THE IMPACT OF THE SUSTAINABILITY INDEX ON THE SUSTAINABILITY PRACTICES AT THE BORSA ISTANBUL STOCK EXCHANGE

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ACADEMIC HONESTY PLEDGE

I declare that all the information in this study, is collected and presented in accordance with academic rules and ethical principles, and that all information and documents that are not original in the study are referenced in accordance with the citation standards, within the framework required by the rules and principles.

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ÖZET

SÜRDÜRÜLEBİLİRLİK ENDEKSİ'NİN BORSA İSTANBUL'DAKİ SÜRDÜRÜLEBİLİRLİK UYGULAMALARINA ETKİLERİ

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Bu tez, Borsa Istanbul (BIST) Sürdürülebilirlik Endeksi'nin borsada sürdürülebilirlik uygulamalarını teşvik edip etmediğini incelemektedir. BIST Sürdürülebilirlik Endeksi şirketlerinin mimetik baskısının sosyal ve çevresel risk seviyeleri, endeksler ve sektörler gibi borsadaki çeşitli ortamlarda sürdürülebilirlik raporlaması olasılığı üzerindeki etkilerini ölçmek için iki aşamalı logit modeli kullanıldı. Bu model, mimetik baskının hangi ortamlarda sürdürülebilirlik raporu yayımlamayı önemli ölçüde etkilediğini ve hangi ortamda mimetik baskının etkisinin en yüksek belirliyor. Analiz sonucunda, sürdürülebilirlik raporu yayınlayan BIST Sürdürülebilirlik Endeksi şirketlerinin sayısındaki artışın, onlarla aynı risk düzeyi, endeks ve sektördeki şirketlerde sürdürülebilirlik raporlaması olasılığını artırdığı görülmektedir. Bunlar arasında BIST Sürdürülebilirlik Endeksi şirketlerinin mimetik baskısının etkisinin en yüksek olduğu yer endekslerdir. BIST Sürdürülebilirlik Endeksi şirketlerinin finansal ve sürdürülebilirlik performanslarındaki başarıları onları diğer şirketler için ideal modeller haline getirdiğinden, analiz sonuçları kurumsal teori ile uyumludur. Ayrıca endekslerde mimetik baskının en yüksek olduğu sonucu BIST Sürdürülebilirlik Endeksi'nin endeks bazlı seçme sistemi ile ilişkilendirilebilir.

Anahtar Kelimeler: Sürdürülebilirlik; Borsa İstanbul; Sürdürülebilirlik Endeksi; Mimetik İzomorfizm

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ABSTRACT

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Master of Arts in Business Administration

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This thesis examines whether companies listed in the Borsa Istanbul (BIST) Sustainability Index encourages sustainability practices of other companies in Borsa Istanbul Stock Exhange. With this aim, a two-stage logit model was used to measure the effects of mimetic pressure by BIST Sustainability Indexcompanies on the likelihood of sustainability reporting in various environments such as social and environmental risk levels, indices, and sectors. The model determines whether the mimetic pressure significantly affects releasing sustainability report in social and environmental risk levels, indices, and sectors and in which one the impact is highest. As a result of the analysis, it is seen that the increase in the number of BIST Sustainability Indexcompanies that publish sustainability reports increases the likelihood of sustainability reporting in companies with the same risk level, index, and sector. Among them, the effect of the mimetic pressure of BIST Sustainability Indexcompanies is the highest in indices The analysis results are compatible with the institutional theory since BIST Sustainability Indexcompanies' success in financial and sustainability performances makes them ideal models for other companies. Also, the result can be interpreted as the consequence index-based selection system of BIST Sustainability Index.

Keywords: Sustainability; Borsa Istanbul Stock Exchange; Sustainability Index;
Mimetic Isomorphism

Numeric Code of the Field: 115303

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ABBREVIATIONS

BIST   : Borsa Istanbul Stock Exchange

CSR   : Corporate Social Responsibility

DJSI   : Dow Jones Sustainability Indices

EBRD   : European Bank for Reconstruction and Development

IFC   : International Finance Corporation

n.d.   : No date

Obs.   : Observations

PDP   : Public Disclosure Platform

SR   : Sustainability report

VIF   : Variance Inflation Factor

CHAPTER 1

INTRODUCTION

Looking at the history of sustainability in the Borsa Istanbul Stock Exchange (BIST), the most crucial step can be considered the launch of the sustainability index (BIST Sustainability Index) in 2014. The index, which includes only companies with high corporate sustainability performance, aims to increase awareness, knowledge, and practices about sustainability, especially among companies listed in the BIST. Also, BIST Sustainability Index can be considered the first attempt in Turkey to help companies express their sustainability performances in terms of financial value in the stock market. In this context, the index is a tool for monetizing sustainability performance. Over the years, the number of companies included in the index has increased. Table 1.1. shows the numbers of companies listed in BIST Sustainability Index by year. While the number was 15 in 2014, it grew to 58 in 2020. As of 2020, 58% of companies in the XU100 are also listed in BIST Sustainability Index. Still, the impact of the index, especially on sustainability, is not clear in empirical studies. This thesis aims to examine the effects of BIST Sustainability Index on sustainability practices in the BIST.

Table 1.1. Number of listed companies in BIST Sustainability Index by year

	2014	2015	2016	2017	2018	2019	2020
Number of listed companies	15	29	43	44	50	56	58

Source: Adapted from BIST website (https://www.borsaistanbul.com/en/)

Companies from various industries with different social and environmental risk levels can be in BIST Sustainability Index. For inclusion, the performance of companies in areas such as environment, biodiversity, climate change, board practices, bribery, and human rights is assessed using publicly available documents (BIST, 2014). In addition to

sustainability performance criteria, companies must already be listed in specific indices before the assessment. While only companies listed in the XU030 could be assessed in 2014, the XU050 companies started to be included in 2015. Also, XU100 companies, which are volunteered for taking part in the assesment can participate in the process starting from 2017. Therefore, it can be said that the selection system of BIST Sustainability Index is index-based selection. XU030, XU050, and XU100 are indices where the top 30, 50, and 100 companies with the highest trading volume and market value in the BIST are included, respectively. In relation with this, Aytekin and Erol (2018) shows that financial performance is the most critical factor for inclusion in BIST Sustainability Index, which indicates that sustainability performance is not sufficient to be included in the index. This shows that BIST Sustainability Index companies are leading not just with their sustainability but also financial performances.

The main problem with BIST Sustainability Index is that its impact is not clearly demonstrated in the literature. While some studies show a positive relationship between inclusion in BIST Sustainability Index and financial performance (Kurnaz & Kestane, 2016; Acar Erdur & Kara, 2016; Ece, 2018; Kandil Göker, 2020), others do not indicate any statistically significant results (Şişman et al., 2016; Önder, 2017; Temiz & Acar, 2018; Gündüz, 2018; Vardari et al. 2020; Doğukanlı & Borak, 2020; Yılmaz et al., 2020; Okuyan & Deniz, 2020; Özmen et al., 2020). Also, the impact of BIST Sustainability Index on sustainability practices is missed in the literature. Few studies investigated the relationship between BIST Sustainability Index and sustainability practices (Önder & Ağca, 2018; Acar & Temiz, 2020), focusing only on companies already included in the index. Considering that the aim of the index is to increase sustainability practices in the BIST and the respective shortcomings in the literature, it is clear that the effect of the index on non-included companies should also be investigated.

Sustainability is a relatively new phenomenon in the BIST. It was entered into the agenda of the BIST with the signing of the United Nations Global Compact Initiative in 2005. However, no steps were taken to direct companies in this field until the launch of BIST Sustainability Index in 2014. Even after the launch, applications that will encourage

sustainable practices are still limited. This indicates that although sustainability has emerged as a new field in BIST, there are still uncertainties. A new field in an environment tends to create uncertainty, therefore until the field matures, companies tend to respond to this by copying others (de Villiers & Alexander, 2014). Especially when new practices are too ambiguous, and profitability cannot be clearly communicated, firms tend to adopt them based on not economic decisions but based on previous adopters (DiMaggio & Powell, 1983). Companies mimic other organizations in their field that they perceive as more successful or legitimate (DiMaggio & Powell, 1983; Haveman, 1993). This copying process causes all organizations to conform to the same practices through time, called mimetic isomorphism (DiMaggio & Powell, 1983). Their high financial and sustainability performances make BIST Sustainability Index companies ideal for modeling by others in sustainability practices. In this context, the impact of BIST Sustainability Index can be measured by whether companies in BIST copy the sustainability practices of BIST Sustainability Index companies. Therefore, this thesis seeks to answer the following research question: "How do companies in BIST Sustainability Index affect the sustainability practices of others in the BIST through mimetic isomorphism?"

Previous studies on mimetic isomorphism and sustainability (Martínez-Ferrero & García-Sánchez, 2017; Peters & Romi, 2015) focused on only the industry pressure, which assume that if more companies in the same industry act in some way, the rest will conform. One reason why these studies focus on industry pressure is the tendency of companies to imitate their competitors. Given BIST Sustainability Index's index-based selection, companies in the same index as BIST Sustainability Index companies may also tend to imitate them. The similar size of companies in XU030, XU050 and XU100 can also be a supportive indicator for the existence of competition among them. Apart from this, when it comes to sustainability, the social and environmental risk levels of companies are also important for sustainability practices. Shabana et al. (2016) shows that sustainability reporting started in hazardous industries because of coercive pressure of regulatory systems on them. In Turkey, no publicly-traded company is required to publish sustainability reports, including companies in hazardous industries (Yeşilçelebi, 2020). On the other hand, BIST Sustainability Index companies can encourage other companies

at the same social and environmental risk level with their success in financial and sustainability performances. In this context, mimetic pressure causes obligatory action, which means when a sufficient number of organizations in a field do specific actions, others follow the same step without any decision-making process (March 1981, p. 221-226). Because of these, this thesis examines whether BIST Sustainability Index companies encourage sustainability practices in the BIST by putting pressure on companies in the same social and environmental risk level, index, and/or sector.

The thesis measures the sustainability practices of companies in a given year by the availability of sustainability reporting belong to that year. Sustainability reporting can be used as "proxy for companies' engagement with sustainability" (Higgins et al., 2018, p. 311). In addition to this, it can be used to measure the impact of the sustainability indices, since these are essential to encourage the preparation and publication of sustainability reports in countries where sustainability reports are published on a voluntary basis (Aracı & Yüksel, 2016). Companies in the BIST do not oblige to release sustainability reports. Compared BIST Sustainability Index to the BIST, the rate of releasing sustainability reports is considerably higher in BIST Sustainability Index. For example, only 15.29% of all the companies in the BIST have a standalone sustainability report or an integrated report in 2020.[1] The rate increases up to 60.00% among XU030 companies, but it is still below the BIST Sustainability Index companies' rate, which is 81.03% in 2020. The fact that owning sustainability reports is more common among companies in the sustainability index can put pressure on other companies in the same social and environmental risk level, index, and/or sector with them and encourage these companies to release sustainability reports.

The thesis uses a two-stage logit model with panel data to analyze the impact of mimetic pressure by BIST Sustainability Index companies on the sustainability practices of other BIST companies. The model is adapted from Martínez-Ferrero & García-Sánchez (2017), who used a two-stage logit model with panel data to examine the effects of

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[1] Sustainability reports published specifically for a single company were used, which means sustainability reports of group companies were not included in the calculation.

institutional factors on the likelihood of voluntary assurance for sustainability reports. The panel data consist of non-financial companies, listed in the BIST in 2021, in the period 2014-2020. As it mentioned before, yearly sustainability reporting is used as a proxy for sustainability practices in the given year. Each independent variable that shows the mimetic pressure in a given group, which are social and environmental risk level, index, and sector is calculated with the number of BIST Sustainability Index companies releasing sustainability reports in a given year in that group. In the first stage of the regression, the impact of mimetic pressure by BIST Sustainability Index companies in the various groups is measured separately. With predicted values from this stage, showing the probability of sustainability reporting of a company under the mimetic pressure exercised by BIST Sustainability Index companies, three indices are produced. At the second stage of the regression, three indices are used to determine in which group the mimetic pressure has the most explanatory power. Therefore, this thesis measures whether the mimetic pressure created by BIST Sustainability Index companies is effective not only on the sustainability practices of BIST-listed companies, but also in which group it has more explanatory power.

The results of the two-stage logit model analysis with panel data show that mimetic pressure is statistically significant in explaining sustainability practices of BIST-listed companies. Mimetic pressure in the index has the most explanatory power on the likelihood of sustainability reporting. This means the higher the number of BIST Sustainability Index companies that have sustainability report increase the likelihood of releasing sustainability report for companies listed in the same index with them. Since the selection system of BIST Sustainability Index is index-based, the findings can be interpreted as an output of this system. However, additional policies are needed to support the sustainability practices on the basis of industry and social and environmental risk level.

The rest of this thesis is organized as follows: first, the literature review is presented. Next, it is followed by the methodology. After this, the thesis continues with discussion of findings of two-stage logit model with panel data.

CHAPTER 2

LITERATURE REVIEW

This thesis is about sustainability, mimetic isomorphism and BIST Sustainability Index. In this context, this chapter discusses the emergence of the concept of sustainability and the sustainability index, and the theoretical background of isomorphism. Also, it examines the empirical studies on BIST Sustainability Index and the impact of isomorphism on sustainability practices.

2.1. Sustainability and Stock Markets

Sustainability became the agenda of policymaking with the Brundtland Report of 1987. The report that focuses on the tension between the scarcity of resources and the wellbeing of future generations defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations, 1987, p. 15). One of the forms that the effects of the report show itself in the business can be considered the Triple Bottom Line concept. The concept, coined by Elkington (1997), is a new measure of corporate performance, which added social and environmental bottom lines to the traditional financial bottom line and increased the importance of "environmental quality and social justice" in business models (Elkington, 1997, p.2). In this framework, the first index in a stock market focusing on sustainability in the business activities was Dow Jones Sustainability Indices (DJSI), launched in 1999. Listed companies in the DSJI are considered the sustainability leaders of their industries (Forcadell & Aracil, 2017). Most of the studies on the DSJI examine the relationship between the inclusion in the index and financial performance (López et al., 2007; Consolandi et al., 2009; Robinson et al., 2011; Lourenço et al., 2012; Pätäri et al., 2012; Oberndorfer et al., 2013; Huhmann & Conner, 2014; DiSegni et al. 2015; Yu & Zhao, 2015; Ur Rehman et al. 2016; Miralles-Quiros et al. 2017; Ang & Weber, 2018; Hawn et al., 2018; Roy, 2018; Durand, 2019; Cunha et al., 2020; Su & Chen, 2020; Pham et al., 2021).

Sustainability indices are benchmark for companies' sustainability performances and also a financial tools aiming to monetize companies' sustainability performance by attracting investors who give value to the performance (Vives & Wadhwa, 2012). This can indicate that these indices also encourage companies to increase their sustainability performances and practices by showing the economic value of sustainability. Therefore, as a relatively new field in stock markets, it is important to assess not just their effect on listed companies but also non-listed ones. For example, one of the non-financial effects of sustainability indices is increasing sustainability information transparency among companies voluntarily (Vardari et al. 2020). In this context, the impact of a sustainability index on the sustainability practices of a stock market can be examined by determining sustainability reporting as a proxy (Higgins et al., 2018).

2.2. Isomorphism

While individual characteristics of a company can be a reason for sustainability reporting, external pressure may also be effective. Empirical studies show that company size, profitability ratio, level of leverage, board independence, and industry membership are determinants of sustainability reporting in Turkey (Yıldırım et al., 2018; Kılıç & Kuzey, 2019; Özcan, 2020). Still, what is missing is that these studies cannot explain why some companies that do not have these characteristics have sustainability reports. At this point, external pressure from the social and economic environment can explain why companies to adopt certain practices (Meyer & Rowan, 1977; DiMaggio & Powell, 1983; Oliver, 1991).

External pressure is among the many factors that shape organizational actions (Heras-Saizarbitoria et al., 2010). Other than individual motivations such as utility-maximizing, organizations are bound to social and cultural contexts like rules, regulations, interests, and values. (Braun, 2019). They respond in return to these contexts affecting organizations (Oliver, 1991). Isomorphism and decoupling are two strategies for adaptation to the environment and external pressures. While isomorphism causes "conforming to societal expectations," decoupling is the reason for an organization's

differentiation from the environment (Boxenbaum & Jonsson, 2017, p. 77). The logic behind isomorphism is simple: "Organizations within the same population facing the same set of environmental constraints will tend to be isomorphic to one another and their environment because they face similar conditions" (Dacin 1997, p. 48).

Despite the empirical studies conducted since the 1980s, no definite conclusion has been reached regarding which organizations are more open to isomorphic pressure (Boxenbaum & Jonsson, 2017). This can provide an opportunity for new research not to limit themselves in specific environments and types of organizations. The diversity of topics in empirical research also indicates that isomorphism can fit different contexts. From public sectors (Rowan, 1982; Tolbert & Zucker, 1983; Meyer et al., 1987; Frumkin & Galaskiewicz, 2004; Ashworth et al., 2007) to different topics in the private sector, such as corporate social responsibility (Galaskiewicz & Wasserman, 1989), accreditation standards (Casile & Davis-Blake, 2002), business planning (Honig & Karlsson, 2004), isomorphism has been discussed with a wide variety of subjects in the literature.

The seminal work of DiMaggio & Powell (1983) describes three isomorphic processes, called coercive, mimetic, and normative, behind organizations' conforming to the environment and becoming similar in time. While coercive isomorphism is based on the regulatory pressure from the policymakers, normative isomorphism explains change towards similarity with professionalization (DiMaggio & Powell, 1983). Especially in uncertain environments, a company tends to model a successful company in its field, called 'mimetic isomorphism' (DiMaggio & Powell, 1983). Strang and Soule (1998) describe mimetic isomorphism as peer pressure from other firms. Similarly, Boxenbaum & Jonsson (2017, p.78) states that mimetic isomorphism, along with the normative isomorphism, comes from "horizontally positioned actors" such as "peer organizations and groupings."

Among three isomorphic processes presented by DiMaggio & Powell (1983), the interest of researchers in mimetic isomorphism seems higher, especially in North American academia (Mizrutchi & Fein, 1999). Mizrutchi & Fein (1999) show that 16 out

of the 26 papers examine isomorphic pressures are only or partially about mimetic isomorphism. One explanation is that mimetic isomorphism is "genuinely original and unique" compared to the other two types (Mizrutchi & Fein 1999, p.667). The evolution of hospital structure (Star, 1982), the adoption of civil service reform by municipal governments (Knoke, 1982; Tobert & Zucker, 1983), the spread of the multinational corporate form (Fligstein, 1985), and adoption of sustainability practices (Amran & Haniffa, 2011) are some of the examples of the impact of mimetic isomorphic pressure. The wide range of these examples shows that mimetic isomorphism can be found in the different areas of organizational studies.

One of these areas is sustainability. Table 2.1. shows studies on impact of isomorphic pressures on sustainability practices in the literature. In general, isomorphic pressures are either positive or have no effects on sustainability practices. As can be seen in Table 2.1., both quantitative and qualitative methods are used. Except Aracil (2019), all studies focusing on mimetic pressure find that it has a positive impact. The impact of mimetic pressure is also relevant for developing countries in most of studies (Amran & Haniffa, 2011; Jacob-John, 2018; Wahga et al., 2017; Yawar & Kauppi, 2018; Zamir & Saeed, 2020; Nasir et al., 2021). Except Amran & Haniffa (2011) and Zamir & Saeed (2020), all these studies use qualitative methods, so a new quantitative study about a developing country can be an important contribution to the literature. Only quantitative research, including Turkey and isomorphism, is that by Zamir & Saeed (2020). Still, it is quite different from this thesis since it aims to analyze the impact of location on corporate social responsibility disclosure in multi-country research, including Turkey. Zamir & Saeed (2020) points out that the companies closer to major cities and financial centers are more prone to CSR disclosure in these countries.

According to De Villers & Alexander (2014), mimetic isomorphic pressure shows itself as copying superior performers, benchmarking, and identifying the best practices in the field. The meta-analysis of Heugens & Lander (2009) shows that the research on mimetic isomorphism can be analyzed in three groups: Trait-based imitation, frequency-based imitation, and outcome-based imitation. While the former focused on the

characteristics of model organizations that others mimic, the number of organizations adopting the new features in the environment is the source of pressure in the second (Heugens & Lander, 2009). The latter measures the successful implementations' impact on the others (Heugens & Lander, 2009). Therefore, characteristics and the number of model institutions and successful implementations by them are essential for creating the mimetic pressure in an environment. All these conditions are met in the case of BIST Sustainability Index.

Table 2.1. Literature review on impact of isomorphic pressures on sustainability practices

	Study	Purpose	Method	Isomorphic pressure type	Key findings
1	Amran & Haniffa (2011)	Exploring impact of institutional isomorphism on sustainability reporting in Malaysia	Multiple regression	Coercive	+
				Normative	+
				Mimetic	+
2	Comyns (2014)	Analyzing how institutional pressure affects greenhouse gas reporting practices of 45 multinational oil and gas companies	Linear regression	Coercive	+
				Normative	+
				Mimetic	+
3	Parente et al. (2014)	Investigating the existence of isomorphism in disclosure of sustainability reporting in Brazil	Analysis of Variance	Not specified	+
4	Sancha et al. (2015)	Investigating the impact of institutional pressures at the country level on adoption of sustainable supplier development practices.	Hierarchical Linear Modeling	Coercive	.
				Normative	.
				Mimetic	+
5	Jacob-John (2018)	Exploring the responsibility orientation in the export-oriented organic dry food supply chain in India.	Semi-structured interviews	Coercive	+
				Normative	+
				Mimetic	+
6	Wahga et al. (2017)	Analyzing the drivers of sustainable entrepreneurial practices in SMEs in Pakistan.	Case studies	Coercive	+
				Normative	+
				Mimetic	+
7	Martinez-Ferrero & Garcia-Sanchez (2017)	Examining the influence of coercive, normative, and mimetic isomorphic forces on the assurance of the sustainability report.	Logistic regression with panel data	Coercive	+
				Normative	+
				Mimetic	+
8	Byun & Kim (2017)	Investigating external stakeholder pressure on the diffusion of sustainability report among publicly traded firms in Korea.	Event-history analysis	Not specified	+
9	Fitriasari & Kawahara (2018)	Exploring possible changes in laws and regulations related to sustainability reports in Indonesia and Japan due to investment interaction between two countries	Descriptive literature review	Coercive	+
				Normative	+
				Mimetic	+
10	Yawar & Kauppi (2018)	Examining whether efficiency ot legitimacy seeking drives the adoption of supplier development practices in India	Case studies	Coercive	.
				Normative	.
				Mimetic	+
11	Masocha & Fatoki (2018)	Examining the role of coercive isomorphic pressure on sustainable development practices of SMEs in South Africa.	Survey reseach method	Coercive	+
12	Bose et al. (2018)	Examining the influence of regulatory guidance on green banking disclosure practices in Bangladesh	OLS	Coercive	+
13	Aracil (2019)	Evaluating whether corporate social responsibility strategies of Islamic and conventional banks converge or diverge in response to formal and informal institutions in Turkey.	Case studies	Mimetic	.
14	Brockhaus et al. (2019)	Examining how companies employed supplier codes of conduct, which companies use it to tackle sustainability related issues	Content analysis	Coercive	+
				Normative	+
				Mimetic	+
15	Hoştut & Deren van def Hof (2020)	Comparing multinational company headquarters and their subsidies in Turkey on greenhouse gas emission disclosure	Content analysis	Not specified	+
16	Bohnsack et al. (2020)	Examining the development of electrical vehicles in automobile industry	Content analysis	Coercive	+
				Normative	+
				Mimetic	+
17	Faisal et al. (2020)	Examining the impact of government regulation on corporate social and environmental responsibility disclosure in Indonesia Stock Exchange.	Univarite and multivariate analysis	Coercive	+
18	Zamir & Saeed (2020)	Analyzing the impact of location on corporate social responsibility disclosure in 9 emerging economies: Brazil, China, India, Indonesia, Korea, Malaysia, Pakistan, Russia, and Turkey	OLS	Not specified	+
19	Sari et al. (2021)	Investigating determinants of anti-corruption disclosure in ASEAN region	Multiple regression	Coercive	+
20	Amoako et al. (2021)	Examining the association between institutional isomorphic forces and environmental accountability practices in Ghana.	Multiple regression	Coercive	.
				Normative	+
				Mimetic	+
21	Jacomossi et al. (2021)	Examining how the existence of isomorphism manifest itself in sustainability reports of Brazilian companies that participate in Dow Jones Sustainability Index	Content analysis	Coercive	+
22	Nasir et al. (2021)	Examining the impact of isomorphic pressure on responses related to environmental sustainability of managers of publicly listed firms to stakeholders in Malaysia.	Non-stuctured interviews	Coercive	+
				Normative	+
				Mimetic	+

Note: Plus (+) indicates positive impact of given isomorphic pressure on given sustainability practices, while dot (.) means that the impact is not statistically significant.

2.3. BIST Sustainability Index

Like its counterparts in other countries, BIST Sustainability Index, which established in 2014, aims to monetize the sustainability performances of listed companies. The index has an index-based assessment system which means that candidate companies must be listed in certain indices before applying for the index. Since these indices, XU030, X050, and X100, consist of top performers of BIST in terms of financial indicators, the financial performance is as important as sustainability performance in the inclusion process. However, unlike studies on DSJI, the studies show no definite results on how inclusion in BIST Sustainability Index affects the financial performance. The reason for this can be selection bias, which can occur while comparing the financial performances of BIST Sustainability Index companies with others (Kapstein 2016). BIST Sustainability Index companies are already chosen from companies with better financial performances, which means that these companies are among the better performers even before their admission to the index.

On the other hand, BIST Sustainability Index is a crucial step for sustainability practices in the BIST. Although sustainability reporting is not mandatory in Turkey, this index calculates the sustainability performance of companies using publicly available data, regardless of whether companies publish a sustainability report. The increase in the number of companies that publish sustainability reports in BIST Sustainability Index over the years can be considered a sign that owning sustainability reports has turned into an obligatory action (Table 2.2.).

Table 2.2. Distribution of BIST Sustainability Index companies published sustainability report in XUSRD, by year

	2014	2015	2016	2017	2018	2019	2020
Rate (%)	73.33%	79.31%	65.12%	77.27%	76.00%	80.36%	81.03%

Source: Adapted from PDP.

Two years after its launch, studies on the BIST Sustainability Index started to appear in literature. Table 2.3. presents the literature review on empirical studies about the BIST Sustainability Index. Literature on the index can be divided into three categories: The impact on financial performance, the impact on sustainability performance, and others, which consist of case studies and content analyses focusing on different topics related to sustainability. Among them, only Aytar (2019) mentions the isomorphism the BIST Sustainability Index context. This study indicates that corporate social responsibility (CSR) activities of the BIST Sustainability Index are not isomorphic on a sectoral basis. Also, the respective study uses content analysis methodology and examines isomorphism only among BIST Sustainability Index companies. As such, this thesis differs from Aytar (2019) in terms of its methodology and sample.

Table 2.3. Literature review on empirical studies on BIST Sustainability Index

	Study	Purpose	Method	Key findings
1	Kurnaz & Kestane (2016)	Investigating the relationship between economic sustainability of BIST Sustainability Index companies and investors' behaviours	Sign test	Positive relationship
2	Şişman et al. (2016)	Investigate the effect of the corporate sustainability in terms of supply chain management activities of BIST Sustainability Index companies on financial performance of the business organizations	Multivariable regression	No significant impact
3	Acar Erdur & Kara (2016)	Investigating whether corporate sustainability, which is proxied by inclusion in BIST Sustainability Index, valued by investors	Event study method	The inclusion increases the stock values.
4	Önder (2017)	Comparing companies listed in BIST Sustainability Index with rest of the BIST 100 on profitability	Multiple linear regression	No relationship between inclusion in BIST Sustainability Indexand profitability
5	Tarakçıoğlu-Altınay et al. (2017)	Investigating the effect of inclusion in BIST Sustainability Index on stock price	Linear regression	No statistically different stock price after the inclusion
6	Önder & Ağca (2018)	Comparing the sustainability performance of BIST100 companies according to their inclusion in BIST Sustainability Index	Frequency analysis	Positive impact of inclusion in BIST Sustainability Index
7	Hizarci-Payne & Kirkulak-Uludag (2018)	Investigationg sustainable business models of companies listed in BIST Sustainability Index from different industries	Content analysis	Sustainability policies change based on the industries
8	Temiz & Acar (2018)	Measuring the market reactions to the announcement of being included in BIST Sustainability Index	Event study method	No significant impact
9	Aytekin & Erol (2018)	Investigating the determinants of inclusion to BIST Sustainability Index	Additive Ratio Assesment (ARAS)	Financial performance is the most important factor.
10	Ece (2018)	Examining the stock market performance of socially reponsible indices (KATLM, XKURY and BIST Sustainability Index)	Descriptive statistics and OLS	Positive relation between social responsibility and both financial and stock market performance
11	Gündüz (2018)	Comparing the listed companies' financial performance before and after included in BIST Sustainability Index	Panel regression	No statistically different results in stock values after the inclusion
12	Baykurt & Kula (2019)	Inestigating the volatility shocks transmission patterns between BIST100 and BIST Sustainability Index	Bivariate BEKK-GARCH (1,1) model	BIST Sustainability Index is responsive for both its shocks and shocks arriving from BIST100.
13	Gürünlü (2019)	Comparing companies listed in BIST Sustainability Indexwith rest of the BIST 100 on financial performance	Pooled - OLS	Inlcusion has weak positive impact on financial performance
14	Aytar (2019)	Investigating whether CSR activities of BIST Sustainability Index companies are isomorphic on the basis of sector	Content analysis	CSR activities are not isomorphic
15	Vardari et al. 2020	Examining whether BIST Sustainability Index makes difference for companies compared to BIST100	Descriptive statistics and ADF tests	No strong evindence for positive impact of inclusion in BIST Sustainability Index.
16	Doğukanlı & Borak, 2020	Investigating the effect of inclusion to BIST Sustainability Indexon corporate financial performance	Multivariable regression	Inclusion in BIST Sustainability Indexis not significant.
17	Yılmaz et al. (2020)	Investigating the relationship between inclusion to BIST Sustainability Index and market specific company performance measures	Event study method	No strong evindence for positive impact of inclusion in BIST Sustainability Index
18	Okuyan & Deniz (2020)	Comparing the performance of socially responsible investments (investments to BIST Sustainability Index) and traditional investments (investments to BIST100)	OLS	No significant difference
19	Acar & Temiz (2020)	Investigating the association between environmental performance and the level of voluntary environmental disclosure	Tobit regression, OLS	Majority of the BIST Sustainability Index companies are among the best performers
20	Özmen et al. (2020)	Comparing the listed companies' financial performance before and after included in BIST Sustainability Index	Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS)	No statistically different financial performace after the inclusion
21	Acar et al. (2020)	Examining the determinants of high sustainability performance, which is proxied by inclusion in BIST Sustainability Index	Linear and logistic regressions	Board size, board independence, comittee independence, being audit by big 4 audit companies, sustainability practices, and the age of the lead auditors are positively affect inclusion in BIST Sustainability Index
22	Aksoy (2020)	Examining the relation between corporate sustainability performance, which is proxied by inclusion in BIST Sustainability Index, and brand performance	Panel logit and panel probit	Both CSP and brand performance has positive impact to each other
23	Goker (2020)	Comparing the listed companies' working capital mangement efficiency before and after included in BIST Sustainability Index	Wilcoxon signed-rank test	The efficiency decreased after the inclusion
24	Kandil Göker (2020)	Comparing financial risk of companies before and after the inclusion in BIST Sustainability Index	Panel regression	BIST Sustainability Index inclusion reduces the risk
25	Keskin et al. (2020)	Investigating factors behind the difference between sustainable, which is proxied by inclusion to BIST Sustainability Index, and non-sustainable companies	Discriminant analysis	The greater the company's size, the more sustainability activities. However, profitability ratios do not lead to significant differences

The literature on the BIST Sustainability Index points out the gaps in studies to show how the index exerts impact on sustainability practices. Current studies examine only the sustainability practices of listed companies in the BIST Sustainability Index, which already have high sustainability performance. Since one of the aims of the BIST Sustainability Index is to increase sustainability practices, there is a need for new research to evaluate the impact of the BIST Sustainability Index on these practices in the BIST. Considering BIST Sustainability Index companies can be a potential model for others in this area, the mimetic isomorphism approach suggests that model companies like BIST Sustainability Index companies can put pressure on others regarding their sustainability practices. Aiming to measure the impact of BIST Sustainability Index companies in social and environmental risk level, index, and sector in the BIST, and to compare the effects in these, this thesis offers a new approach to both measuring the impact of BIST Sustainability Index and creating policy recommendations in this area.

CHAPTER 3

METHODOLOGY

This section presents how and with which methodology the impact of BIST Sustainability Index companies on sustainability practices in BIST will be measured. For this purpose, firstly, how the dataset was created and its properties are shared. Secondly, since a quantitative method will be used for analysis purposes, information about the variables is provided. Afterwards the dataset and variables, the research design and hypotheses are discussed. Finally, this section presents the mathematical background of the models use, and the variables' compatibility with the models is checked.

3.1. Data and Variables

The thesis aims to examine the BIST Sustainability Index's impact on the sustainability practices in companies listed in BIST by using sustainability reports published by these companies in 2014-2020. The unit of analysis is the companies in the BIST in the same period. The data sources for company information are Public Disclosure Platform (PDP), BIST DataStore, and European Bank for Reconstruction and Development (EBRD, 2014). Companies with missing information, such as total asset in a given year, were eliminated to form a balanced dataset, where complete data is available for all the companies and years. Also, financial institutions[2] are not included. Most empirical research left them out in analyses since they make comparisons biased due to differences from non-financial companies (Foerster & Sapp, 2005).

According to the PDP, shares of 444 companies were traded on the BIST in 2021. 129 financial firms and 69 companies with missing information are removed out of the 444 companies (Table 3.1.). At the final stage, 7 years of data for the 2014-2020 period

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[2] These are banks, insurance companies, financial leasing and factoring companies, holding and investment companies, brokerage houses, real estate investment trusts, investment trusts, venture capital investment trusts.

for the 246 remaining companies[3] constitute the sample consisting of 1722 observations. Since the BIST Sustainability Index was established in 2014 and the most recent data was published in 2020, the dataset covers the 2014-2020 period. Except for excluded companies due to various reasons discussed above, the analysis sampling method can be considered to be the total population sampling.

Table 3.1. Formation of Research Sample

Criteria	Number of companies
Companies in PDP in 2021	444
Financial firms	(129)
Companies not sharing financial information continuously between 2014 and 2020	(69)
Number of companies in the sample	246
Research year	7
Number of observations	1722

The information contained in the dataset for each company is as follows: Availability of sustainability reports in a given year, social and environmental risk level, index, sector, and total asset for each year. While the availability of sustainability reports is the dependent variable, others are categorical variables to calculate independent variables for the analysis, except total asset, the control variable. The rest of the chapter discusses the details about variables in the analysis.

3.1.1. Dependent Variable

Availability of sustainability report in a given year is the dependent variable in the analysis. It takes the value one if the company has a sustainability or integrated report in

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[3] The codes and names of the companies in final dataset are available in Appendix A.

that year. If not, the variable's value equals zero. Therefore, the dependent variable is binary.

As mentioned before, the dependent variable is a proxy for companies' sustainability practices. Since sustainability disclosure is voluntary in Turkey, this can show that a company is interested in showing its sustainability performance in a voluntary report. Although the reason behind this interest is not apparent, it can be assumed that companies that have nothing to do with sustainable practices are not willing to publish reports. In this respect, companies with a sustainability report are more prone to sustainable practices than those without a report.

It is seen that the companies in the dataset publish sustainability reports at different times. Some companies have published biannual sustainability reports, some have published annually. A value of one was given in both years for biannual sustainability reports in the dataset to ensure comparability.[4]

Availability of sustainability reporting is a dependent variable frequently used in the literature for different purposes, especially in logistic regression models. For the case of Turkey, Yıldırım et al. (2018) and Özcan (2020), which are both analyzing the determinants of disclosing sustainability information in Turkey, used the availability of sustainability report as a proxy for sustainability information disclosure. Among studies on isomorphism's effects on sustainability, Byun & Kim (2017), Shabana et al. (2017), Faisal et al. (2020), Sari et al. (2021) used a binary dependent variable that shows the adoption of non-financial reporting.

3.1.2. Categorical variables

The information in the data sources enables the companies in the dataset to be categorized under three different groups. Under these groups, how BIST Sustainability

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[4] The data on availability of sustainability or integrated report of each company is available in Appendix B.

Index companies affect other companies listed in the BIST sustainability practices constitutes this thesis's hypotheses. This section presents these groups individually and the hypotheses associated with them.

3.1.2.1. Environmental and Social Risk Level

In 2014, EBRD prepared a checklist that provided a guideline for credit officers at financial institutions. The checklist provides information on the environmental and social risks associated with business activities. There are three risk levels: Low, medium, and high. While high-risk level business activities have significant or long-term environmental and social risks and impacts, there are limited risks and impacts at medium-level, and minor ones at low-risk level (EBRD, 2014, p. 2). Table 3.2. shows the overall risk levels of business activities in the dataset. Most of the business activities in the service sector are at the low-risk level. Manufacturing companies can be divided into risk levels based on their product. For example, food companies are medium risks, while basic metal companies are high-risk. As Table 3.2. shows, there are more business activities with medium-level risk compared to those with the other two risk levels.

Table 3.2. Business activities in the dataset by social and environmental risk level

Social and environmental risk level	Business Activities
Low	Computer programming, consultancy activities, development of building projects, motion picture, video and television program production, organization of conventions and trade shows, passenger and freight air transport, real estate activities, renting and leasing of cars, retail sale of clothing, retail sale of food, retail sale of food, beverages and tobacco in specialized stores, retail sale of information and communication equipment in specialized stores, retail sale of other goods in specialized stores, sale of motor vehicles, sports activities, wholesale on a fee or contract basis
Medium	Accommodation, Articles of concrete, cement, and plaster, beverage, brushes, clay building materials, communication equipment, computers and peripheral equipment, construction installation activities, consumer electronics, dairy cattle, seed process, animal feeds, milk production, electrical equipment, electricity distribution and control apparatus, electronic cards, food and beverage service activities, food products, freight transport by road and removal services, fruit juice, furniture, general purpose machinery, human health activities, metal products, milk and dairy products, motor vehicles, non-domestic cooling and ventilation equipment, paper board, parts and accessories for motor vehicles, pens and pencils, porcelain and ceramic products, printing and service, activities related to printing, processing and preserving of food products, processing and preserving of fruit and vegetables, processing and preserving of poultry meat, processing and preserving of tomato, products of wood, raising cattle, sea and coastal passenger water transport, security systems service activities, telecommunications, transportation and storage, vegetable oil, wholesale of construction materials
High	Basic iron and steel, basic metals, carpets and rugs, chemical fertilizer, chemicals, construction of residential and non-residential buildings, electronic copper wire, extraction of crude petroleum and natural gas, leather and fur, metal pipes, mining and quarrying, paints, pharmaceutical products plastic packing goods, plastics, production of electricity, pulp, refined petroleum products, retail sale of automotive fuel in specialized stores, sponge, steel pipes, textiles, tin, wholesale of chemical products, wholesale of pharmaceutical products

Resource: Adapted from EBRD, 2014.

The environmental and social risk level is critical for companies' sustainability activities. Milne & Patten (2002) shows how companies operating in sensitive sectors face more substantial pressure to disclose and divulge their environmental and social performances. Shabana et al. (2017) stated that CSR reporting started in hazardous industries due to stakeholder concerns, which led to coercive isomorphism. According to them, poorly performed companies in environmental and social areas try to improve their image through CSR activities. This can indicate that companies at similar risk levels are exposed to similar environmental pressures. In this case, especially the larger companies' emphasis on CSR activities causes others to adopt it in the medium and long term, and Shabana et al. (2017) explains this with mimetic isomorphism. In connection with this, if companies at the same risk level are affected by each other, they may imitate the sustainability activities of BIST Sustainability Index companies due to their size. Thus, the first hypothesis is:

H1: Mimetic pressure by BIST Sustainability Index companies increases the likelihood of sustainability reporting among other companies at the same environmental and social risk level.

The risk level is a time-invariant variable, meaning it does not change over time.[5] Each company can be in only one of three risk levels. Table 3.3. shows the distribution of companies according to their associated risk level. Approximately half of the companies in the dataset are in the medium-level risk category. It is followed by high risk and low risk in order.

Table 3.3. Distribution of companies by overall environmental and social risk level

	Low risk	Medium risk	High risk
Rate (%)	12.2	50.4	37.4

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[5] The risk level of each company in the dataset is available in Appendix C.

3.1.2.2. Index

There are many specific BIST indices, from regional to sectoral ones. Among these indices, XU030, XU050, and XU100 consist of companies with the highest volume. Also, data on which indices companies are included in by years are only available for these indices in BIST DataStore. Studies on BIST and sustainability in the literature primarily focus on these indices. (Aras et al., 2017; Önder, 2017; Önder & Ağca, 2018; Baykurt & Kula, 2019; Gürünlü, 2019; Keskin et al., 2020; Okuyan & Deniz, 2020; Vardari et al. 2020)

XU030, XU050, and XU100 can be sorted according to the market and transaction volume of companies listed in them. 30 companies with the highest volume are included in XU030. These 30 companies are also listed in XU050 and XU100 since these indices consist of the top 50 and 100 companies, respectively. 20 new companies, which are not in XU030, are listed in XU050. The number is 50 for XU100, which shows that 50 companies are included in neither XU030 nor XU050. Still, the majority of the BIST companies are not members of any of these indices. Members of each index can change every year. Therefore, it is a time-variant variable. [6]

BIST Sustainability Index has an index-based selection, so its nomination process is not open to all volunteer BIST companies. Companies must be listed in specific indices beforehand. In 2014 only companies in the XU030 could apply. In 2015, the nomination was extended to XU050 companies. As of 2017, volunteered XU100 companies can participate in the assessment. Since these indices include 100 companies with the highest trading volume, BIST Sustainability Index is made up of companies with high sustainability and financial performance. Considering that companies in the same indexes are more or less similar in financial performance, the primary difference between BIST Sustainability Index companies and others is sustainability performance. In particular, the increase in the number of BIST Sustainability Index companies in the same index can cause others to focus on sustainability. From the framework of institutional theory, this

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[6] The indices of each company in the dataset are available in Appendix D.

can be interpreted as peer pressure (Strang & Soule, 1998; Boxenbaum & Jonsson, 2017). Thus, the second hypothesis is:

H2: Mimetic pressure by BIST Sustainability Index companies increases the likelihood of sustainability reporting among other companies in the same index.

Table 3.4. shows the distribution of companies in the dataset by indices. Companies that were not listed in the BIST in specific years are still included in the dataset, so there are five categories that companies can be included. Over the years, their number of non-listed companies decreased while the number of BIST members, which are not listed in any indices, increased. The rate of companies only listed in XU050 is the lowest in general. XU100 and XU030 follow it.

Table 3.4. Distribution of companies by indices (%)

	2014	2015	2016	2017	2018	2019	2020
XU030	6.9	6.9	6.9	6.5	5.7	6.1	6.5
XU050	5.3	6.1	6.5	6.1	5.3	4.5	4.5
XU100	11.8	11.8	11.8	13.8	12.6	12.2	13.8
BIST	69.9	71.5	71.5	70.7	74.9	75.2	74.4
Not listed	6.1	3.7	3.3	2.8	2.4	2.0	0.8

Resource: BIST DataStore

3.1.2.3. Sector

There are 14 main sectors in BIST as of 2021. Every company is listed in main sectors only once, but they can be in the subsectors many times. Information on companies' sectors is available in PDP and BIST DataStore.

Studies on isomorphism and sustainability are primarily focused on companies in the same sector (Comyns, 2014; Sancha et al., 2015; Jacob-John, 2017; Bose et al., 2018;

Aracil, 2019; Bohnsack et al.,2020). One reason is companies' similarities in the same industry, which leads them to adopt similar practices (de Villiers & Alexander, 2014). Also, as the majority adopts the same practice, it becomes a standard in the industry (Braun, 2019). Therefore, the third hypothesis is:

H3: Mimetic pressure by BIST Sustainability Index companies increases the likelihood of sustainability reporting among other companies in the same industry.

In the dataset, there are companies from 12 out of 14 main sectors. As mentioned before, financial firms are not included. Also, the information and communication sector are missing because there is only one company, İhlas Haber Ajansı A. Ş., and there is no data available. Therefore, sectors are rearranged to distribute the companies among sectors more evenly in the analysis. The manufacturing sector has 161 members, nearly five times higher than the second sector with the most member, so manufacturing companies are categorized according to their subsectors. The pulp, paper product, printing, publishing sector, forest products, furniture sector, and stationery sector are combined under the name "manufacturing wood-based product" because separately their number of members is too low, and their raw material in the industry is similar. Other than arrangements in manufacturing, two more sectors, the service sector and other sectors, are also created for the same reasons. The service sector consists of administrative and support services, education, health, other social services, professional, scientific, technical, real estate activities, transportation, storage, telecommunication. Those companies in the agriculture, forestry, fishing sector, electricity, gas, water sector, and mining and quarrying sector are coded as the others due to their separately low rates. In the end, there are 11 different sectors in the dataset. The sector is a time-invariant variable.[7]

Table 3.5. shows the distribution of companies by sectors. The highest rate (12.2%) is in the manufacturing metal products, electrical equipment, motor vehicles sector and the lowest (5.7%) is in the technology sector.

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[7] The sectors and subsectors of each company in the dataset are available in Appendix E.

Table 3.5. Distribution of companies by sectors

Sectors	(%)
Manufacturing of basic metal	6.9
Manufacturing of food, beverage, tobacco	10.6
Manufacturing of wood-based products	7.3
Manufacturing of chemicals, petroleum products, and plastics	11.8
Manufacturing of metal products, electrical equipment, motor vehicles	12.2
Manufacturing of products based on stone and earth	7.7
Manufacturing of textile	8.9
Service	8.1
Technology	5.7
Wholesale and retail trade, restaurant, and hotels	10.6
Others	6.5

Resource: PDP

3.1.3. Independent variable: Mimetic Pressure

As in other studies in the literature, this thesis mainly focuses on the impact of mimetic isomorphism and sustainability so that mimetic pressure is the independent variable. Mimetic isomorphism shows itself as copying superior performers, benchmarking, and identifying the best practices in the field (de Villers & Alexander, 2014). In empirical studies, mimetic pressure is measured by computing the average level of implementation (Sancha et al., 2015), industry membership (Amran & Haniffa, 2011), percentage of adopters (Byun & Kim, 2017), and the number of adopters (Peter & Romi, 2014; Martínez-Ferrero & García-Sánchez, 2017).

In this study, the number of sustainability report adopters is used to calculate the mimetic pressure of the sustainability index companies on others. The total number of sustainability or integrated report released by BIST Sustainability Index company in the given year shows the mimetic pressure in general. The pressure was measured separately for each category and its subcategories mentioned in the previous section. For example, the high-risk level pressure score in 2014 is the number of high-risk level companies listed

in BIST Sustainability Index that have sustainability reports in 2014. The mimetic pressure is different for companies in different subcategories. There are three subcategories for each risk level, five for each index, and 11 for each sector. Therefore, mimetic pressure was calculated for risk levels, indices, and sectors, so there are three independent variables: XUSRD_RISK, XUSRD_INDEX, XUSRD_SECTOR.

Table 3.6. shows the number of BIST Sustainability Index companies in each category and subcategory by year. Since not all companies listed in BIST Sustainability Index have sustainability reports, the table's values are not equal to the pressure score. On the other hand, if there is no BIST Sustainability Index company in a given year for any subcategory, the pressure score equals zero. In this context, companies not members of any index are not under the influence of mimetic pressure by BIST Sustainability Index companies. The remainder of this section shows the pressure score.

Table 3.6. Number of BIST Sustainability Index companies by year

		2014	2015	2016	2017	2018	2019	2020
Risk level	High	2	5	9	8	10	12	12
	Medium	5	11	14	14	17	18	18
	Low	0	3	3	5	5	4	6
Index	XU030	6	12	12	10	10	11	11
	XU050	1	6	7	9	7	8	5
	XU100	0	1	5	5	9	7	17
	Member	0	0	2	3	6	8	3
	Non-member	0	0	0	0	0	0	0
Sector	Manufacturing of metal products, electrical equipment, motor vehicles	2	5	6	6	7	7	7
	Manufacturing of chemicals, petroleum products and plastics	2	3	3	3	5	5	5
	Manufacturing of food, beverage, tobacco	0	3	4	3	4	5	5
	Service	2	3	4	4	4	3	4
	Technology	1	1	1	3	3	3	3
	Wholesale and retail trade, restaurant, and hotels	0	2	1	2	2	2	3
	Construction and public works	0	0	0	0	1	2	2
	Manufacturing of basic metal	0	1	1	1	1	2	2
	Manufacturing of products based on stone and earth	0	0	0	1	1	1	1
	Manufacturing of textile	0	0	2	1	1	1	1
	Manufacturing of wood-based products	0	0	1	0	0	0	0
	Others	0	1	3	3	3	3	3

3.1.3.1. Risk Pressure Score

The variable XUSRD_RISK shows the mimetic pressure score of each risk level in a given year Table 3.7. shows the number of XUSRD BIST Sustainability Index companies having sustainability or integrated report by year and risk level. Although medium-level BIST Sustainability Index companies are higher than others, almost all high-risk level companies had sustainability or integrated reports in 2020. This can also

apply to low-risk BIST Sustainability Index companies. Therefore, the tendency to publish sustainability reports at the medium risk level is lower. In 2014, the risk pressure score was zero in the low-risk level since there was no BIST Sustainability Index company at the low-risk level in the dataset.

Table 3.7. Risk pressure score by year

	2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
High	1	4	7	7	9	11	11
Medium	3	8	8	8	10	11	11
Low	0	2	2	4	4	4	6

3.1.3.2. Index Pressure Score

The variable XUSRD_INDEX shows the index pressure score of each index in a given year. Table 3.8. shows index pressure scores by year. With the change of the assessment procedures, companies in other indices started to join BIST Sustainability Index and release reports in 2015. As of 2020, the highest score is in the XU100, which XU030 follows. Since there are no BIST Sustainability Index companies outside the BIST, the score of non-members is 0 in the period 2014-2020.

Table 3.8. Index pressure scores of by year

	2014	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
XU030	4	9	10	7	7	9	9
XU050	0	4	4	6	6	6	3
XU100	0	1	3	4	5	6	15
Member	0	0	0	2	5	5	1
Non-member	0	0	0	0	0	0	0

3.1.3.3. Sector Pressure Score

The variable XUSRD_SECTOR shows the sector pressure score of each sector in a given year. Table 3.9. shows XUSRD_SECTOR scores by year. The highest number of companies in manufacturing metal products, electrical equipment, and motor vehicles

sector also have the highest sector pressure score. Although there are BIST Sustainability Index companies in the manufacturing of wood-based products sector, no company released sustainability or an integrated report.

Table 3.9. Sector pressure scores of by year

	2014	2015	2016	2017	2018	2019	2020
Manufacturing of metal products, electrical equipment, motor vehicles	2	4	4	3	4	4	5
Manufacturing of chemicals, petroleum products and plastics	1	2	2	2	4	4	4
Manufacturing of food, beverage, tobacco	0	3	3	2	3	4	3
Service	1	1	2	2	2	2	3
Technology	0	1	0	2	2	2	2
Wholesale and retail trade, restaurant and hotels	0	1	1	2	2	2	3
Construction and public works	0	0	0	0	0	1	1
Manufacturing of basic metal	0	1	1	1	1	2	2
Manufacturing of products based on stone and earth	0	0	0	1	1	1	1
Manufacturing of textile	0	0	1	1	1	1	1
Manifacturing of wood-based products	0	0	0	0	0	0	0
Others	0	1	3	3	3	3	3

3.1.4. Control Variables

SIZE and YEAR are the control variables in the regression analyses.

One of the most commonly used control variables in studies on isomorphism and sustainability is size, equal to the natural logarithm of companies' total assets (Amran & Haniffa, 2011; Byun & Kim, 2017; Hassan et al., 2019; Faisal et al., 2020; Sari et al., 2021). Especially smaller companies benchmark against industry leaders, showing the importance of size in mimetic isomorphism (de Villers & Alexander, 2014, p. 201). The importance of company size is also highlighted in studies on sustainability in Turkey. Size

is one of the factors predicting sustainability reporting (Yıldırım et al., 2018; Kıymetli-Şen & Hatunoğlu, 2019; Özcan, 2020). Also, firm size positively impacts sustainability performance (Aksoy, 2020; Keskin et al., 2020).

YEAR is used to control the year-specific impacts on sustainability reporting, which is preferred in panel data analysis. Each year in the period 2014-2020 is a dummy variable that takes the value one if the other variables belong to the given year.

Both control variables were tested with the Wald test. The test accepts the null hypothesis, which suggests removing the control variables damages the fit to the model.

3.2. Research Design

This thesis aims to examine the impact of BIST Sustainability Index on sustainability practices in the BIST. To this end, a quantitative method is chosen to examine the impact because it allows testing hypotheses proposed in previous sections. Also, the dataset is suitable for such a method. To summarize, the hypotheses presented in the previous section are:

H1: Mimetic pressure by BIST Sustainability Index companies increase the likelihood of sustainability reporting among other companies at the same environmental and social risk level.

H2: Mimetic pressure by BIST Sustainability Index companies increases the likelihood of sustainability reporting among other companies in the same index.

H3: Mimetic pressure by BIST Sustainability Index companies increases the likelihood of sustainability reporting among other companies in the same industry.

In addition to these hypotheses, which focus on the impact of BIST Sustainability Index in the risk level, index, and sector, it is essential to determine in which environment

the impact of BIST Sustainability Index is highest. Despite the risk level and sector's importance in sustainability practices, since BIST Sustainability Indexhas an index-based selection process, the impact of the index can be higher. Therefore, the following is the fourth and final hypothesis to be tested with the research design, which will be discussed in detail:

H4: The explanatory power of mimetic pressure by BIST Sustainability Index companies is the highest among companies in the same index.

Within this framework, there is a need for a model that measures the effect of mimetic pressure and compares the pressure in different environments.

The dataset determines the limits of the analysis method to be used. In this context, when the dataset is examined, the dependent variable is binary, and there are data from different years for each unit; that is, panel data is used. The most appropriate analysis method for this dataset is logit regression. In this case, the command recommended by Stata 14 MP is xtlogit, which fits logit models for a binary dependent variable.

Logit models are binary response models that explain the effect of explanatory (independent) variables on the probability response where the dependent variable is equal to value one. Thus, the binary response model has the following formula:

$$P(y = 1 \mid X) = G(\beta_o + X\beta) = G(z) \qquad \text{Equation (1)}$$

where X denote the full set of explanatory variables (Wooldridge, 2020).

G(z) is strictly between zero for all real numbers of z. This ensures that the estimated probabilities are strictly between zero and one where G is a logistic function (Wooldridge, 2020). Under these conditions, the cumulative distribution function for standard logistic function is the following:

$$G(z) = \frac{e^z}{[1 + e^z]} \qquad \text{Equation (2)}$$

This formula can be transformed into the logistic probability function by taking its derivative (Wooldridge, 2020; Martínez-Ferrero & García-Sánchez, 2017, p. 7)

$$g(x) = \text{In} \frac{G(z)}{1 - G(z)} = z = \beta_o + X\beta \qquad \text{Equation (3)}$$

For panel data, xtlogit command fits to both random and fixed effect logistic regression models for binary panel data. Therefore, prior to the analysis the model must be decided.

In panel data analysis, unobserved effects, which can be random or fixed, are common (Wooldridge, 2010, p. 282). The main difference between random and fixed effects is the relation between unobserved effects and observed explanatory variables (Wooldridge, 2010, p. 286). The random effect model should be used if the unobserved effect is uncorrelated with the variables. On the other hand, if the unobserved effect is "arbitrarily correlated" with the explanatory variables, then the model in the analysis should be the fixed effect model. (Wooldridge, 2010, p. 286). Also, the random effect models allow time constant variables, such as sector, social, and environmental risk levels, to be predictors in the estimation. In contrast, the fixed-effect models are sensitive to time-variant data and remove the impact of those time-invariant variables.

Hausman test helps determine which effect model should be used in the analysis. The test is based on the differences between random effect and fixed effect estimates and check whether the difference between estimates of the models is statistically significant. (Wooldridge, 2010, p. 328). The statistically significant result of the Hausman test favors the fixed-effect since arbitrary correlation increases the explanatory power of coefficients if they are significant (Wooldridge, 2010, p. 328). The opposite result is the evidence in favor of the random effect.

Hausman Test was conducted in the research design process of this thesis. However, it is essential to check multicollinearity between independent variables prior to this. Multicollinearity, a high correlation between two or more variables in multiple regression, causes validity problems since highly correlated independent variables have similar explanatory power on dependent variable (Nayebi, 2020, pp. 22–24). Correlation matrices, variance inflation factor (VIF), and tolerance are methods that can be used to detect multicollinearity.

In Table 3.10., the correlation matrix shows the correlation between each pair of variables in the analysis. No pair in the table has a strong correlation. A commonly used rule of thumb is that the variable has a strong correlation if the pairwise correlation is higher than 0.50.

Table 3.10. Pairwise correlations between variables

Variables	SR	XUSRD_RISK	XUSRD_INDEX	XUSRD_SECTOR
XUSRD_RISK	0.0789**			
XUSRD_INDEX	0.3180***	0.3604***		
XUSRD_SECTOR	0.1681***	0.4241***	0.3420***	
SIZE	0.3934***	0.0544**	0.3413***	0.0960***

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 3.11. shows VIF and tolerance scores of independent variables in the analysis. VIF and tolerance are opposite indicators of multicollinearity. High scores in VIF, generally close to 10, indicate multicollinearity. In contrast, a value close to 1, the highest score in tolerance, refers to no problems in terms of multicollinearity (Cohen et al., 2003, p. 423). In sum, VIF measures how much variance in a variable is explained by other regression variables. Since all the VIF values in Table 3.11 are lower than 2, there is no indication of multicollinearity. Tolerance scores show how much variance of the variable is independent of other variables in the regression (Nayebi, 2020, p. 22). As the tolerance values in Table 3.11 are close to 1, the majority of the variance in each variable

is not explained by other independent variables. Therefore, both VIF and tolerance scores do not indicate multicollinearity.

Table 3.11. Collinearity diagnostics

Variable	VIF	Tolerance scores
XUSRD_RISK	1.42	0.70
XUSRD_INDEX	1.45	0.69
XUSRD_SECTOR	1.31	0.76
SIZE	1.19	0.84

Since the analysis is free from multicollinearity problems, all dependent variables can be used. For the Hausman Test, the results of fixed-effect and random effect model versions of the regressions in the thesis were used to check which model should be used. The result is not statistically significant. Since the not statistically significant result of the Hausman Test indicates random effect, the random effect model is chosen for analysis.

3.2.1. Two-stage Logit Model Using Indices to Compare Mimetic pressure in Different Environments

Within the framework of hypotheses, this thesis aims to measure the effect of mimetic pressure in different environments such as risk level, index, and sector and find out which of these environments has the highest explanatory power of mimetic pressure. Unlike linear regression models, it is not possible to compare different models by looking at the coefficients of the estimators in logit regressions. Therefore, a two-stage regression model was preferred to make comparisons and measure the interaction effect along with main effects (Kim, 2009).

In the two-stage models, the outputs of the first stage are used as an independent variable in the second stage (Lund, 2015, p. 17). In this study, the first stage determines which pressure scores are significant in explaining sustainability reporting, a proxy for sustainability practices. Then, using the first regression for each significant variable, pressure indices are constructed with predicted values. In the second stage, all indices

were used as independent variables. They regressed together with the control variables on the binary dependent variable to see which mimetic pressure type has more explanatory power on the probability of sustainability reporting

The analysis in this thesis adopts the approach of Martínez-Ferrero & García-Sánchez (2017), where they examined the effects of institutional factors on the likelihood of voluntary assurance for sustainability reports using a quantitative model. The research models are prepared by modifying the two-stage logit model employed by Martínez-Ferrero & García-Sánchez (2017).

3.2.1.1. First-Stage Regression Models

Based on the first-stage regression models of Martínez-Ferrero & García-Sánchez (2017, p.8), the first stage aims to detect whether the mimetic pressure of XUSRD companies is significant in explaining the sustainability reporting in different environments to test the first three hypotheses. At the same time, the first stage will serve to develop indices from logit model estimation that use mimetic pressure by BIST Sustainability Index companies in the same risk level (XUSRD_RISK), index (XUSRD_INDEX), and sector (XUSRD_SECTOR) as instruments to determine predicted values of sustainability reporting based on each environment. Model 1, Model 2, and Model 3 determine predicted values for risk pressure, index pressure, and sector pressure indices, respectively:

$$\text{Prob}(SR_{it} = 1) = \alpha_0 + \alpha_1 \text{XUSRD\_RISK}_{it} + \mu_{it} + c_i \qquad \text{(Model 1)}$$

$$\text{Prob}(SR_{it} = 1) = \beta_0 + \beta_1 \text{XUSRD\_INDEX}_{it} + \mu_{it} + c_i \qquad \text{(Model 2)}$$

$$\text{Prob}(SR_{it} = 1) = \gamma_0 + \gamma_1 \text{XUSRD\_SECTOR}_{it} + \mu_{it} + c_i \qquad \text{(Model 3)}$$

where SR is for the dependent variable, α, β, γ are coefficients of independent variables, variable i ranges between 1 to 246 with respect to company ids, t takes values of each year in the period 2014-2020, μ_{it} represents the error term, and c_i is unobserved effects.

3.2.1.2. Second-Stage Regression Model

After the first stage, the developed indices contain the predicted values between zero and one, showing the sustainability reporting probability of a company under the mimetic pressure of BIST Sustainability Index companies in different environments. The index based on results on Model 1 is denoted as Risk_Pressure. Model 2 is denoted as Index_Pressure, and Model 3 is as Sector_Pressure. These indices (Risk_Pressure, Index_Pressure, Sector_Pressure) are used in the second-stage logit model to determine which environment the explanatory power of BIST Sustainability Index companies' mimetic pressure is the highest. Along with these independent variables, control variables SIZE and YEAR are formed following Model 4:

$$\text{Prob}(SR_{it} = 1)$$

$$= \varepsilon_0 + \varepsilon_1 \text{Risk pressure} + \varepsilon_2 \text{Index pressure}$$

$$+ \varepsilon_3 \text{Sector pressure} + SIZE + \sum_{j=4}^{10} \varepsilon_j \text{YEAR} + \mu_{it} + c_i \quad \text{(Model 4)}$$

3.2.1.3. Control Models

Since the sampling method of the analysis is not based on probability sampling techniques but total population sampling, random sampling cannot be assumed. Therefore, some undetected features of the dataset may cause problems in terms of accuracy. Two-stage logit regression detailed above was repeated with bootstrapping to control these problems. This control model aims to check whether the explanatory effects of pressure types relative to each other were the same with bootstrap standard errors.

Bootstrapping is a method of resampling the original data with replacement. It helps "to obtain reliable standard errors, confidence intervals and other measures of uncertainty for a wide range of problems" (Davison & Hinkley, 1997, p. 2). xtlogit

command in Stata 14 MP allows estimating bootstrap standard errors. Also, the number of bootstrap replications to be performed can be changed in the module. Since StataCorp (2021, p. 143) recommends 1,000 replications for bias-corrected models, the analysis was performed with 1,000 bootstrap replications.

CHAPTER 4

FINDINGS AND DICUSSIONS

The chapter first discusses the descriptive statistics pointed to by the dataset. Then, the results of the models whose details were shared in the previous section are evaluated.

4.1. Descriptive Statistics

Table 4.1. shows the number of companies that have and do not have sustainability reports by year. Most companies did not publish standalone sustainability or integrated reports in all years. On the other hand, the number of sustainability reporting firms rose. Especially from 2016 to 2017, the number increased by 62.5%. The regression analyzes whether mimetic pressure affect this increasing trend and where the pressure is the most effective.

Table 4.1. Status of companies to publish sustainability reports by years

	2014	2015	2016	2017	2018	2019	2020
SR = 0	226	225	222	207	204	201	200
SR = 1	20	21	24	39	42	45	46

Before going into details of the results of regression models, looking at the dataset's descriptive statistics can help interpret the regression results. As Table 4.2. presents, the number of companies affects the mean pressure scores. Since more companies are in groups based on risk levels relative to other categories, the average XUSRD_RISK is the highest. On the other hand, the risk pressure scores of both sustainability reporting and non-reporting companies are close. This can mean that the relationship between the risk pressure score and sustainability reporting is weak. A similar situation applies to the sector pressure score. On the other hand, even in descriptive statistics, the index pressure score differentiates between companies that publish sustainability reports and those that do not. Therefore, before regression analyses, the expectation is that the index pressure may have more explanatory power than the other two.

Table 4.2. Descriptive statistics

		XUSRD_RISK	XUSRD_INDEX	XUSRD_SECTOR	Size	Obs
Full Sample	Mean	7.303	2.749	1.781	5.596	1,722
	Std. Error	3.283	3.116	1.394	0.865	
	Min	0	0	0	2.851	
	Max	11	15	5	8.755	
SR = 1	Mean	8.030	5.506	2.376	6.447	237
	Std. Error	3.019	3.858	1.343	0.980	
	Min	0	0	0	2.851	
	Max	11	15	5	7.813	
SR = 0	Mean	7.187	2.309	1.686	5.460	1,485
	Std. Error	3.309	2.736	1.378	0.762	
	Min	0	0	0	3.540	
	Max	11	15	5	8.755	

4.2. Results of Logistic Regression Models

Model 1, Model 2, and Model 3 measure the impact of different mimetic pressure in different environments, namely risk level, index, and sector, respectively. Each model is used to predict the marginal probability of having a sustainability report, which is the positive outcome of the research design. Also, each model tests each hypothesis. Table 4.3. shows the results of the first stage and second stage logit models.

According to Model 1, XUSRD_RISK has a positive influence on voluntary sustainability disclosure. For any social and environmental risk level, the increase in the number of BIST Sustainability Index companies having sustainability reports increases the likelihood of publishing sustainability reports of any company in the risk level group. The variable coefficient is 0.748, which is significant at 99.9%.

Model 2 shows that XUSRD_INDEX also positively impacts sustainability reporting. In this model, the coefficient of the explanatory variable is 0.526, which is highly significant (99.9%) like XUSRD_RISK. The model suggests that the increase in

the number of BIST Sustainability Index companies with sustainability reports positively affects the likelihood of other companies releasing sustainability reports in the same index.

Lastly, Model 3 provides insights into the relationship between sector pressure and sustainability reporting. Similar to the variables discussed earlier, XUSRD_SECTOR increases the likelihood of having a sustainability report (coefficient 1.656 significant at 99.9%), which means rising sector pressure score in one sector has a positive impact on the voluntary sustainability disclosure of a company in the same industry.

When the results of all three models are examined, it is seen that the mimetic pressure of BIST Sustainability Index companies in all environments increases the sustainability reporting and thus the sustainability practices. The results support the first hypothesis, which claims that the pressure of BIST Sustainability Index companies is effective on risk levels, the second hypothesis claiming the same for indices, and the third one for sectors. Wald tests of models show that explanatory variables in all models are significant.

On the other hand, the different coefficients in the models do not mean the explanatory power of one variable is higher than others. Predicted values generated from these variables are compared in Model 4. Based on each pressure type's earlier models, predicted values show the marginal probability of having a sustainability report based on a given pressure type. In Model 4, control variables size and year are included to obstruct biased results.

Model 4 presents that the only significant variable is the index pressure, which has greater explanatory power than other scores. Its coefficient is 22.188, significant at 99.9%. Both risk score and sector score are not significant. Therefore, the only index has a significant impact when their predictive power for sustainability reporting is compared. Since BIST Sustainability Index is an index-based application system and no other incentives for companies at the sectoral level or regarding their social and environmental risk, the results are compatible with the current state in the BIST.

Table 4.3. Impact of mimetic isomorphism on voluntary sustainability disclosure

SR	Model 1	Model 2	Model 3	Model 4
XUSRD_RISK	0.748*** (0.098)			
XUSRD_INDEX		0.526*** (0.073)		
XUSRD_SECTOR			1.656*** (0.240)	
Risk score				-1.969 (9.516)
Index score				22.188*** (6.009)
Sector Score				12.706 (9.507)
Size				Controlled
Year				Controlled
Constant	-20.556*** (1.147)	-12.073*** (0.684)	-15.211*** (1.020)	-22.893*** (2.583)

*** p<0.001, ** p<0.01, * p<0.05

Standard errors are indicated in parentheses.

The same analyses above are repeated with bootstrap standard errors to overcome accuracy problems that may affect the results. As Table 4.4. presents, all coefficients are the same, but the standard errors are different. Although in Control Model 1, 2, and 3 bootstrap standard errors are higher, the significance level is not changed. However, these changes affect predicted values so that the index score's significance level decreases to %99 in Control Model 4, where other variables are still insignificant. Therefore, even with bootstrap standard errors, the index score is still the only variable with predictive power on voluntary sustainability disclosure.

Table 4.4. Control models with bootstrap standard errors

SR	Control Model 1	Control Model 2	Control Model 3	Control Model 4
XUSRD_RISK	0.748*** (0.135)			
XUSRD_INDEX		0.526*** (0.106)		
XUSRD_SECTOR			1.656*** (0.297)	
Risk score				-1.969 (9.316)
Index score				22.188** (9.043)
Sector Score				12.706 (11.457)
Size				Controlled
Year				Controlled
Constant	-20,556*** (3.080)	-12,073*** (2.289)	-15,211*** (2.496)	-22.893*** (4.881)

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Standard errors are indicated in parentheses.

4.3. Discussion and Policy Recommendations

The regression results are in line with the institutional theory, which draws attention to the influence of the social and economic environment on companies. In this framework, companies adapt to their environment, which is isomorphism, or decoupling from their environment (Khadaroo, 2005). In general, the regression results indicate that companies in BIST tend to adapt to the environment by being similar to BIST Sustainability Index companies in terms of sustainability practices.

The four models, the results of which were examined, show BIST Sustainability Index companies' pressure on other BIST companies in various environments, the risk

level, index, and sector, and in which environment they were highest. Accordingly, the increase in the number of BIST Sustainability Index companies that have sustainability reports can encourage other companies to report sustainability practices in all groups. On the other hand, the index level is the environment where this pressure is most effective.

Within the framework of this thesis, the environment is the group where companies with similar characteristics come together. At the risk level, there are companies with the same social and environmental risks, companies with similar size and financial success at the index level, and companies in the same industry in the sector. As pointed out throughout the thesis, each environment has different importance in terms of sustainability practices. However, the factor that makes the index stand out in BIST is that BIST Sustainability Index is an index-based selection system. Accordingly, the indices where the pressure of BIST Sustainability Index companies is high are also the indices that companies must take part in before being listed in BIST Sustainability Index.

This thesis examined the effects of BIST Sustainability Index companies' pressure on the XU030, XU050, and XU100 indices and the rest of the BIST companies. The feature of these indices is that companies with the highest market and transaction volume are in them in total. Studies on sustainability reporting within the scope of institutional theory indicate that large companies are more inclined to publish sustainability reports, primarily due to concerns on legitimacy (Amran & Haniffa, 2011; Byun & Kim, 2017; Hassan et al., 2019; Faisal et al., 2020; Sari et al., 2021). On the other hand, it is difficult to argue that the index stands out in this study for this reason. Since the size is controlled in Model 4, the BIST Sustainability Index pressure on the indices is independent of size. This situation strengthens the claim that the stronger pressure in the index can be related to the BIST Sustainability Index selection system.

When the results are analyzed in terms of sustainability policies, it should be underlined that the positive effect of pressure on high-risk sectors is preferable to the effect on the indices. Although the pressure of BIST Sustainability Index companies alone was significant both at risk levels and sectors, this effect disappeared with the index variable

and control variables in the second stage of the model. In this context, although the sustainability reporting of BIST Sustainability Index companies positively affects companies in the same risk levels and sectors, these effects need to be supported by policies. A similar practice as to how the BIST Sustainability Index selection process supports the index effect does not exist in other environments. For example, "emission standards, fiscal incentives, and industry policy" have positive influence on automobile companies in terms sustainability practices (Bohsnsack et al., 2020, p. 4). From a similar perspective, Fritz et al. (2021) states the importance of positive coercive pressure on non-voluntary firms to promote sustainability practices. Although the importance of coercive pressure in promoting sustainable practices is underlined in these examples, the effect of mimetic pressure can also be increased with policies aimed at highlighting good examples and raising awareness (Cordova et al., 2021, p.536).

According to the results, the effect of mimetic pressure is limited in sectors, which is an area that needs further research. It is necessary to analyze the difference between companies with and without a sustainability report in the same sector. Higgins et al. (2008, p. 321) shows that companies with no sustainability report in sectors where sustainability reports are common "have almost no interaction with sustainability interest groups and sustainability-oriented business associations." In relation, encouraging the establishment and the work of these interest groups and business associations in Turkey can be essential as a policy recommendation.

Considering that DSJI was founded in 1999, BIST Sustainability Index, launched in 2014, is a sustainability index that was established relatively late. Also, before BIST Sustainability Index, no other critical step was taken in the name of sustainability in BIST. In other words, the concept of sustainability, in general, is new for companies in Turkey. In similar situations, studies conducted in countries such as India (Jacob-John, 2018), Malaysia (Amran & Haniffa, 2021; Nasir et al., 2021), Pakistan (Wahga et al., 2017), indicate that normative and coercive pressure, together with mimetic isomorphism, is influential in the development of sustainability practices. For the Ghana case, Acquah et al. (2021) states that all three's composite impact makes isomorphism effective for

sustainability practices. On the other hand, Yawan and Kauppi (2018) draws attention to the lack of normative and coercive pressures in adopting sustainability practices in the India case.

These examples point out that the effects of coercive and normative pressure should be evaluated in Turkey as well. Although "Existing in the Future: Sustainability Guidelines for Companies", published by BIST, recommended publicly traded companies to publish a sustainability report, Turkey has no legal requirement. In this respect, there is no coercive pressure for sustainability reporting in Turkey. Sustainability reporting has to be made compulsory for coercive pressure. For normative pressure, further research is needed that evaluates the companies' employment status of professionals working in sustainability. Similarly, the board members' experiences regarding sustainability can also be examined.

CHAPTER 5

CONCLUSION

Sustainability is getting more critical since environmental and social risks, and their effects are becoming more visible. This situation requires taking measures and practices for sustainability in financial markets and publicly traded companies. The establishment of BIST Sustainability Index is one of the essential steps taken for sustainability in Turkey. Despite its importance, the fact that studies on BIST Sustainability Index mainly focus on its financial effects and that the aim of disseminating sustainability practices in BIST is ignored is the reason for this thesis's emergence.

Companies listed in BIST Sustainability Index can be a model for others with their financial and sustainability performances when evaluated in general. To be included in BIST Sustainability Index, companies must be in indices, XU030, XU050, or XU100, in addition to their high sustainability performance as measured by their publicly available documents. This means that their financial performance is also high.

Institutional theory, which focuses on how external pressure from stakeholders, or their social and economic environments affect companies, shows that companies can adopt some of their behaviors by being influenced by their competitors and successful companies in their environment. In this context, mimetic pressure is one of the factors behind companies imitating other companies in the same environment.

This thesis examined the impact of mimetic pressure on sustainability practices in the BIST based on the assumption that BIST Sustainability Index companies can encourage others in the same environment to imitate them because of their financial and sustainability performance. By dividing companies into different environments, this analysis aimed to determine both in which environment the mimetic pressure of BIST Sustainability Index companies is effective, and in which one is more effective. A two-stage logit model was used for this. The analysis was conducted on non-financial companies listed in BIST in 2021 and measured their sustainability practices using the

sustainability report as a proxy. In this framework, the effect of BIST Sustainability Index pressure on the likelihood of sustainability reporting was examined.

Four hypotheses were tested with two-stage logit models. The first three hypotheses argued that the BIST Sustainability Index pressure increased the likelihood of companies' sustainability reporting in the same social and environmental risk level, index, and sectors as BIST Sustainability Index companies, respectively. The first stage of the logit model confirmed these hypotheses and showed that the BIST Sustainability Index effect was significant in all environments. In the second stage, it was tested in which environment the effect of BIST Sustainability Index pressure was highest. As a result, it was determined that the BIST Sustainability Index pressure was the highest in indices, as claimed in the fourth hypothesis.

As in institutional theory, the results show that companies in the BIST are affected by mimetic pressure, so the pressure increases their likelihood of sustainability reporting. The index's highest mimetic pressure among all environments is compatible with selection system of the sustainability index.

Studies in developing countries such as Turkey show that isomorphic pressure affects sustainability practices. As in other studies, it is necessary to focus on coercive and normative pressure to see the effects of isomorphic pressure in all its dimensions in policymaking and further research. When this thesis was written, the sustainability report was still not mandatory in Turkey. Making it mandatory can increase companies' sustainability practices by creating coercive pressure. For the normative pressure, examining the professionalization trend in sustainability can be analyzed in further studies by focusing on the companies' board structures and human resources.

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APPENDIX

Appendix A: The sectors and subsectors of each company in the dataset

Id	Code	Company Name
1	ACSEL	Aciselsan Acipayam Selüloz Sanayi ve Ticaret A.Ş.
2	ADEL	Adel Kalemcilik Ticaret ve Sanayi A.Ş.
3	ADESE	Adese Gayrimenkul Yatirim A.Ş.
4	AEFES	Anadolu Efes Biracilik ve Malt Sanayii A.Ş.
5	AFYON	Afyon Çimento Sanayi T.A.Ş.
6	AKCNS	Akçansa Çimento Sanayi ve Ticaret A.Ş.
7	AKENR	Akenerji Elektrik Üretim A.Ş.
8	AKSA	Aksa Akrilik Kimya Sanayii A.Ş.
9	AKSEN	Aksa Enerji Üretim A.Ş.
10	AKSUE	Aksu Enerji ve Ticaret A.Ş.
11	ALCAR	Alarko Carrier Sanayi ve Ticaret A.Ş.
12	ALCTL	Alcatel Lucent Teletaş Telekomünikasyon A.Ş.
13	ALKA	Alkim Kağit Sanayi ve Ticaret A.Ş.
14	ALKIM	Alkim Alkali Kimya A.Ş.
15	ALMAD	Altinyağ Madencilik ve Enerji Yatirimlari Sanayi ve Ticaret A.Ş.
16	ANELE	Anel Elektrik Proje Taahhüt ve Ticaret A.Ş.
17	ARCLK	Arçelik A.Ş.
18	ARENA	Arena Bilgisayar Sanayi ve Ticaret A.Ş.
19	ARMDA	Armada Bilgisayar Sistemleri Sanayi ve Ticaret A.Ş.
20	ARSAN	Arsan Tekstil Ticaret ve Sanayi A.Ş.
21	ASELS	Aselsan Elektronik Sanayi ve Ticaret A.Ş.

Id	Code	Company Name
22	ASUZU	Anadolu Isuzu Otomotiv Sanayi ve Ticaret A.Ş.
23	ATEKS	Akin Tekstil A.Ş.
24	AVOD	A.V.O.D. Kurutulmuş Gida ve Tarim Ürünleri Sanayi Ticaret A.Ş.
25	AVTUR	Avrasya Petrol ve Turistik Tesisler Yatirimlar A.Ş.
26	AYCES	Altin Yunus Çeşme Turistik Tesisler A.Ş.
27	AYEN	Ayen Enerji A.Ş.
28	AYES	Ayes Çelik Hasir ve Çit Sanayi A.Ş.
29	AYGAZ	Aygaz A.Ş.
30	BAGFS	Bagfaş Bandirma Gübre Fabrikalari A.Ş.
31	BAKAB	Bak Ambalaj Sanayi ve Ticaret A.Ş.
32	BALAT	Balatacilar Balatacilik Sanayi ve Ticaret A.Ş.
33	BANVT	Banvit Bandirma Vitaminli Yem Sanayii A.Ş.
34	BASCM	Baştaş Başkent Çimento Sanayi ve Ticaret A.Ş.
35	BEYAZ	Beyaz Filo Oto Kiralama A.Ş.
36	BFREN	Bosch Fren Sistemleri Sanayi ve Ticaret A.Ş.
37	BIMAS	Bim Birleşik Mağazalar A.Ş.
38	BIZIM	Bizim Toptan Satiş Mağazalari A.Ş.
39	BJKAS	Beşiktaş Futbol Yatirimlari Sanayi ve Ticaret A.Ş.
40	BLCYT	Bilici Yatirim Sanayi ve Ticaret A.Ş.
41	BNTAS	Bantaş Bandirma Ambalaj Sanayi Ticaret A.Ş.
42	BOSSA	Bossa Ticaret ve Sanayi Işletmeleri T.A.Ş.
43	BRISA	Brisa Bridgestone Sabanci Lastik Sanayi ve Ticaret A.Ş.
44	BRKO	Birko Birleşik Koyunlulular Mensucat Ticaret ve Sanayi A.Ş.

Id	Code	Company Name
45	BRKSN	Berkosan Yalitim ve Tecrit Maddeleri Üretim ve Ticaret A.Ş.
46	BRMEN	Birlik Mensucat Ticaret ve Sanayi Işletmesi A.Ş.
47	BRSAN	Borusan Mannesmann Boru Sanayi ve Ticaret A.Ş.
48	BSOKE	Batisöke Söke Çimento Sanayii T.A.Ş.
49	BTCIM	Batiçim Bati Anadolu Çimento Sanayii A.Ş.
50	BUCIM	Bursa Çimento Fabrikasi A.Ş.
51	BURCE	Burçelik Bursa Çelik Döküm Sanayii A.Ş.
52	BURVA	Burçelik Vana Sanayi ve Ticaret A.Ş.
53	CASA	Casa Emtia Petrol Kimyevi ve Türevleri Sanayi Ticaret A.Ş.
54	CCOLA	Coca-Cola Içecek A.Ş.
55	CELHA	Çelik Halat ve Tel Sanayii A.Ş.
56	CEMAS	Çemaş Döküm Sanayi A.Ş.
57	CEMTS	Çemtaş Çelik Makina Sanayi ve Ticaret A.Ş.
58	CIMSA	Çimsa Çimento Sanayi ve Ticaret A.Ş.
59	CLEBI	Çelebi Hava Servisi A.Ş.
60	CMBTN	Çimbeton Hazirbeton ve Prefabrik Yapi Elemanlari Sanayi ve Ticaret A.Ş.
61	CMENT	Çimentaş Izmir Çimento Fabrikasi T.A.Ş.
62	CRFSA	Carrefoursa Carrefour Sabanci Ticaret Merkezi A.Ş.
63	CUSAN	Çuhadaroğlu Metal Sanayi ve Pazarlama A.Ş.
64	DAGI	Dagi Giyim Sanayi ve Ticaret A.Ş.
65	DARDL	Dardanel Önentaş Gida Sanayi A.Ş.
66	DERIM	Derimod Konfeksiyon Ayakkabi Deri Sanayi ve Ticaret A.Ş.
67	DESA	Desa Deri Sanayi ve Ticaret A.Ş.

Id	Code	Company Name
68	DESPC	Despec Bilgisayar Pazarlama ve Ticaret A.Ş.
69	DEVA	Deva Holding A.Ş.
70	DGATE	Datagate Bilgisayar Malzemeleri Ticaret A.Ş.
71	DGKLB	Doğtaş Kelebek Mobilya Sanayi ve Ticaret A.Ş.
72	DIRIT	Diriteks Diriliş Tekstil Sanayi ve Ticaret A.Ş.
73	DITAS	Ditaş Doğan Yedek Parça Imalat ve Teknik A.Ş.
74	DMSAS	Demisaş Döküm Emaye Mamülleri Sanayi A.Ş.
75	DOAS	Doğuş Otomotiv Servis ve Ticaret A.Ş.
76	DOBUR	Doğan Burda Dergi Yayincilik ve Pazarlama A.Ş.
77	DOGUB	Doğusan Boru Sanayii ve Ticaret A.Ş.
78	DOKTA	Döktaş Dökümcülük Ticaret ve Sanayi A.Ş.
79	DURDO	Duran Doğan Basim ve Ambalaj Sanayi A.Ş.
80	DYOBY	Dyo Boya Fabrikalari Sanayi ve Ticaret A.Ş.
81	EDIP	Edip Gayrimenkul Yatirim Sanayi ve Ticaret A.Ş.
82	EGEEN	Ege Endüstri ve Ticaret A.Ş.
83	EGGUB	Ege Gübre Sanayii A.Ş.
84	EGPRO	Ege Profil Ticaret ve Sanayi A.Ş.
85	EGSER	Ege Seramik Sanayi ve Ticaret A.Ş.
86	EKIZ	Ekiz Kimya Sanayi ve Ticaret A.Ş.
87	EMKEL	Emek Elektrik Endüstrisi A.Ş.
88	EMNIS	Eminiş Ambalaj Sanayi ve Ticaret A.Ş.
89	ENKAI	Enka Inşaat ve Sanayi A.Ş.
90	EPLAS	Egeplast Ege Plastik Ticaret ve Sanayi A.Ş.

Id	Code	Company Name
91	ERBOS	Erbosan Erciyas Boru Sanayii ve Ticaret A.Ş.
92	EREGL	Ereğli Demir ve Çelik Fabrikaları T.A.Ş.
93	ERSU	Ersu Meyve ve Gida Sanayi A.Ş.
94	ESCOM	Escort Teknoloji Yatirim A.Ş.
95	ETILR	Etiler Gida ve Ticari Yatirimlar Sanayi ve Ticaret A.Ş.
96	FENER	Fenerbahçe Futbol A.Ş.
97	FLAP	Flap Kongre Toplanti Hizmetleri Otomotiv ve Turizm A.Ş.
98	FMIZP	Federal-Mogul Izmit Piston ve Pim Üretim Tesisleri A.Ş.
99	FRIGO	Frigo-Pak Gida Maddeleri Sanayi ve Ticaret A.Ş.
100	FROTO	Ford Otomotiv Sanayi A.Ş.
101	GEDZA	Gediz Ambalaj Sanayi ve Ticaret A.Ş.
102	GENTS	Gentaş Dekoratif Yüzeyler Sanayi ve Ticaret A.Ş.
103	GEREL	Gersan Elektrik Ticaret ve Sanayi A.Ş.
104	GOLTS	Göltaş Göller Bölgesi Çimento Sanayi ve Ticaret A.Ş.
105	GOODY	Goodyear Lastikleri T.A.Ş.
106	GSDDE	Gsd Denizcilik Gayrimenkul Inşaat Sanayi ve Ticaret A.Ş.
107	GSRAY	Galatasaray Sportif Sinai ve Ticari Yatirimlar A.Ş.
108	GUBRF	Gübre Fabrikalari T.A.Ş.
109	HATEK	Hateks Hatay Tekstil Işletmeleri A.Ş.
110	HEKTS	Hektaş Ticaret T.A.Ş.
111	HURGZ	Hürriyet Gazetecilik ve Matbaacilik A.Ş.
112	IDEAS	Ideal Finansal Teknolojiler ve Danişmanlik A.Ş.
113	IHEVA	Ihlas Ev Aletleri Imalat Sanayi ve Ticaret A.Ş.

Id	Code	Company Name
114	IHGZT	Ihlas Gazetecilik A.Ş.
115	IHLGM	Ihlas Gayrimenkul Proje Geliştirme ve Ticaret A.Ş.
116	INDES	Indeks Bilgisayar Sistemleri Mühendislik Sanayi ve Ticaret A.Ş.
117	INTEM	Intema Inşaat ve Tesisat Malzemeleri Yatirim ve Pazarlama A.Ş.
118	IPEKE	Ipek Doğal Enerji Kaynaklari Araştirma ve Üretim A.Ş.
119	IZFAS	Izmir Firça Sanayi ve Ticaret A.Ş.
120	IZMDC	Izmir Demir Çelik Sanayi A.Ş.
121	IZTAR	Iz Hayvancilik Tarim ve Gida Sanayi Ticaret A.Ş.
122	JANTS	Jantsa Jant Sanayi ve Ticaret A.Ş.
123	KAPLM	Kaplamin Ambalaj Sanayi ve Ticaret A.Ş.
124	KAREL	Karel Elektronik Sanayi ve Ticaret A.Ş.
125	KARSN	Karsan Otomotiv Sanayii ve Ticaret A.Ş.
126	KARTN	Kartonsan Karton Sanayi ve Ticaret A.Ş.
127	KATMR	Katmerciler Araç Üstü Ekipman Sanayi ve Ticaret A.Ş.
128	KENT	Kent Gida Maddeleri Sanayii ve Ticaret A.Ş.
129	KERVT	Kerevitaş Gida Sanayi ve Ticaret A.Ş.
130	KLMSN	Klimasan Klima Sanayi ve Ticaret A.Ş.
131	KNFRT	Konfrut Gida Sanayi ve Ticaret A.Ş.
132	KONYA	Konya Çimento Sanayii A.Ş.
133	KORDS	Kordsa Teknik Tekstil A.Ş.
134	KOZAA	Koza Anadolu Metal Madencilik Işletmeleri A.Ş.
135	KOZAL	Koza Altin Işletmeleri A.Ş.
136	KRDMD	Kardemir Karabük Demir Çelik Sanayi ve Ticaret A.Ş.

Id	Code	Company Name
137	KRONT	Kron Telekomünikasyon Hizmetleri A.Ş.
138	KRSTL	Kristal Kola ve Meşrubat Sanayi Ticaret A.Ş.
139	KRTEK	Karsu Tekstil Sanayii ve Ticaret A.Ş.
140	KSTUR	Kuştur Kuşadasi Turizm Endüstri A.Ş.
141	KUTPO	Kütahya Porselen Sanayi A.Ş.
142	KUYAS	Kuyaş Yatirim A.Ş.
143	LINK	Link Bilgisayar Sistemleri Yazilimi ve Donanimi Sanayi ve Ticaret A.Ş.
144	LKMNH	Lokman Hekim Engürüsağ Sağlik Turizm Eğitim Hizmetleri ve İnşaat Taahhüt A.Ş.
145	LOGO	Logo Yazilim Sanayi ve Ticaret A.Ş.
146	LUKSK	Lüks Kadife Ticaret ve Sanayii A.Ş.
147	MAALT	Marmaris Altinyunus Turistik Tesisler A.Ş.
148	MAKTK	Makina Takim Endüstrisi A.Ş.
149	MARTI	Marti Otel Işletmeleri A.Ş.
150	MEGAP	Mega Polietilen Köpük Sanayi ve Ticaret A.Ş.
151	MEPET	Mepet Metro Petrol ve Tesisleri Sanayi Ticaret A.Ş.
152	MERIT	Merit Turizm Yatirim ve Işletme A.Ş.
153	MERKO	Merko Gida Sanayi ve Ticaret A.Ş.
154	MGROS	Migros Ticaret A.Ş.
155	MIPAZ	Milpa Ticari ve Sinai Ürünler Pazarlama Sanayi ve Ticaret A.Ş.
156	MNDRS	Menderes Tekstil Sanayi ve Ticaret A.Ş.
157	MRSHL	Marshall Boya ve Vernik Sanayii A.Ş.
158	NETAS	Netaş Telekomünikasyon A.Ş.
159	NIBAS	Niğbaş Niğde Beton Sanayi ve Ticaret A.Ş.

Id	Code	Company Name
160	NUHCM	Nuh Çimento Sanayi A.Ş.
161	ODAS	Odaş Elektrik Üretim Sanayi Ticaret A.Ş.
162	OLMK	Mondi Olmuksan Kağit ve Ambalaj Sanayi A.Ş.
163	ORGE	Orge Enerji Elektrik Taahhüt A.Ş.
164	ORMA	Orma Orman Mahsulleri Integre Sanayi ve Ticaret A.Ş.
165	OTKAR	Otokar Otomotiv ve Savunma Sanayi A.Ş.
166	OYAKC	Oyak Çimento Fabrikalari A.Ş.
167	OYLUM	Oylum Sinai Yatirimlar A.Ş.
168	OZBAL	Özbal Çelik Boru Sanayi Ticaret ve Taahhüt A.Ş.
169	OZRDN	Özerden Plastik Sanayi ve Ticaret A.Ş.
170	PAMEL	Pamel Yenilenebilir Elektrik Üretim A.Ş.
171	PARSN	Parsan Makina Parçalari Sanayii A.Ş.
172	PENGD	Penguen Gida Sanayi A.Ş.
173	PETKM	Petkim Petrokimya Holding A.Ş.
174	PETUN	Pinar Entegre Et ve Un Sanayii A.Ş.
175	PGSUS	Pegasus Hava Taşimaciliği A.Ş.
176	PINSU	Pinar Su ve Içecek Sanayi ve Ticaret A.Ş.
177	PKART	Plastikkart Akilli Kart Iletişim Sistemleri Sanayi ve Ticaret A.Ş.
178	PKENT	Petrokent Turizm A.Ş.
179	PNSUT	Pinar Süt Mamulleri Sanayii A.Ş.
180	POLTK	Politeknik Metal Sanayi ve Ticaret A.Ş.
181	PRKAB	Türk Prysmian Kablo ve Sistemleri A.Ş.
182	PRKME	Park Elektrik Üretim Madencilik Sanayi ve Ticaret A.Ş.

Id	Code	Company Name
183	PRZMA	Prizma Pres Matbaacilik Yayincilik Sanayi ve Ticaret A.Ş.
184	PSDTC	Pergamon Status Diş Ticaret A.Ş.
185	RODRG	Rodrigo Tekstil Sanayi ve Ticaret A.Ş.
186	ROYAL	Royal Hali Iplik Tekstil Mobilya Sanayi ve Ticaret A.Ş.
187	RTALB	Rta Laboratuvarlari Biyolojik Ürünler Ilaç ve Makine Sanayi Ticaret A.Ş.
188	RYSAS	Reysaş Taşimacilik ve Lojistik Ticaret A.Ş.
189	SAMAT	Saray Matbaacilik Kağitçilik Kirtasiyecilik Ticaret ve Sanayi A.Ş.
190	SANEL	San-El Mühendislik Elektrik Taahhüt Sanayi ve Ticaret A.Ş.
191	SANFM	Sanifoam Sünger Sanayi ve Ticaret A.Ş.
192	SANKO	Sanko Pazarlama Ithalat Ihracat A.Ş.
193	SARKY	Sarkuysan Elektrolitik Bakir Sanayi ve Ticaret A.Ş.
194	SASA	Sasa Polyester Sanayi A.Ş.
195	SAYAS	Say Yenilenebilir Enerji Ekipmanlari Sanayi ve Ticaret A.Ş.
196	SEKUR	Sekuro Plastik Ambalaj Sanayi A.Ş.
197	SELEC	Selçuk Ecza Deposu Ticaret ve Sanayi A.Ş.
198	SELGD	Selçuk Gida Endüstri Ihracat Ithalat A.Ş.
199	SERVE	Serve Film Prodüksiyon Eğlence A.Ş.
200	SEYKM	Seyitler Kimya Sanayi A.Ş.
201	SILVR	Silverline Endüstri ve Ticaret A.Ş.
202	SKTAS	Söktaş Tekstil Sanayi ve Ticaret A.Ş.
203	SNKRN	Senkron Güvenlik ve Iletişim Sistemleri A.Ş.
204	SNPAM	Sönmez Pamuklu Sanayii A.Ş.
205	SODSN	Sodaş Sodyum Sanayii A.Ş.

Id	Code	Company Name
206	SONME	Sönmez Filament Sentetik Iplik ve Elyaf Sanayi A.Ş.
207	TACTR	Taç Tarim Ürünleri Hayvancilik Gida Sanayi ve Ticaret A.Ş.
208	TATGD	Tat Gida Sanayi A.Ş.
209	TBORG	Türk Tuborg Bira ve Malt Sanayii A.Ş.
210	TCELL	Turkcell Iletişim Hizmetleri A.Ş.
211	TEKTU	Tek-Art Inşaat Ticaret Turizm Sanayi ve Yatirimlar A.Ş.
212	TETMT	Tetamat Gida Yatirimlari A.Ş.
213	TGSAS	Tgs Diş Ticaret A.Ş.
214	THYAO	Türk Hava Yollari A.O.
215	TIRE	Mondi Tire Kutsan Kağit ve Ambalaj Sanayi A.Ş.
216	TKNSA	Teknosa Iç ve Diş Ticaret A.Ş.
217	TMPOL	Temapol Polimer Plastik ve Inşaat Sanayi Ticaret A.Ş.
218	TMSN	Tümosan Motor ve Traktör Sanayi A.Ş.
219	TOASO	Tofaş Türk Otomobil Fabrikasi A.Ş.
220	TSPOR	Trabzonspor Sportif Yatirim ve Futbol Işletmeciliği Ticaret A.Ş.
221	TTKOM	Türk Telekomünikasyon A.Ş.
222	TTRAK	Türk Traktör ve Ziraat Makineleri A.Ş.
223	TUCLK	Tuğçelik Alüminyum ve Metal Mamülleri Sanayi ve Ticaret A.Ş.
224	TUKAS	Tukaş Gida Sanayi ve Ticaret A.Ş.
225	TUPRS	Tüpraş-Türkiye Petrol Rafinerileri A.Ş.
226	TURGG	Türker Proje Gayrimenkul ve Yatirim Geliştirme A.Ş.
227	ULAS	Ulaşlar Turizm Yatirimlari ve Dayanikli Tüketim Mallari Ticaret Pazarlama A.Ş.
228	ULKER	Ülker Bisküvi Sanayi A.Ş.

Id	Code	Company Name
229	ULUSE	Ulusoy Elektrik Imalat Taahhüt ve Ticaret A.Ş.
230	ULUUN	Ulusoy Un Sanayi ve Ticaret A.Ş.
231	USAK	Uşak Seramik Sanayi A.Ş.
232	UTPYA	Utopya Turizm Inşaat Işletmecilik Ticaret A.Ş.
233	UZERB	Uzertaş Boya Sanayi Ticaret ve Yatirim A.Ş.
234	VAKKO	Vakko Tekstil ve Hazir Giyim Sanayi Işletmeleri A.Ş.
235	VANGD	Vanet Gida Sanayi Iç ve Diş Ticaret A.Ş.
236	VESBE	Vestel Beyaz Eşya Sanayi ve Ticaret A.Ş.
237	VESTL	Vestel Elektronik Sanayi ve Ticaret A.Ş.
238	VKING	Viking Kağit ve Selüloz A.Ş.
239	YAPRK	Yaprak Süt ve Besi Çiftlikleri Sanayi ve Ticaret A.Ş.
240	YATAS	Yataş Yatak ve Yorgan Sanayi ve Ticaret A.Ş.
241	YAYLA	Yayla Enerji Üretim Turizm ve Inşaat Ticaret A.Ş.
242	YBTAS	Yibitaş Yozgat Işçi Birliği Inşaat Malzemeleri Ticaret ve Sanayi A.Ş.
243	YONGA	Yonga Mobilya Sanayi ve Ticaret A.Ş.
244	YUNSA	Yünsa Yünlü Sanayi ve Ticaret A.Ş.
245	YYAPI	Yeşil Yapi Endüstrisi A.Ş.
246	ZOREN	Zorlu Enerji Elektrik Üretim A.Ş.

Appendix B: The availability of sustainability report in the dataset by year

Id	Code	2014	2015	2016	2017	2018	2019	2020	Total
1	ACSEL	0	0	0	0	0	0	0	0
2	ADEL	0	0	0	0	0	0	0	0
3	ADESE	0	0	0	0	0	0	0	0
4	AEFES	1	1	1	1	1	1	1	7
5	AFYON	0	0	0	0	0	0	0	0
6	AKCNS	1	0	1	1	1	1	1	6
7	AKENR	1	1	1	1	1	1	1	7
8	AKSA	1	1	1	1	1	1	1	7
9	AKSEN	1	1	1	1	1	1	1	7
10	AKSUE	0	0	0	0	0	0	0	0
11	ALCAR	0	0	0	0	0	0	0	0
12	ALCTL	0	0	0	0	0	0	0	0
13	ALKA	0	0	0	0	0	0	0	0
14	ALKIM	0	0	0	0	0	0	0	0
15	ALMAD	0	0	0	0	0	0	0	0
16	ANELE	0	0	0	0	0	0	0	0
17	ARCLK	1	1	1	1	1	1	1	7
18	ARENA	0	0	0	0	0	0	0	0
19	ARMDA	0	0	0	0	0	0	0	0
20	ARSAN	0	0	0	0	0	0	0	0
21	ASELS	0	1	1	1	1	1	1	6
22	ASUZU	0	0	0	0	1	1	1	3
23	ATEKS	0	0	0	0	0	0	0	0
24	AVOD	0	0	0	0	0	0	0	0
25	AVTUR	0	0	0	0	0	0	0	0
26	AYCES	0	0	0	0	0	0	0	0
27	AYEN	0	0	0	0	0	0	0	0
28	AYES	0	0	0	0	0	0	0	0
29	AYGAZ	1	1	1	1	1	1	1	7
30	BAGFS	0	0	0	0	0	0	0	0
31	BAKAB	0	0	0	0	0	0	0	0
32	BALAT	0	0	0	0	0	0	0	0
33	BANVT	0	0	0	0	0	0	0	0

Id	Code	2014	2015	2016	2017	2018	2019	2020	Total
34	BASCM	0	0	0	0	0	0	0	0
35	BEYAZ	0	0	0	0	0	0	0	0
36	BFREN	0	0	0	1	1	1	0	3
37	BIMAS	0	0	0	0	0	0	1	1
38	BIZIM	0	0	0	1	1	1	1	4
39	BJKAS	0	0	0	0	0	0	0	0
40	BLCYT	0	0	0	0	0	0	0	0
41	BNTAS	0	0	0	0	0	0	0	0
42	BOSSA	0	0	0	0	0	0	0	0
43	BRISA	1	1	1	1	1	1	1	7
44	BRKO	0	0	0	0	0	0	0	0
45	BRKSN	0	0	0	0	0	0	0	0
46	BRMEN	0	0	0	0	0	0	0	0
47	BRSAN	0	0	0	1	1	1	1	4
48	BSOKE	0	0	0	0	0	0	0	0
49	BTCIM	0	0	0	0	0	0	0	0
50	BUCIM	0	0	0	0	0	0	0	0
51	BURCE	0	0	0	0	0	0	0	0
52	BURVA	0	0	0	0	0	0	0	0
53	CASA	0	0	0	0	0	0	0	0
54	CCOLA	1	1	1	1	1	1	0	6
55	CELHA	0	0	0	0	0	0	0	0
56	CEMAS	0	0	0	0	0	0	0	0
57	CEMTS	0	0	0	0	0	0	0	0
58	CIMSA	1	1	1	1	1	1	1	7
59	CLEBI	0	0	0	0	0	0	0	0
60	CMBTN	0	0	0	0	0	0	0	0
61	CMENT	0	0	0	0	0	0	0	0
62	CRFSA	0	0	0	0	0	0	0	0
63	CUSAN	0	0	0	0	0	0	0	0
64	DAGI	0	0	0	0	0	0	0	0
65	DARDL	0	0	0	0	0	0	0	0
66	DERIM	0	0	0	0	0	0	0	0
67	DESA	0	0	0	0	0	0	0	0
68	DESPC	0	0	0	0	0	0	0	0

Id	Code	2014	2015	2016	2017	2018	2019	2020	Total
69	DEVA	0	0	0	0	0	0	0	0
70	DGATE	0	0	0	0	0	0	0	0
71	DGKLB	0	0	0	0	0	0	0	0
72	DIRIT	0	0	0	0	0	0	0	0
73	DITAS	0	0	0	0	0	0	0	0
74	DMSAS	0	0	0	0	0	0	0	0
75	DOAS	1	1	0	1	1	1	1	6
76	DOBUR	0	0	0	0	0	0	0	0
77	DOGUB	0	0	0	0	0	0	0	0
78	DOKTA	0	0	0	0	0	0	0	0
79	DURDO	0	0	0	0	0	0	0	0
80	DYOBY	0	0	0	0	0	0	0	0
81	EDIP	0	0	0	0	0	0	0	0
82	EGEEN	0	0	0	0	0	0	0	0
83	EGGUB	0	0	0	0	0	0	0	0
84	EGPRO	0	0	0	0	0	0	0	0
85	EGSER	0	0	0	0	0	0	0	0
86	EKIZ	0	0	0	0	0	0	0	0
87	EMKEL	0	0	0	0	0	0	0	0
88	EMNIS	0	0	0	0	0	0	0	0
89	ENKAI	0	0	0	1	1	1	1	4
90	EPLAS	0	0	0	0	0	0	0	0
91	ERBOS	0	0	0	0	0	0	0	0
92	EREGL	1	1	1	1	1	1	1	7
93	ERSU	0	0	0	0	0	0	0	0
94	ESCOM	0	0	0	0	0	0	0	0
95	ETILR	0	0	0	0	0	0	0	0
96	FENER	0	0	0	0	0	0	0	0
97	FLAP	0	0	0	0	0	0	0	0
98	FMIZP	0	0	0	0	0	0	0	0
99	FRIGO	0	0	0	0	0	0	0	0
100	FROTO	1	1	1	1	1	1	1	7
101	GEDZA	0	0	0	1	1	1	1	4
102	GENTS	0	0	0	0	0	0	0	0
103	GEREL	0	0	0	0	0	0	0	0

Id	Code	2014	2015	2016	2017	2018	2019	2020	Total
104	GOLTS	0	0	0	0	0	0	0	0
105	GOODY	0	0	0	0	0	0	0	0
106	GSDDE	0	0	0	0	0	0	0	0
107	GSRAY	0	0	0	0	0	0	0	0
108	GUBRF	0	0	0	0	0	0	0	0
109	HATEK	0	0	0	0	0	0	0	0
110	HEKTS	0	0	0	0	0	0	0	0
111	HURGZ	0	0	0	0	0	0	0	0
112	IDEAS	0	0	0	0	0	0	0	0
113	IHEVA	0	0	0	0	0	0	0	0
114	IHGZT	0	0	0	0	0	0	0	0
115	IHLGM	0	0	0	0	0	0	0	0
116	INDES	0	0	0	0	0	0	0	0
117	INTEM	0	0	0	1	1	1	0	3
118	IPEKE	0	0	0	0	0	0	0	0
119	IZFAS	0	0	0	0	0	0	0	0
120	IZMDC	0	0	0	0	0	0	0	0
121	IZTAR	0	0	0	0	0	0	1	1
122	JANTS	0	0	0	0	0	0	0	0
123	KAPLM	0	0	0	0	0	0	0	0
124	KAREL	0	0	0	0	0	0	0	0
125	KARSN	0	0	0	0	0	0	1	1
126	KARTN	0	0	0	0	0	0	0	0
127	KATMR	0	0	0	0	0	0	0	0
128	KENT	0	0	0	0	0	0	0	0
129	KERVT	0	0	0	1	1	1	1	4
130	KLMSN	0	0	0	0	0	0	0	0
131	KNFRT	0	0	0	0	0	0	0	0
132	KONYA	0	0	0	0	0	0	0	0
133	KORDS	1	1	1	1	1	1	1	7
134	KOZAA	0	0	0	0	0	0	0	0
135	KOZAL	0	0	0	0	0	0	0	0
136	KRDMD	0	0	0	0	0	1	1	2
137	KRONT	0	0	0	0	0	0	0	0
138	KRSTL	0	0	0	0	0	0	0	0

Id	Code	2014	2015	2016	2017	2018	2019	2020	Total
139	KRTEK	0	0	0	0	1	0	0	1
140	KSTUR	0	0	0	0	0	0	0	0
141	KUTPO	0	0	0	0	0	0	0	0
142	KUYAS	0	0	0	0	0	0	0	0
143	LINK	0	0	0	0	0	0	0	0
144	LKMNH	0	0	0	0	0	0	0	0
145	LOGO	0	0	0	1	1	1	1	4
146	LUKSK	0	0	0	0	0	0	0	0
147	MAALT	0	0	0	0	0	0	0	0
148	MAKTK	0	0	0	0	0	0	0	0
149	MARTI	0	0	0	0	0	0	0	0
150	MEGAP	0	0	0	0	0	0	0	0
151	MEPET	0	0	0	0	0	0	0	0
152	MERIT	0	0	0	0	0	0	0	0
153	MERKO	0	0	0	0	0	0	0	0
154	MGROS	0	0	1	1	1	1	1	5
155	MIPAZ	0	0	0	0	0	0	0	0
156	MNDRS	0	0	0	0	0	0	1	1
157	MRSHL	0	0	0	0	0	0	1	1
158	NETAS	0	0	0	0	0	0	0	0
159	NIBAS	0	0	0	0	0	0	0	0
160	NUHCM	0	0	0	1	1	1	1	4
161	ODAS	0	0	0	0	0	0	0	0
162	OLMK	0	0	0	0	0	0	0	0
163	ORGE	0	0	0	0	0	0	0	0
164	ORMA	0	0	0	0	0	0	0	0
165	OTKAR	1	1	1	1	1	1	1	7
166	OYAKC	0	0	1	0	1	1	1	4
167	OYLUM	0	0	0	0	0	0	0	0
168	OZBAL	0	0	0	0	0	0	0	0
169	OZRDN	0	0	0	0	0	1	1	2
170	PAMEL	0	0	0	0	0	0	0	0
171	PARSN	0	0	0	0	0	0	0	0
172	PENGD	0	0	0	0	0	0	0	0
173	PETKM	0	0	0	0	0	0	0	0

Id	Code	2014	2015	2016	2017	2018	2019	2020	Total
174	PETUN	0	0	0	0	0	0	0	0
175	PGSUS	0	0	0	0	0	1	1	2
176	PINSU	0	0	0	0	0	0	0	0
177	PKART	0	0	0	0	0	0	0	0
178	PKENT	0	0	0	0	0	0	0	0
179	PNSUT	0	0	0	0	0	0	0	0
180	POLTK	0	0	0	0	0	0	0	0
181	PRKAB	0	0	0	0	0	0	0	0
182	PRKME	0	0	0	0	0	0	0	0
183	PRZMA	0	0	0	0	0	0	0	0
184	PSDTC	0	0	0	0	0	0	0	0
185	RODRG	0	0	0	0	0	0	0	0
186	ROYAL	0	0	0	0	0	0	0	0
187	RTALB	0	0	0	0	0	0	0	0
188	RYSAS	0	0	0	0	0	0	0	0
189	SAMAT	0	0	0	0	0	0	0	0
190	SANEL	0	0	0	0	0	0	0	0
191	SANFM	0	0	0	0	0	0	0	0
192	SANKO	0	0	0	0	0	0	0	0
193	SARKY	0	0	0	0	0	0	0	0
194	SASA	0	0	0	0	0	0	0	0
195	SAYAS	0	0	0	1	1	1	1	4
196	SEKUR	0	0	0	0	0	0	0	0
197	SELEC	0	0	0	0	0	0	0	0
198	SELGD	0	0	0	0	0	0	0	0
199	SERVE	0	0	0	0	0	0	0	0
200	SEYKM	0	0	0	1	1	1	1	4
201	SILVR	0	0	0	0	0	0	1	1
202	SKTAS	0	0	0	0	0	0	0	0
203	SNKRN	0	0	0	0	0	0	0	0
204	SNPAM	0	0	0	0	0	0	0	0
205	SODSN	0	0	0	0	0	0	0	0
206	SONME	0	0	0	0	0	0	0	0
207	TACTR	1	1	1	1	1	1	1	7
208	TATGD	0	0	0	0	0	0	0	0

Id	Code	2014	2015	2016	2017	2018	2019	2020	Total
209	TBORG	0	0	0	1	1	1	0	3
210	TCELL	1	0	1	1	1	1	1	6
211	TEKTU	0	0	0	0	0	0	0	0
212	TETMT	0	0	0	0	0	0	0	0
213	TGSAS	0	0	0	0	0	0	0	0
214	THYAO	0	1	1	1	1	1	1	6
215	TIRE	0	0	0	0	0	0	0	0
216	TKNSA	0	0	0	0	0	0	0	0
217	TMPOL	0	0	0	1	1	1	1	4
218	TMSN	0	0	0	0	0	0	0	0
219	TOASO	1	1	1	1	1	1	1	7
220	TSPOR	0	0	0	0	0	0	0	0
221	TTKOM	0	0	0	0	0	0	0	0
222	TTRAK	0	0	0	0	0	0	1	1
223	TUCLK	0	0	0	1	1	1	0	3
224	TUKAS	0	0	0	0	0	0	0	0
225	TUPRS	1	1	1	1	1	1	1	7
226	TURGG	0	0	0	0	0	0	0	0
227	ULAS	0	0	0	0	0	0	0	0
228	ULKER	0	1	1	1	1	1	1	6
229	ULUSE	0	0	0	0	0	0	0	0
230	ULUUN	0	0	0	0	0	0	0	0
231	USAK	0	0	0	0	0	0	0	0
232	UTPYA	0	0	0	0	0	0	0	0
233	UZERB	0	0	0	0	0	0	0	0
234	VAKKO	0	0	0	0	0	0	0	0
235	VANGD	0	0	0	0	0	0	0	0
236	VESBE	0	0	0	0	0	0	0	0
237	VESTL	0	0	0	0	0	0	0	0
238	VKING	0	0	0	0	0	0	0	0
239	YAPRK	0	0	0	0	0	0	0	0
240	YATAS	0	0	0	0	0	0	0	0
241	YAYLA	0	0	0	0	0	0	0	0
242	YBTAS	0	0	0	0	0	1	1	2
243	YONGA	0	0	0	0	0	0	0	0

Id	Code	2014	2015	2016	2017	2018	2019	2020	Total
244	YUNSA	0	0	0	1	1	1	0	3
245	YYAPI	0	0	0	0	0	0	0	0
246	ZOREN	1	1	1	1	1	1	1	7

Appendix C: The risk level of each company in the dataset

Id	Code	Business Activities	Risk level
1	ACSEL	Chemicals	High
2	ADEL	Pens and pencils	Medium
3	ADESE	Real estate activities	Low
4	AEFES	Beverage	Medium
5	AFYON	Articles of concrete, cement, and plaster	Medium
6	AKCNS	Articles of concrete, cement, and plaster	Medium
7	AKENR	Production of electricity	High
8	AKSA	Chemicals	High
9	AKSEN	Production of electricity	High
10	AKSUE	Production of electricity	High
11	ALCAR	Electrical equipment	Medium
12	ALCTL	Communication equipment	Medium
13	ALKA	Pulp	High
14	ALKIM	Chemicals	High
15	ALMAD	Mining and quarrying	High
16	ANELE	Construction installation activities	Medium
17	ARCLK	Consumer electronics	Medium
18	ARENA	Computers and peripheral equipment	Medium
19	ARMDA	Computers and peripheral equipment	Medium
20	ARSAN	Textiles	High
21	ASELS	Communication equipment	Medium
22	ASUZU	Motor vehicles	Medium

Id	Code	Business Activities	Risk level
23	ATEKS	Textiles	High
24	AVOD	Food products	Medium
25	AVTUR	Accommodation	Medium
26	AYCES	Accommodation	Medium
27	AYEN	Production of electricity	High
28	AYES	Basic metals	High
29	AYGAZ	Chemicals	High
30	BAGFS	Chemical fertilizer	High
31	BAKAB	Plastic packing goods	High
32	BALAT	Parts and accessories for motor vehicles	Medium
33	BANVT	Processing and preserving of poultry meat	Medium
34	BASCM	Articles of concrete, cement, and plaster	Medium
35	BEYAZ	Renting and leasing of cars	Low
36	BFREN	Parts and accessories for motor vehicles	Medium
37	BIMAS	Retail sale of food, beverages, and tobacco in specialized stores	Low
38	BIZIM	Retail sale of food, beverages, and tobacco in specialized stores	Low
39	BJKAS	Sports activities	Low
40	BLCYT	Textiles	High
41	BNTAS	Tin	High
42	BOSSA	Textiles	High
43	BRISA	Plastics	High
44	BRKO	Textiles	High
45	BRKSN	Chemicals	High

Id	Code	Business Activities	Risk level
46	BRMEN	Textiles	High
47	BRSAN	Metal pipes	High
48	BSOKE	Articles of concrete, cement, and plaster	Medium
49	BTCIM	Articles of concrete, cement, and plaster	Medium
50	BUCIM	Articles of concrete, cement, and plaster	Medium
51	BURCE	General purpose machinery	Medium
52	BURVA	General purpose machinery	Medium
53	CASA	Retail sale of food	Low
54	CCOLA	Beverage	Medium
55	CELHA	Basic metals	High
56	CEMAS	Basic metals	High
57	CEMTS	Basic metals	High
58	CIMSA	Articles of concrete, cement, and plaster	Medium
59	CLEBI	Transportation and storage	Medium
60	CMBTN	Articles of concrete, cement, and plaster	Medium
61	CMENT	Articles of concrete, cement, and plaster	Medium
62	CRFSA	Retail sale of food, beverages, and tobacco in specialized stores	Low
63	CUSAN	Basic metals	High
64	DAGI	Textiles	High
65	DARDL	Processing and preserving of food products	Medium
66	DERIM	Leather and fur	High
67	DESA	Leather and fur	High
68	DESPC	Computers and peripheral equipment	Medium
69	DEVA	Pharmaceutical products	High

Id	Code	Business Activities	Risk level
70	DGATE	Computers and peripheral equipment	Medium
71	DGKLB	Furniture	Medium
72	DIRIT	Textiles	High
73	DITAS	Parts and accessories for motor vehicles	Medium
74	DMSAS	Basic metals	High
75	DOAS	Sale of motor vehicles	Low
76	DOBUR	Printing and service activities related to printing	Medium
77	DOGUB	Clay building materials	Medium
78	DOKTA	Basic metals	High
79	DURDO	Plastic packing goods	High
80	DYOBY	Paints	High
81	EDIP	Development of building projects	Low
82	EGEEN	Parts and accessories for motor vehicles	Medium
83	EGGUB	Chemical fertilizer	High
84	EGPRO	Plastics	High
85	EGSER	Clay building materials	Medium
86	EKIZ	Vegetable oil	Medium
87	EMKEL	Electricity distribution and control apparatus	Medium
88	EMNIS	Tin	High
89	ENKAI	Construction of residential and non-residential buildings	High
90	EPLAS	Plastics	High
91	ERBOS	Basic metals	High
92	EREGL	Basic iron and steel	High
93	ERSU	Fruit juice	Medium

Id	Code	Business Activities	Risk level
94	ESCOM	Computers and peripheral equipment	Medium
95	ETILR	Food and beverage service activities	Medium
96	FENER	Sports activities	Low
97	FLAP	Organization of conventions and trade shows	Low
98	FMIZP	Parts and accessories for motor vehicles	Medium
99	FRIGO	Processing and preserving of fruit and vegetables	Medium
100	FROTO	Motor vehicles	Medium
101	GEDZA	Plastics	High
102	GENTS	Furniture	Medium
103	GEREL	Electrical equipment	Medium
104	GOLTS	Articles of concrete, cement, and plaster	Medium
105	GOODY	Plastics	High
106	GSDDE	Sea and coastal passenger water transport	Medium
107	GSRAY	Sports activities	Low
108	GUBRF	Chemical fertilizer	High
109	HATEK	Textiles	High
110	HEKTS	Chemical fertilizer	High
111	HURGZ	Printing and service activities related to printing	Medium
112	IDEAS	Consultancy activities	Low
113	IHEVA	Consumer electronics	Medium
114	IHGZT	Printing and service activities related to printing	Medium
115	IHLGM	Real estate activities	Low
116	INDES	Computers and peripheral equipment	Medium
117	INTEM	Wholesale of construction materials	Medium

Id	Code	Business Activities	Risk level
118	IPEKE	Extraction of crude petroleum and natural gas	High
119	IZFAS	Brushes	Medium
120	IZMDC	Basic iron and steel	High
121	IZTAR	Dairy cattle, seed process, animal feeds, milk production	Medium
122	JANTS	Metal products	Medium
123	KAPLM	Paper board	Medium
124	KAREL	Communication equipment	Medium
125	KARSN	Motor vehicles	Medium
126	KARTN	Paper board	Medium
127	KATMR	Parts and accessories for motor vehicles	Medium
128	KENT	Food products	Medium
129	KERVT	Processing and preserving of food products	Medium
130	KLMSN	Non-domestic cooling and ventilation equipment	Medium
131	KNFRT	Fruit juice	Medium
132	KONYA	Articles of concrete, cement, and plaster	Medium
133	KORDS	Textiles	High
134	KOZAA	Mining and quarrying	High
135	KOZAL	Mining and quarrying	High
136	KRDMD	Basic iron and steel	High
137	KRONT	Communication equipment	Medium
138	KRSTL	Beverage	Medium
139	KRTEK	Textiles	High
140	KSTUR	Accommodation	Medium
141	KUTPO	Porcelain and ceramic products	Medium

Id	Code	Business Activities	Risk level
142	KUYAS	Construction of residential and non-residential buildings	High
143	LINK	Computer programming	Low
144	LKMNH	Human health activities	Medium
145	LOGO	Computer programming	Low
146	LUKSK	Textiles	High
147	MAALT	Accommodation	Medium
148	MAKTK	Metal products	Medium
149	MARTI	Accommodation	Medium
150	MEGAP	Plastics	High
151	MEPET	Retail sale of automotive fuel in specialised stores	High
152	MERIT	Accommodation	Medium
153	MERKO	Processing and preserving of tomato	Medium
154	MGROS	Retail sale of food, beverages, and tobacco in specialized stores	Low
155	MIPAZ	Retail sale of other goods in specialised stores	Low
156	MNDRS	Textiles	High
157	MRSHL	Paints	High
158	NETAS	Communication equipment	Medium
159	NIBAS	Articles of concrete, cement, and plaster	Medium
160	NUHCM	Articles of concrete, cement, and plaster	Medium
161	ODAS	Production of electricity	High
162	OLMK	Pulp	High
163	ORGE	Construction installation activities	Medium
164	ORMA	Products of wood	Medium

Id	Code	Business Activities	Risk level
165	OTKAR	Motor vehicles	Medium
166	OYAKC	Articles of concrete, cement, and plaster	Medium
167	OYLUM	Food products	Medium
168	OZBAL	Steel pipes	High
169	OZRDN	Plastic packing goods	High
170	PAMEL	Production of electricity	High
171	PARSN	Parts and accessories for motor vehicles	Medium
172	PENGD	Processing and preserving of fruit and vegetables	Medium
173	PETKM	Refined petroleum products	High
174	PETUN	Food products	Medium
175	PGSUS	Passenger and freight air transport	Low
176	PINSU	Beverage	Medium
177	PKART	Electronic cards	Medium
178	PKENT	Accommodation	Medium
179	PNSUT	Milk and dairy products	Medium
180	POLTK	Chemicals	High
181	PRKAB	Metal products	Medium
182	PRKME	Mining and quarrying	High
183	PRZMA	Printing and service activities related to printing	Medium
184	PSDTC	Wholesale on a fee or contract basis	Low
185	RODRG	Textiles	High
186	ROYAL	Carpets and rugs	High
187	RTALB	Pharmaceutical products	High
188	RYSAS	Freight transport by road and removal services	Medium

Id	Code	Business Activities	Risk level
189	SAMAT	Printing and service activities related to printing	Medium
190	SANEL	Construction installation activities	Medium
191	SANFM	Sponge	High
192	SANKO	Wholesale on a fee or contract basis	Low
193	SARKY	Electronic copper wire	High
194	SASA	Chemicals	High
195	SAYAS	Metal products	Medium
196	SEKUR	Plastics	High
197	SELEC	Wholesale of pharmaceutical products	High
198	SELGD	Processing and preserving of fruit and vegetables	Medium
199	SERVE	Motion picture, video, and television program production	Low
200	SEYKM	Chemicals	High
201	SILVR	Metal products	Medium
202	SKTAS	Textiles	High
203	SNKRN	Security systems service activities	Medium
204	SNPAM	Textiles	High
205	SODSN	Mining and quarrying	High
206	SONME	Real estate activities	Low
207	TACTR	Raising cattle	Medium
208	TATGD	Processing and preserving of fruit and vegetables	Medium
209	TBORG	Beverage	Medium
210	TCELL	Telecommunications	Medium
211	TEKTU	Accommodation	Medium
212	TETMT	Processing and preserving of fruit and vegetables	Medium

Id	Code	Business Activities	Risk level
213	TGSAS	Wholesale on a fee or contract basis	Low
214	THYAO	Passenger and freight air transport	Low
215	TIRE	Pulp	High
216	TKNSA	Retail sale of information and communication equipment in specialized stores	Low
217	TMPOL	Plastics	High
218	TMSN	Motor vehicles	Medium
219	TOASO	Motor vehicles	Medium
220	TSPOR	Sports activities	Low
221	TTKOM	Telecommunications	Medium
222	TTRAK	Motor vehicles	Medium
223	TUCLK	Basic iron and steel	High
224	TUKAS	Processing and preserving of fruit and vegetables	Medium
225	TUPRS	Refined petroleum products	High
226	TURGG	Development of building projects	Low
227	ULAS	Accommodation	Medium
228	ULKER	Processing and preserving of food products	Medium
229	ULUSE	Electrical equipment	Medium
230	ULUUN	Processing and preserving of food products	Medium
231	USAK	Clay building materials	Medium
232	UTPYA	Production of electricity	High
233	UZERB	Wholesale of chemical products	High
234	VAKKO	Retail sale of clothing	Low
235	VANGD	Processing and preserving of food products	Medium
236	VESBE	Consumer electronics	Medium

Id	Code	Business Activities	Risk level
237	VESTL	Consumer electronics	Medium
238	VKING	Pulp	High
239	YAPRK	Dairy cattle, seed process, animal feeds, milk production	Medium
240	YATAS	Textiles	High
241	YAYLA	Construction of residential and non-residential buildings	High
242	YBTAS	Articles of concrete, cement, and plaster	Medium
243	YONGA	Furniture	Medium
244	YUNSA	Textiles	High
245	YYAPI	Development of building projects	Low
246	ZOREN	Production of electricity	High

Appendix D: The indices of each company in the dataset by year

Id	Code	2014	2015	2016	2017	2018	2019	2020
1	ACSEL	BIST	BIST	BIST	BIST	BIST	BIST	BIST
2	ADEL	BIST	XU100	BIST	BIST	BIST	BIST	BIST
3	ADESE	BIST	BIST	BIST	BIST	BIST	BIST	BIST
4	AEFES	XU050	XU050	XU050	XU100	XU100	XU100	XU050
5	AFYON	XU100	XU050	XU050	XU050	XU100	XU100	BIST
6	AKCNS	BIST	BIST	BIST	BIST	BIST	BIST	XU100
7	AKENR	XU100	XU100	XU100	XU100	BIST	BIST	BIST
8	AKSA	XU100	XU100	XU100	XU100	XU100	XU100	XU100
9	AKSEN	XU050	XU050	XU050	XU100	XU050	XU050	XU100
10	AKSUE	BIST	BIST	BIST	BIST	BIST	BIST	BIST
11	ALCAR	BIST	BIST	BIST	BIST	BIST	BIST	BIST
12	ALCTL	BIST	XU100	XU100	XU100	BIST	BIST	XU100
13	ALKA	BIST	BIST	BIST	BIST	BIST	BIST	BIST
14	ALKIM	XU100	XU100	BIST	XU100	BIST	BIST	XU050
15	ALMAD	-	-	-	-	-	-	BIST
16	ANELE	BIST	BIST	BIST	XU100	XU100	BIST	BIST
17	ARCLK	XU030	XU030	XU030	XU030	XU030	XU030	XU030
18	ARENA	BIST	BIST	BIST	BIST	BIST	BIST	BIST
19	ARMDA	BIST	BIST	BIST	BIST	BIST	BIST	BIST
20	ARSAN	BIST	BIST	BIST	BIST	BIST	BIST	BIST
21	ASELS	XU050	XU050	XU050	XU030	XU030	XU030	XU030
22	ASUZU	XU100	BIST	BIST	BIST	BIST	BIST	BIST

Id	Code	2014	2015	2016	2017	2018	2019	2020
23	ATEKS	BIST	BIST	BIST	BIST	BIST	BIST	BIST
24	AVOD	BIST	BIST	BIST	BIST	BIST	XU100	BIST
25	AVTUR	BIST	BIST	BIST	BIST	BIST	BIST	BIST
26	AYCES	BIST	BIST	BIST	BIST	BIST	BIST	BIST
27	AYEN	BIST	BIST	XU100	BIST	BIST	BIST	BIST
28	AYES	BIST	BIST	BIST	BIST	BIST	BIST	BIST
29	AYGAZ	XU100	XU100	XU100	XU100	BIST	BIST	XU100
30	BAGFS	XU100	XU050	XU050	XU100	BIST	BIST	XU100
31	BAKAB	BIST	BIST	BIST	BIST	BIST	BIST	BIST
32	BALAT	BIST	BIST	BIST	BIST	BIST	BIST	BIST
33	BANVT	BIST	BIST	BIST	XU100	BIST	BIST	BIST
34	BASCM	BIST	BIST	BIST	BIST	BIST	BIST	BIST
35	BEYAZ	BIST	BIST	BIST	BIST	BIST	BIST	BIST
36	BFREN	BIST	BIST	BIST	BIST	BIST	BIST	BIST
37	BIMAS	XU030	XU030	XU030	XU030	XU030	XU030	XU030
38	BIZIM	XU050	XU100	XU100	XU100	BIST	BIST	XU100
39	BJKAS	XU050	XU100	XU050	XU050	XU100	XU100	BIST
40	BLCYT	BIST	BIST	BIST	BIST	BIST	BIST	BIST
41	BNTAS	-	BIST	BIST	BIST	BIST	BIST	BIST
42	BOSSA	BIST	BIST	BIST	BIST	BIST	BIST	BIST
43	BRISA	XU100	XU100	XU100	XU100	BIST	BIST	XU100
44	BRKO	BIST	BIST	BIST	BIST	BIST	BIST	BIST
45	BRKSN	BIST	BIST	BIST	BIST	BIST	BIST	BIST
46	BRMEN	BIST	BIST	BIST	BIST	BIST	BIST	BIST

Id	Code	2014	2015	2016	2017	2018	2019	2020
47	BRSAN	XU100	XU100	XU100	BIST	XU100	BIST	XU100
48	BSOKE	BIST	BIST	BIST	BIST	BIST	BIST	BIST
49	BTCIM	BIST	BIST	BIST	BIST	BIST	BIST	BIST
50	BUCIM	BIST	BIST	BIST	BIST	BIST	BIST	XU100
51	BURCE	BIST	BIST	BIST	BIST	BIST	BIST	BIST
52	BURVA	BIST	BIST	BIST	BIST	BIST	BIST	BIST
53	CASA	-	-	-	-	-	-	BIST
54	CCOLA	XU050	XU050	XU030	XU050	XU050	XU050	XU050
55	CELHA	BIST	BIST	BIST	BIST	BIST	BIST	BIST
56	CEMAS	BIST	BIST	BIST	BIST	XU100	XU100	BIST
57	CEMTS	BIST	BIST	BIST	XU100	XU100	XU100	XU100
58	CIMSA	XU100	XU100	XU100	BIST	BIST	BIST	XU100
59	CLEBI	XU100	XU100	XU100	XU100	BIST	XU100	XU100
60	CMBTN	BIST	BIST	BIST	BIST	BIST	BIST	BIST
61	CMENT	BIST	BIST	BIST	BIST	BIST	BIST	BIST
62	CRFSA	-	XU100	XU100	XU100	BIST	BIST	BIST
63	CUSAN	-	-	BIST	BIST	BIST	BIST	BIST
64	DAGI	BIST	BIST	BIST	BIST	BIST	BIST	BIST
65	DARDL	BIST	BIST	BIST	BIST	BIST	BIST	BIST
66	DERIM	BIST	BIST	BIST	BIST	BIST	BIST	BIST
67	DESA	BIST	BIST	BIST	BIST	BIST	BIST	BIST
68	DESPC	BIST	BIST	BIST	BIST	BIST	BIST	BIST
69	DEVA	BIST	XU100	XU100	XU100	XU100	XU100	XU100
70	DGATE	BIST	BIST	BIST	BIST	BIST	BIST	BIST

Id	Code	2014	2015	2016	2017	2018	2019	2020
71	DGKLB	BIST	BIST	BIST	BIST	XU100	XU100	BIST
72	DIRIT	BIST	BIST	BIST	BIST	BIST	BIST	BIST
73	DITAS	BIST	BIST	BIST	BIST	BIST	BIST	BIST
74	DMSAS	BIST	BIST	BIST	BIST	BIST	BIST	BIST
75	DOAS	XU050	XU030	XU030	XU050	XU100	XU100	XU100
76	DOBUR	BIST	BIST	BIST	BIST	BIST	BIST	BIST
77	DOGUB	BIST	BIST	BIST	BIST	BIST	BIST	BIST
78	DOKTA	-	-	-	-	BIST	BIST	BIST
79	DURDO	BIST	BIST	BIST	BIST	BIST	BIST	BIST
80	DYOBY	BIST	BIST	BIST	BIST	BIST	BIST	BIST
81	EDIP	BIST	BIST	BIST	BIST	BIST	BIST	BIST
82	EGEEN	XU100	XU050	XU050	XU100	XU100	XU100	XU100
83	EGGUB	BIST	BIST	BIST	BIST	BIST	BIST	BIST
84	EGPRO	BIST	BIST	BIST	BIST	BIST	BIST	BIST
85	EGSER	BIST	BIST	BIST	BIST	BIST	BIST	BIST
86	EKIZ	BIST	BIST	BIST	BIST	BIST	BIST	BIST
87	EMKEL	BIST	BIST	BIST	BIST	BIST	BIST	BIST
88	EMNIS	BIST	BIST	BIST	BIST	BIST	BIST	BIST
89	ENKAI	XU030	XU030	XU030	XU030	XU050	XU100	XU100
90	EPLAS	BIST	BIST	BIST	BIST	BIST	BIST	BIST
91	ERBOS	BIST	XU100	BIST	XU100	BIST	BIST	BIST
92	EREGL	XU030	XU030	XU030	XU030	XU030	XU030	XU030
93	ERSU	BIST	BIST	BIST	BIST	BIST	BIST	BIST
94	ESCOM	BIST	BIST	BIST	BIST	BIST	BIST	BIST

Id	Code	2014	2015	2016	2017	2018	2019	2020
95	ETILR	BIST	BIST	BIST	BIST	BIST	BIST	BIST
96	FENER	XU100	XU100	XU050	XU100	XU100	XU100	BIST
97	FLAP	BIST	BIST	BIST	BIST	XU100	BIST	BIST
98	FMIZP	BIST	BIST	BIST	BIST	BIST	BIST	BIST
99	FRIGO	BIST	BIST	BIST	BIST	BIST	BIST	BIST
100	FROTO	XU030	XU030	XU030	XU050	XU050	XU030	XU100
101	GEDZA	BIST	BIST	BIST	BIST	BIST	BIST	BIST
102	GENTS	BIST	BIST	BIST	BIST	XU100	BIST	BIST
103	GEREL	BIST	BIST	BIST	BIST	XU100	XU100	BIST
104	GOLTS	XU050	XU050	XU050	XU050	XU100	XU100	BIST
105	GOODY	XU100	XU100	XU050	XU100	XU100	BIST	XU100
106	GSDDE	BIST	BIST	BIST	BIST	BIST	BIST	BIST
107	GSRAY	XU100	XU100	XU100	XU100	XU050	XU100	BIST
108	GUBRF	XU050	XU050	XU050	XU050	XU100	XU100	XU030
109	HATEK	BIST	BIST	BIST	BIST	BIST	BIST	BIST
110	HEKTS	BIST	BIST	BIST	BIST	XU100	XU100	XU050
111	HURGZ	XU100	BIST	XU100	XU100	XU100	BIST	BIST
112	IDEAS	-	-	-	-	-	BIST	BIST
113	IHEVA	BIST	BIST	BIST	BIST	BIST	BIST	BIST
114	IHGZT	BIST	BIST	BIST	BIST	BIST	BIST	BIST
115	IHLGM	-	-	-	BIST	XU100	XU100	BIST
116	INDES	BIST	BIST	BIST	BIST	BIST	BIST	XU100
117	INTEM	BIST	BIST	BIST	BIST	BIST	BIST	BIST
118	IPEKE	XU050	XU100	XU100	XU050	XU050	XU050	XU050

Id	Code	2014	2015	2016	2017	2018	2019	2020
119	IZFAS	BIST	BIST	BIST	BIST	BIST	BIST	BIST
120	IZMDC	XU100	BIST	XU100	XU100	BIST	BIST	BIST
121	IZTAR	BIST	BIST	BIST	BIST	BIST	BIST	BIST
122	JANTS	BIST	BIST	BIST	BIST	BIST	BIST	BIST
123	KAPLM	BIST	BIST	BIST	BIST	BIST	BIST	BIST
124	KAREL	BIST	BIST	BIST	BIST	BIST	BIST	XU100
125	KARSN	XU100	XU050	XU100	XU100	XU050	XU100	BIST
126	KARTN	XU100	XU100	XU100	XU100	XU100	BIST	XU100
127	KATMR	BIST	BIST	BIST	BIST	BIST	BIST	BIST
128	KENT	BIST	BIST	BIST	BIST	BIST	BIST	BIST
129	KERVT	BIST	BIST	BIST	BIST	BIST	XU100	XU100
130	KLMSN	BIST	BIST	BIST	BIST	BIST	BIST	BIST
131	KNFRT	BIST	BIST	BIST	BIST	BIST	BIST	BIST
132	KONYA	XU100	XU100	XU100	XU100	BIST	XU100	BIST
133	KORDS	BIST	XU100	XU050	XU100	XU100	XU050	XU100
134	KOZAA	XU030	XU050	XU100	XU030	XU030	XU030	XU030
135	KOZAL	XU030	XU030	XU030	XU030	XU030	XU030	XU030
136	KRDMD	XU030	XU030	XU030	XU030	XU030	XU030	XU030
137	KRONT	BIST	BIST	BIST	BIST	BIST	BIST	BIST
138	KRSTL	BIST	BIST	BIST	BIST	BIST	BIST	BIST
139	KRTEK	BIST	BIST	BIST	BIST	BIST	BIST	BIST
140	KSTUR	BIST	BIST	BIST	BIST	BIST	BIST	BIST
141	KUTPO	BIST	BIST	BIST	BIST	BIST	BIST	BIST
142	KUYAS	BIST	BIST	BIST	BIST	BIST	BIST	BIST

Id	Code	2014	2015	2016	2017	2018	2019	2020
143	LINK	BIST	BIST	BIST	BIST	BIST	BIST	BIST
144	LKMNH	BIST	BIST	BIST	BIST	BIST	BIST	BIST
145	LOGO	XU100	BIST	XU100	BIST	BIST	BIST	XU100
146	LUKSK	BIST	BIST	BIST	BIST	BIST	BIST	BIST
147	MAALT	BIST	BIST	BIST	BIST	BIST	BIST	BIST
148	MAKTK	BIST	BIST	BIST	BIST	BIST	BIST	BIST
149	MARTI	BIST	BIST	BIST	BIST	BIST	BIST	BIST
150	MEGAP	BIST	BIST	BIST	BIST	BIST	BIST	BIST
151	MEPET	BIST	BIST	BIST	BIST	BIST	BIST	BIST
152	MERIT	BIST	BIST	BIST	BIST	BIST	BIST	BIST
153	MERKO	BIST	BIST	BIST	BIST	BIST	BIST	BIST
154	MGROS	XU030	XU050	XU050	XU050	XU050	XU050	XU030
155	MIPAZ	BIST	BIST	BIST	BIST	BIST	BIST	BIST
156	MNDRS	XU100	BIST	BIST	BIST	BIST	BIST	BIST
157	MRSHL	BIST	BIST	BIST	BIST	BIST	BIST	BIST
158	NETAS	XU100	XU050	XU100	XU050	XU100	XU100	XU100
159	NIBAS	BIST	BIST	BIST	BIST	BIST	BIST	BIST
160	NUHCM	BIST	BIST	BIST	BIST	BIST	BIST	BIST
161	ODAS	BIST	XU100	XU100	XU100	XU100	XU100	XU050
162	OLMK	-	-	-	-	-	-	-
163	ORGE	BIST	BIST	BIST	BIST	BIST	BIST	BIST
164	ORMA	BIST	BIST	BIST	BIST	BIST	BIST	BIST
165	OTKAR	XU050	XU030	XU030	XU030	XU050	XU100	XU100
166	OYAKC	-	-	-	-	-	-	XU030

Id	Code	2014	2015	2016	2017	2018	2019	2020
167	OYLUM	BIST	BIST	BIST	BIST	BIST	BIST	BIST
168	OZBAL	BIST	BIST	BIST	BIST	BIST	BIST	BIST
169	OZRDN	-	BIST	BIST	BIST	BIST	BIST	BIST
170	PAMEL	-	-	-	-	-	-	-
171	PARSN	BIST	BIST	BIST	BIST	BIST	XU100	BIST
172	PENGD	BIST	BIST	BIST	BIST	BIST	BIST	BIST
173	PETKM	XU030	XU030	XU030	XU030	XU030	XU030	XU030
174	PETUN	BIST	BIST	BIST	BIST	BIST	BIST	XU100
175	PGSUS	XU030	XU030	XU050	XU030	XU030	XU030	XU030
176	PINSU	BIST	BIST	BIST	BIST	BIST	BIST	BIST
177	PKART	BIST	BIST	BIST	BIST	BIST	BIST	BIST
178	PKENT	BIST	BIST	BIST	BIST	BIST	BIST	BIST
179	PNSUT	BIST	BIST	BIST	BIST	BIST	BIST	XU100
180	POLTK	BIST	BIST	BIST	BIST	BIST	BIST	BIST
181	PRKAB	BIST	BIST	BIST	BIST	BIST	BIST	BIST
182	PRKME	XU100	XU100	XU100	XU100	XU100	XU100	BIST
183	PRZMA	BIST	BIST	BIST	BIST	BIST	BIST	BIST
184	PSDTC	BIST	BIST	BIST	BIST	BIST	BIST	BIST
185	RODRG	BIST	BIST	BIST	BIST	BIST	BIST	BIST
186	ROYAL	BIST	BIST	BIST	BIST	BIST	BIST	BIST
187	RTALB	BIST	BIST	BIST	BIST	BIST	BIST	BIST
188	RYSAS	BIST	BIST	BIST	BIST	BIST	BIST	BIST
189	SAMAT	BIST	BIST	BIST	BIST	BIST	BIST	BIST
190	SANEL	BIST	BIST	BIST	BIST	BIST	BIST	BIST

Id	Code	2014	2015	2016	2017	2018	2019	2020
191	SANFM	BIST	BIST	BIST	BIST	BIST	BIST	BIST
192	SANKO	BIST	BIST	BIST	BIST	BIST	BIST	BIST
193	SARKY	BIST	BIST	BIST	BIST	BIST	BIST	BIST
194	SASA	XU100	BIST	BIST	XU050	XU050	XU050	XU050
195	SAYAS	BIST	BIST	BIST	BIST	BIST	BIST	BIST
196	SEKUR	BIST	BIST	BIST	BIST	BIST	BIST	BIST
197	SELEC	BIST	BIST	BIST	BIST	BIST	BIST	XU050
198	SELGD	BIST	BIST	BIST	BIST	BIST	BIST	BIST
199	SERVE	BIST	BIST	BIST	BIST	BIST	BIST	BIST
200	SEYKM	-	BIST	BIST	BIST	BIST	BIST	BIST
201	SILVR	BIST	BIST	BIST	BIST	BIST	BIST	BIST
202	SKTAS	BIST	BIST	BIST	BIST	BIST	BIST	BIST
203	SNKRN	-	BIST	BIST	BIST	BIST	BIST	BIST
204	SNPAM	BIST	BIST	BIST	BIST	BIST	BIST	BIST
205	SODSN	BIST	BIST	BIST	BIST	BIST	BIST	BIST
206	SONME	BIST	BIST	BIST	BIST	BIST	BIST	BIST
207	TACTR	BIST	BIST	BIST	BIST	BIST	BIST	BIST
208	TATGD	XU100	XU050	XU050	XU050	XU100	BIST	XU100
209	TBORG	BIST	BIST	BIST	BIST	BIST	BIST	BIST
210	TCELL	XU030	XU030	XU030	XU030	XU030	XU030	XU030
211	TEKTU	BIST	BIST	BIST	BIST	BIST	BIST	BIST
212	TETMT	BIST	BIST	BIST	BIST	BIST	BIST	BIST
213	TGSAS	BIST	BIST	BIST	BIST	BIST	BIST	BIST
214	THYAO	XU030	XU030	XU030	XU030	XU030	XU030	XU030

Id	Code	2014	2015	2016	2017	2018	2019	2020
215	TIRE	BIST	BIST	BIST	BIST	BIST	BIST	BIST
216	TKNSA	XU100	XU100	BIST	XU100	BIST	BIST	BIST
217	TMPOL	BIST	BIST	BIST	BIST	BIST	BIST	BIST
218	TMSN	XU100	XU100	XU100	XU100	XU100	XU100	XU100
219	TOASO	XU030	XU030	XU030	XU030	XU030	XU030	XU050
220	TSPOR	BIST	BIST	XU100	XU100	BIST	BIST	BIST
221	TTKOM	XU030	XU030	XU030	XU030	XU030	XU030	XU030
222	TTRAK	XU050	XU100	XU100	XU100	XU100	XU050	XU100
223	TUCLK	BIST	BIST	BIST	BIST	BIST	BIST	BIST
224	TUKAS	BIST	BIST	BIST	BIST	BIST	XU100	BIST
225	TUPRS	XU030	XU030	XU030	XU030	XU030	XU030	XU030
226	TURGG	-	BIST	BIST	BIST	BIST	BIST	BIST
227	ULAS	BIST	BIST	BIST	BIST	BIST	BIST	BIST
228	ULKER	XU030	XU030	XU030	XU050	XU100	XU050	XU050
229	ULUSE	BIST	BIST	BIST	BIST	BIST	BIST	BIST
230	ULUUN	BIST	BIST	BIST	BIST	BIST	BIST	BIST
231	USAK	BIST	BIST	BIST	BIST	BIST	BIST	BIST
232	UTPYA	BIST	BIST	BIST	BIST	BIST	BIST	BIST
233	UZERB	BIST	BIST	BIST	BIST	BIST	BIST	BIST
234	VAKKO	BIST	BIST	BIST	BIST	BIST	BIST	BIST
235	VANGD	BIST	BIST	BIST	BIST	BIST	BIST	BIST
236	VESBE	BIST	XU100	XU100	BIST	BIST	BIST	BIST
237	VESTL	XU050	XU050	XU050	XU050	XU050	XU050	XU050
238	VKING	BIST	BIST	BIST	BIST	BIST	BIST	BIST

Id	Code	2014	2015	2016	2017	2018	2019	2020
239	YAPRK	BIST	BIST	BIST	BIST	BIST	BIST	BIST
240	YATAS	BIST	BIST	BIST	XU100	XU050	XU050	XU100
241	YAYLA	BIST	BIST	BIST	BIST	BIST	BIST	BIST
242	YBTAS	BIST	BIST	BIST	BIST	BIST	BIST	BIST
243	YONGA	BIST	BIST	BIST	BIST	BIST	BIST	BIST
244	YUNSA	BIST	BIST	BIST	BIST	BIST	BIST	BIST
245	YYAPI	BIST	BIST	BIST	BIST	BIST	BIST	BIST
246	ZOREN	XU100	XU100	XU100	XU050	XU050	XU050	XU100

Appendix E: The sectors and subsectors of each company in the dataset

Id	Code	Main Sector	Subsector
1	ACSEL	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
2	ADEL	Manufacturing	Manufacturing of wood-based products
3	ADESE	Real estate activities	
4	AEFES	Manufacturing	Manufacturing of food, beverage, tobacco
5	AFYON	Manufacturing	Manufacturing of products based on stone and earth
6	AKCNS	Manufacturing	Manufacturing of products based on stone and earth
7	AKENR	Electricity Gas Water	
8	AKSA	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
9	AKSEN	Electricity Gas Water	
10	AKSUE	Electricity Gas Water	
11	ALCAR	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
12	ALCTL	Technology	
13	ALKA	Manufacturing	Manufacturing of wood-based products
14	ALKIM	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
15	ALMAD	Mining and quarrying	
16	ANELE	Construction and public works	
17	ARCLK	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
18	ARENA	Technology	
19	ARMDA	Technology	
20	ARSAN	Manufacturing	Manufacturing of textile
21	ASELS	Technology	
22	ASUZU	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles

Id	Code	Main Sector	Subsector
23	ATEKS	Manufacturing	Manufacturing of textile
24	AVOD	Manufacturing	Manufacturing of food, beverage, tobacco
25	AVTUR	Wholesale and retail trade, restaurant, and hotels	
26	AYCES	Wholesale and retail trade, restaurant, and hotels	
27	AYEN	Electricity Gas Water	
28	AYES	Manufacturing	Manufacturing of basic metal
29	AYGAZ	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
30	BAGFS	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
31	BAKAB	Manufacturing	Manufacturing of wood-based products
32	BALAT	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
33	BANVT	Manufacturing	Manufacturing of food, beverage, tobacco
34	BASCM	Manufacturing	Manufacturing of products based on stone and earth
35	BEYAZ	Transportation, storage, communication	
36	BFREN	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
37	BIMAS	Wholesale and retail trade, restaurant, and hotels	
38	BIZIM	Wholesale and retail trade, restaurant, and hotels	
39	BJKAS	Education, health, and other social services	
40	BLCYT	Manufacturing	Manufacturing of textile
41	BNTAS	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
42	BOSSA	Manufacturing	Manufacturing of textile
43	BRISA	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
44	BRKO	Manufacturing	Manufacturing of textile

Id	Code	Main Sector	Subsector
45	BRKSN	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
46	BRMEN	Manufacturing	Manufacturing of textile
47	BRSAN	Manufacturing	Manufacturing of basic metal
48	BSOKE	Manufacturing	Manufacturing of products based on stone and earth
49	BTCIM	Manufacturing	Manufacturing of products based on stone and earth
50	BUCIM	Manufacturing	Manufacturing of products based on stone and earth
51	BURCE	Manufacturing	Manufacturing of basic metal
52	BURVA	Manufacturing	Manufacturing of basic metal
53	CASA	Wholesale and retail trade, restaurant, and hotels	
54	CCOLA	Manufacturing	Manufacturing of food, beverage, tobacco
55	CELHA	Manufacturing	Manufacturing of basic metal
56	CEMAS	Manufacturing	Manufacturing of basic metal
57	CEMTS	Manufacturing	Manufacturing of basic metal
58	CIMSA	Manufacturing	Manufacturing of products based on stone and earth
59	CLEBI	Transportation, storage, communication	
60	CMBTN	Manufacturing	Manufacturing of products based on stone and earth
61	CMENT	Manufacturing	Manufacturing of products based on stone and earth
62	CRFSA	Wholesale and retail trade, restaurant, and hotels	
63	CUSAN	Manufacturing	Manufacturing of basic metal
64	DAGI	Manufacturing	Manufacturing of textile
65	DARDL	Manufacturing	Manufacturing of food, beverage, tobacco
66	DERIM	Manufacturing	Manufacturing of textile
67	DESA	Manufacturing	Manufacturing of textile

Id	Code	Main Sector	Subsector
68	DESPC	Technology	
69	DEVA	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
70	DGATE	Technology	
71	DGKLB	Manufacturing	Manufacturing of wood-based products
72	DIRIT	Manufacturing	Manufacturing of textile
73	DITAS	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
74	DMSAS	Manufacturing	Manufacturing of basic metal
75	DOAS	Wholesale and retail trade, restaurant, and hotels	
76	DOBUR	Manufacturing	Manufacturing of wood-based products
77	DOGUB	Manufacturing	Manufacturing of products based on stone and earth
78	DOKTA	Manufacturing	Manufacturing of basic metal
79	DURDO	Manufacturing	Manufacturing of wood-based products
80	DYOBY	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
81	EDIP	Construction and public works	
82	EGEEN	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
83	EGGUB	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
84	EGPRO	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
85	EGSER	Manufacturing	Manufacturing of products based on stone and earth
86	EKIZ	Manufacturing	Manufacturing of food, beverage, tobacco
87	EMKEL	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
88	EMNIS	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles

Id	Code	Main Sector	Subsector
89	ENKAI	Construction and public works	
90	EPLAS	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
91	ERBOS	Manufacturing	Manufacturing of basic metal
92	EREGL	Manufacturing	Manufacturing of basic metal
93	ERSU	Manufacturing	Manufacturing of food, beverage, tobacco
94	ESCOM	Technology	
95	ETILR	Wholesale and retail trade, restaurant, and hotels	
96	FENER	Education, health, and other social services	
97	FLAP	Administrative and support services	
98	FMIZP	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
99	FRIGO	Manufacturing	Manufacturing of food, beverage, tobacco
100	FROTO	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
101	GEDZA	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
102	GENTS	Manufacturing	Manufacturing of wood-based products
103	GEREL	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
104	GOLTS	Manufacturing	Manufacturing of products based on stone and earth
105	GOODY	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
106	GSDDE	Transportation, storage, communication	
107	GSRAY	Education, health, and other social services	
108	GUBRF	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
109	HATEK	Manufacturing	Manufacturing of textile
110	HEKTS	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics

Id	Code	Main Sector	Subsector
111	HURGZ	Manufacturing	Manufacturing of wood-based products
112	IDEAS	Professional, scientific, and technical activities	
113	IHEVA	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
114	IHGZT	Manufacturing	Manufacturing of wood-based products
115	IHLGM	Real estate activities	
116	INDES	Technology	
117	INTEM	Wholesale and retail trade, restaurant, and hotels	
118	IPEKE	Mining and quarrying	
119	IZFAS	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
120	IZMDC	Manufacturing	Manufacturing of basic metal
121	IZTAR	Agriculture, forestry, and fishing	
122	JANTS	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
123	KAPLM	Manufacturing	Manufacturing of wood-based products
124	KAREL	Technology	
125	KARSN	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
126	KARTN	Manufacturing	Manufacturing of wood-based products
127	KATMR	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
128	KENT	Manufacturing	Manufacturing of food, beverage, tobacco
129	KERVT	Manufacturing	Manufacturing of food, beverage, tobacco
130	KLMSN	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
131	KNFRT	Manufacturing	Manufacturing of food, beverage, tobacco
132	KONYA	Manufacturing	Manufacturing of products based on stone and earth

Id	Code	Main Sector	Subsector
133	KORDS	Manufacturing	Manufacturing of textile
134	KOZAA	Mining and quarrying	
135	KOZAL	Mining and quarrying	
136	KRDMD	Manufacturing	Manufacturing of basic metal
137	KRONT	Technology	
138	KRSTL	Manufacturing	Manufacturing of food, beverage, tobacco
139	KRTEK	Manufacturing	Manufacturing of textile
140	KSTUR	Wholesale and retail trade, restaurant, and hotels	
141	KUTPO	Manufacturing	Manufacturing of products based on stone and earth
142	KUYAS	Construction and public works	
143	LINK	Technology	
144	LKMNH	Education, health, and other social services	
145	LOGO	Technology	
146	LUKSK	Manufacturing	Manufacturing of textile
147	MAALT	Wholesale and retail trade, restaurant, and hotels	
148	MAKTK	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
149	MARTI	Wholesale and retail trade, restaurant, and hotels	
150	MEGAP	Manufacturing	Manufacturing of textile
151	MEPET	Wholesale and retail trade, restaurant, and hotels	
152	MERIT	Wholesale and retail trade, restaurant, and hotels	
153	MERKO	Manufacturing	Manufacturing of food, beverage, tobacco
154	MGROS	Wholesale and retail trade, restaurant, and hotels	
155	MIPAZ	Wholesale and retail trade, restaurant, and hotels	

Id	Code	Main Sector	Subsector
156	MNDRS	Manufacturing	Manufacturing of textile
157	MRSHL	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
158	NETAS	Technology	
159	NIBAS	Manufacturing	Manufacturing of products based on stone and earth
160	NUHCM	Manufacturing	Manufacturing of products based on stone and earth
161	ODAS	Electricity Gas Water	
162	OLMK	Manufacturing	Manufacturing of wood-based products
163	ORGE	Construction and public works	
164	ORMA	Manufacturing	Manufacturing of wood-based products
165	OTKAR	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
166	OYAKC	Manufacturing	Manufacturing of products based on stone and earth
167	OYLUM	Manufacturing	Manufacturing of food, beverage, tobacco
168	OZBAL	Manufacturing	Manufacturing of basic metal
169	OZRDN	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
170	PAMEL	Electricity Gas Water	
171	PARSN	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
172	PENGD	Manufacturing	Manufacturing of food, beverage, tobacco
173	PETKM	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
174	PETUN	Manufacturing	Manufacturing of food, beverage, tobacco
175	PGSUS	Transportation, storage, communication	
176	PINSU	Manufacturing	Manufacturing of food, beverage, tobacco
177	PKART	Technology	

Id	Code	Main Sector	Subsector
178	PKENT	Wholesale and retail trade, restaurant, and hotels	
179	PNSUT	Manufacturing	Manufacturing of food, beverage, tobacco
180	POLTK	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
181	PRKAB	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
182	PRKME	Mining and quarrying	
183	PRZMA	Manufacturing	Manufacturing of wood-based products
184	PSDTC	Wholesale and retail trade, restaurant, and hotels	
185	RODRG	Manufacturing	Manufacturing of textile
186	ROYAL	Manufacturing	Manufacturing of textile
187	RTALB	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
188	RYSAS	Transportation, storage, communication	
189	SAMAT	Manufacturing	Manufacturing of wood-based products
190	SANEL	Construction and public works	
191	SANFM	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
192	SANKO	Wholesale and retail trade, restaurant, and hotels	
193	SARKY	Manufacturing	Manufacturing of basic metal
194	SASA	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
195	SAYAS	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
196	SEKUR	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
197	SELEC	Wholesale and retail trade, restaurant, and hotels	
198	SELGD	Manufacturing	Manufacturing of food, beverage, tobacco
199	SERVE	Education, health, and other social services	

Id	Code	Main Sector	Subsector
200	SEYKM	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
201	SILVR	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
202	SKTAS	Manufacturing	Manufacturing of textile
203	SNKRN	Administrative and support services	
204	SNPAM	Manufacturing	Manufacturing of textile
205	SODSN	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
206	SONME	Real estate activities	
207	TACTR	Agriculture, forestry, and fishing	
208	TATGD	Manufacturing	Manufacturing of food, beverage, tobacco
209	TBORG	Manufacturing	Manufacturing of food, beverage, tobacco
210	TCELL	Transportation, storage, communication	
211	TEKTU	Wholesale and retail trade, restaurant, and hotels	
212	TETMT	Manufacturing	Manufacturing of food, beverage, tobacco
213	TGSAS	Wholesale and retail trade, restaurant, and hotels	
214	THYAO	Transportation, storage, communication	
215	TIRE	Manufacturing	Manufacturing of wood-based products
216	TKNSA	Wholesale and retail trade, restaurant, and hotels	
217	TMPOL	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
218	TMSN	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
219	TOASO	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
220	TSPOR	Education, health, and other social services	
221	TTKOM	Transportation, storage, communication	

Id	Code	Main Sector	Subsector
222	TTRAK	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
223	TUCLK	Manufacturing	Manufacturing of basic metal
224	TUKAS	Manufacturing	Manufacturing of food, beverage, tobacco
225	TUPRS	Manufacturing	Manufacturing of chemicals, petroleum products, and plastics
226	TURGG	Construction and public works	
227	ULAS	Wholesale and retail trade, restaurant, and hotels	
228	ULKER	Manufacturing	Manufacturing of food, beverage, tobacco
229	ULUSE	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
230	ULUUN	Manufacturing	Manufacturing of food, beverage, tobacco
231	USAK	Manufacturing	Manufacturing of products based on stone and earth
232	UTPYA	Electricity Gas Water	
233	UZERB	Wholesale and retail trade, restaurant, and hotels	
234	VAKKO	Wholesale and retail trade, restaurant, and hotels	
235	VANGD	Manufacturing	Manufacturing of food, beverage, tobacco
236	VESBE	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
237	VESTL	Manufacturing	Manufacturing of metal products, electrical equipment, motor vehicles
238	VKING	Manufacturing	Manufacturing of wood-based products
239	YAPRK	Agriculture, forestry, and fishing	
240	YATAS	Manufacturing	Manufacturing of textile
241	YAYLA	Construction and public works	
242	YBTAS	Manufacturing	Manufacturing of products based on stone and earth
243	YONGA	Manufacturing	Manufacturing of wood-based products

Id	Code	Main Sector	Subsector
244	YUNSA	Manufacturing	Manufacturing of textile
245	YYAPI	Construction and public works	
246	ZOREN	Electricity Gas Water	