type should be preferred in the panel regression model to be established. When the tests applied for the selection of the effect type are evaluated together, the pooled least squares (LS) effect type will be preferred for the panel regression model which will be built on the variables measured and calculated between the years 2000-2009.

Table 10: Results Of F Test, Breusch-Pagan LM Test And Hausman Test (2010-2020)

Test	Model 2	Model 3	Model 4	Model 5
F test	0.711 (0.715)	0.815 (0.614)	0.745 (0.682)	0.946 (0.489)
Breusch-Pagan LM test	0.683 (0.408)	0.369 (0.544)	0.567 (0.451)	0.114 (0.736)
Hausman test	1.942 (0.963)	2.465 (0.930)	2.220 (0.947)	4.997 (0.660)

Note: Test statistics are given in parentheses with their significance values *$p<0.10$, **$p<0.05$, ***$p<0.01$

Table 11 shows the results of the Breusch–Godfrey autocorrelation test and the Breusch–Pagan heteroscedasticity test for panel regression models built on the variables measured and calculated between the years 2000 and 2009. According to the findings, there is no autocorrelation problem and heteroscedasticity problem in the established panel regression model ($p>0.05$).

Table 11: Result Of Autocorrelation And Heteroscedasticity Test (2000-2009)

Test	Model 1
Breusch–Godfrey test	546.470 (0.744)
Breusch–Pagan test	2.788 (0.835)

Note: Test statistics are given in parentheses with their significance values. *$p<0.10$, **$p<0.05$, ***$p<0.01$

Table 12 shows the results of the Breusch–Godfrey autocorrelation test and the Breusch–Pagan heteroscedasticity test for panel regression models built on the variables measured and calculated between the years 2010-2020. The test established that there is no autocorrelation problem and no heteroscedasticity problem in the established panel regression models ($p>0.05$).

Table 12: Result Of Autocorrelation And Heteroscedasticity Test (2010-2020)

Test	Model 2	Model 3	Model 4	Model 5
	489.940	506.990	494.000	498.350
Breusch–Godfrey test	(0.992)	(0.968)	(0.988)	(0.984)
Breusch–Pagan test	7.197 (0.409)	11.239 (0.128)	7.126 (0.416)	5.772 (0.567)

Note: Test statistics are given in parentheses with their significance values. *p<0.10, **p<0.05, ***p<0.01

Coefficients of Model 1 in Table 13 demonstrate that LTA, SIZE, and NP variables significantly affect the EM result (p<0.05). Since the regression coefficients of LTA, SIZE, and NP variables are positive, there is a relationship in the same direction with the EM variable. In the light of these findings, a 1% increase in the LTA variable will cause an increase of 0.001 in the EM variable. A 1% increase in the SIZE variable leads to an increase of approximately 0.0015 in the EM variable. In addition, it is seen that a 1% increase in the NP variable will lead to an increase of approximately 0.010 in the EM variable.

Table 13: Panel Regression Model Statistics (Model 1)

Variable	Coefficient
Fixed	-0.502*** (0.005)
LTA	0.001*** (0.003)
SIZE	0.015*** (0.001)
ROA	0.003 (0.461)
MV/BV	0.001 (0.510)
LEV	0.001 (0.128)
NP	0.010*** (0.000)
R^2=0.040	
RSS=8.303	
TRSS=8.646	

Note: Coefficients are given in parentheses with their significance values, *p<0.10, **p<0.05, ***p<0.01, RSS: Error sum of squares, TRSS: General error sum of squares, R2: Coefficient of indication

The coefficients of Model 2 in Table 14 establish that LEV, NP, and ESG variables significantly affect the EM result (p<0.05). The positive regression coefficients of the LEV, NP, and ESG variables show that there is a correlation between them and the EM variable in the same direction. In the light of these findings, a 1% increase in the LEV variable will cause an increase of approximately 0.001 in the EM variable. It is seen that

a 1% increase in the NP variable causes an increase of approximately 0.0017 in the EM variable. In addition, 1% increase in the ESG variable leads to an increase of approximately 0.010 in the EM variable.

Table 14: Panel Regression Model Statistics (Model 2)

Variable	Coefficient
Fixed	-0.536 (0.269)
LTA	-0.000 (0.626)
SIZE	0.008 (0.619)
ROA	0.006 (0.322)
MV/BV	0.001 (0.572)
LEV	0.001** (0.015)
NP	0.017*** (0.000)
ESG	0.010*** (0.000)
R^2=0.040	
RSS=8.303	
TRSS=8.646	

Note: Coefficients are given in parentheses with their significance values, *p<0.10, **p<0.05, ***p<0.01, RSS: Error sum of squares, TRSS: General error sum of squares, R2: Coefficient of indication

The coefficients of Model 3 in Table 15 show that LEV, NP, and ENV variables significantly affect the EM result (p<0.05). Since the regression coefficients of the LEV, NP, and ENV variables are positive, it was determined that there is a relationship between them and the EM variable in the same direction. In the light of these findings, it is seen that 1% increase in the LEV variable will cause an increase of approximately 0.001 in the EM variable. A 1% increase in the NP variable causes an increase of approximately 0.018 in the EM variable. On the other hand, we understand that 1% increase in the ENV variable causes an increase of approximately 0.005 in the EM variable.

Table 15: Panel Regression Model Statistics (Model 3)

Variable	Coefficient
Fixed	-0.538 (0.278)
LTA	-0.000 (0.790)
SIZE	0.009 (0.609)
ROA	0.006 (0.321)
MV/BV	0.001 (0.405)
LEV	0.001*** (0.005)
NP	0.018*** (0.000)
ENV	0.005*** (0.001)

Table 15: Panel Regression Model Statistics (Model 3)

R^2=0.035
RSS=8.342
TRSS=8.647

Note: Coefficients are given in parentheses with their significance values, *p<0.10, **p<0.05, ***p<0.01, RSS: Error sum of squares, TRSS: General error sum of squares, R2: Coefficient of indication

When the coefficients of Model 4 in Table 16 are examined, it is observed that LEV, NP, and SOC variables significantly affect the EM result (p<0.05). The positive regression coefficients of the LEV, NP, and SOC variables show that there is a correlation between them and the EM variable in the same direction. According to these findings, it was established that a 1% increase in the LEV variable causes an increase of approximately 0.001 in the EM variable. It is seen that a 1% increase in the NP variable causes an increase of approximately 0.017 in the EM variable. On the other hand, we established that a 1% increase in the SOC variable causes an increase of approximately 0.007 in the EM variable.

Table 16: Panel Regression Model Statistics (Model 4)

Variable	Coefficient
Fixed	-0.535 (0.278)
LTA	-0.000 (0.775)
SIZE	0.008 (0.618)
ROA	0.006 (0.333)
MV/BV	0.001 (0.489)
LEV	0.001*** (0.004)
NP	0.017*** (0.000)
SOC	0.007*** (0.000)
R^2=0.037	
RSS=8.328	
TRSS=8.646	

Note: Coefficients are given in parentheses with their significance values, *p<0.10, **p<0.05, ***p<0.01, RSS: Error sum of squares, TRSS: General error sum of squares, R2: Coefficient of indication

When the coefficients of Model 5 are evaluated in Table 17, it is determined that LEV, NP, and GOV variables significantly affect the EM result (p<0.05). The positive regression coefficients of the LEV, NP, and GOV variables show that there is a correlation between them and the EM variable in the same direction. In the light of these findings, a 1% increase in the LEV variable causes an increase of approximately 0.001 in the EM variable. It was determined that a 1% increase in the NP variable causes an increase of approximately 0.018 in

the EM variable. In addition, we found that a 1% increase in the GOV variable causes an increase of approximately 0.004 on the EM variable.

Table 17: Panel Regression Model Statistics (Model 5)

Variable	Coefficient
Fixed	-0.571 (0.270)
LTA	0.000 (0.252)
SIZE	0.010 (0.580)
ROA	0.007 (0.276)
MV/BV	0.000 (0.738)
LEV	0.001*** (0.007)
NP	0.018*** (0.000)
GOV	0.004*** (0.003)
R^2=0.035	
RSS=8.342	
TRSS=8.647	

Note: Coefficients are given in parentheses with their significance values, *p<0.10, **p<0.05, ***p<0.01, RSS: Error sum of squares, TRSS: General error sum of squares, R2: Coefficient of indication

5. RESULT

In order to analyse corporate performance, examining financial information and non-financial information together has become a necessity today. As concrete proofs of the use of sustainability as a performance indicator today, we can show sustainability indices on various stock exchanges and the appointment of senior executives with the title of Chief Sustainability Officer (CSO). These indices and the presence of senior managers increase awareness about sustainability and encourage companies to take more responsibility for environmental and social issues.

On the other hand, starting from the twentieth century, due to global-scale financial scandals, company administrations have been questioned in terms of the reliability of the financial data which they declare. For this reason, we asked companies to be more sensitive about carrying out their activities with transparency, fairness, accountability, and responsibility awareness, which are the basic principles of corporate governance. Another important indicator of corporate social responsibility sensitivity of company management is earnings management. Discretionary accruals-based models are also frequently used in the determination of earnings management.

Based on the reasons stated above, this study investigated the relationship between the sustainability performance of companies and earnings management. In this context, publicly-traded (other than financial companies) companies in OECD countries were analysed. The findings reveal a statistically significant relationship between sustainability performance and earnings management. In this context, we conducted research on publicly traded (other than financial companies) companies in OECD countries. The findings of the analyses reveal a statistically significant relationship between sustainability performance and earnings management.

This result shows that the H0 hypothesis was rejected. The review of previous studies revels that the relationship between sustainability and earnings management was tested with discretionary accruals. In these studies, when sustainability had a positive impact on discretionary accruals, earnings management was negatively affected and a negative statistical sign of the effect positively affected earnings management.

When the pre-ESG and post-ESG periods were compared;

• It was observed that the control variables affecting discretionary accruals differed.

This shows that ESG independent variables impact discretionary accruals.

• While discretionary accruals have values between -0.0030 and +0.0036 in the pre-ESG period, it was determined that the value was between -0.0051 and +0.0039 in the post-ESG period. These findings show that ESG performance widens the numerical range of discretionary accrual amount. This expansion can be interpreted as an increase in discretionary accruals giving more field for earnings management.

The findings of this study, which investigate the relationship between sustainability performance and earnings management, show a positive relationship between sustainability performance and discretionary accruals representing earnings management and quality.

Accordingly, 1% increase in total sustainability performance led to a positive increase by 0.010; 1% increase in social sustainability performance by 0.007; 1% increase in environmental sustainability performance by 0.005 and finally, a 1% increase in governance sustainability performance by 0.004 in discretionary accruals. As a result, the findings reveal statistically positive and significant results on discretionary accruals, which represent the earnings quality of the total sustainability performance with all its sub-components. These results show that sustainability leads to a raise in discretionary accruals, which increases earnings management and ultimately decreases earnings quality.

As a result, the findings, together with all its sub-components, reveal a statistically significant effect between total sustainability and earnings management as well as the effect of increasing earnings management by restricting earnings management. The results of this research conducted on OECD countries show that, contrary to many studies in the literature, sustainability does not reduce discretionary accruals, but rather increases them relatively. While this increase gives space for earnings management, it reduces the quality of

earnings. Earnings quality is also an indicator of financial reporting. The presence of opposing findings in the literature shows that the relationship between non-financial reporting and financial reporting is still open to debate. The findings obtained in this study may not be similar when compared to samples with economic, cultural, and political differences.

YAZARLARIN BEYANI

Bu çalışmada, Araştırma ve Yayın etiğine uyulmuştur, çıkar çatışması bulunmamaktadır.

AUTHORS' DECLARATION

This paper complies with Research and Publication Ethics, has no conflict of interest to declare.

YAZARLARIN KATKILARI

Çalışma Konsepti/Tasarım- NY, MG; Yazı Taslağı- NY, MG; İçeriğin Eleştirel İncelemesi- NY, MG; Son Onay ve Sorumluluk- NY, MG.

AUTHORS' CONTRIBUTIONS

Conception/Design of Study- NY, MG; Drafting Manuscript- NY, MG; Critical Revision of Manuscript- NY, MG; Final Approval of Accountability- NY, MG.

REFERENCES

Aksoy, F. (2019). İşletmelerde sürdürülebilirlik raporlama çerçeveleri. *Muhasebe Bilim Dünyası Dergisi*, 21(2), 324-346.

Akter, R., & Toha, M. A. (2021). Nexus between earning management and sustainability: A paradigm from emerging economies.

Aslanoğlu, S., Cengiz, S., Dinç, Y., & Dilsiz, M. (2016). Yaratıcı muhasebe uygulamalarının bağımsız denetim kalitesi üzerine etkisi: BIST'de bir uygulama/The Impact of Creative Accounting Practices on Independent Audit Quality: An Application in BIST. *Muhasebe ve Finansman Dergisi*, (69). Baltagi, B. H. (2008). Econometric analysis of panel data (Vol. 2). New York: Wiley.

Buertey, S., Sun, E. J., Lee, J. S., & Hwang, J. (2020). Corporate social responsibility and earnings management: The moderating effect of corporate governance mechanisms. *Corporate Social Responsibility and Environmental Management*, 27(1), 256-271.

Bozzolan, S., Fabrizi, M., Mallin, C.A. & Michelon, G. (2015). Corporate social responsibility and earnings quality: International evidence. *The International Journal of Accounting*, Vol. 50 No. 4, pp. 361-396.

Croissant, Y. & Millo, G. (2008). Panel data econometrics in R: The PLM package. *Journal of Statistical Software*, 27(2), 1-43.

Çetin, E. & Yaşar, A. (2021). The association between audit quality and earnings management using classification shifting. *İşletme Bilimi Dergisi*, 9 (2), 147-164. DOI: 10.22139/jobs.958329.

Dechow, P. M., Sloan, R. G. & Sweeney, A. P. (1995). Detecting earnings management. *Accounting review*, 193-225.

Driscoll, J. C. & Kraay, A. C. (1998). Consistent covariance matrix estimation with spatially dependent panel data. *Review of Economics and Statistics*, 80(4), 549-560.

Ertan, Y. (2018). Türkiye'de sürdürülebilirlik raporlaması (2005-2017). *Journal of Accounting and Taxation Studies*, 11(3), 463-478.

Farhan, M. (2018). Analysis of sustainability report disclosure towards financial performance with earning management as moderating variable (Doctoral dissertation, President University).

Gonçalves, T., Gaio, C. & Ferro, A. (2021). Corporate social responsibility and earnings management: Moderating impact of economic cycles and financial performance. *Sustainability*, 13(17), 9969.

Grimaldi, F., Caragnano, A., Zito, M. & Mariani, M. (2020). Sustainability engagement and earnings management: The Italian context. *Sustainability*, 12(12), 4881.

Güneş, M. & Yalçın, N. (2022). Finansal olmayan raporlamanın AB direktifi kapsamında incelenmesi: Bist kurumsal yönetim endeksi işletmeleri üzerine bir araştırma. *Mali Çözüm Dergisi*, 32(170), 111-148.

Hansen, B. E. (1995). Rethinking the univariate approach to unit root testing: Using covariates to increase power. *Econometric Theory*, 11(5), 1148-1171.

Hausman, J. A. (1978). Specification tests in econometrics. Econometrica: *Journal of the Econometric Society*, 1251-1271.

Hausman, J.A. & Taylor, W.E. (1981). Panel data and unobservable individual effects. Econometrica, 49, 1377–1398.

Hoechle, D. (2007). Robust standard errors for panel regressions with cross-sectional dependence. *The Stata Journal*, 7(3), 281-312.

Indy, L. A., Uzliawati, L. & Mulyasari, W. (2022). The effect of managerial ownership and institutional ownership on sustainability reporting and their impact on earning management. *Journal of Applied Business, Taxation and Economics Research*, 1(3), 243-256.

Kabadayi, B., Emsen, O. S. & Nisanci, M. (2012). The Relationship between Economic Growth and Financial Development in Emerging Countries. Proceedings of the Northeast Business & Economics Association.

Kim, Y., Park, M. S. & Wier, B. (2012). Is earnings quality associated with corporate social responsibility? *The Accounting Review*, 87(3), 761-796.

Martínez-Ferrero, J., Garcia-Sanchez, I. M. & Cuadrado-Ballesteros, B. (2015). Effect of financial reporting quality on sustainability information disclosure. *Corporate Social Responsibility and Environmental Management*, 22(1), 45-64.

Muttakin, M. B., Khan, A. & Azim, M. I. (2015). Corporate social responsibility disclosures and earnings quality: Are they a reflection of managers' opportunistic behavior? *Managerial Auditing Journal.*

Ocak, M. (2018). The impact of auditor education level on the relationship between auditor busyness and audit quality in Turkey. *Cogent Business & Management*, 5(1), 1517588.

Sultanoğlu, B. & Akdoğan, N. (2020). IIRC çerçevesi kapsamında entegre raporlardaki içerik öğelerinin Türkiye ve uluslararası karşılaştırılması ve entegre raporların düzenlenmesinde sürdürülebilirlik raporlarındaki bilgilerin kullanımı, *Muhasebe Bilim Dünyası Dergisi*, 22, 20-46. DOI:10.31460/mbdd.646683.

Sumritsakun, C. (2022). The relationship between sustainable management and earning management of Thai listed firms in SET100 Index (No. jfbr196). Global Academy of Training and Research (GATR) Enterprise.

Şeker, Y. (2020). Finansal raporlama kalitesi ile çevresel sosyal ve kurumsal yönetim (esg) performansı arasındaki ilişkinin incelenmesine yönelik uluslararası bir araştırma, İstanbul Üniversitesi Sosyal Bilimler Enstitüsü İşletme Anabilim Dalı Muhasebe Bilim Dalı, Doktora Tezi, İstanbul.

Torres-Reyna, O. (2010). Getting started in fixed/random effects models using R. Data & Statistical Services. Princeton University.

Trisnawati, R. & Setiawati, E. (2016). Sustainability reporting and earning management (Empirical Studies in the companies that participated in the Indonesian Sustainability Reporting Award (ISRA)).

Velte, P. (2019). Does CEO power moderate the link between ESG performance and financial performance? A focus on the German two-tier system. *Management Research Review*.

Yalçın, N. (2022). Kurumsal sürdürülebilirlik performansı ile kazanç kalitesi arasındaki ilişki. *Journal of Research in Business*, 7 (1) , 208-228. DOI: 10,54452/jrb.1011929.

Zeileis, A. & Hothorn, T. (2002). Diagnostic checking in regression relationships. R News, 2(3), 7-10. URL https://CRAN.R-project.org/doc/Rnews/