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Examining the Association between Environmental Performance and the Company's Ability to Access Bank Credit: Evidence from Egyptian Companies

اختبار العلاقة بين الأداء البيئي وقدرة الشركة على الحصول على الائتمان المصرفي: دليل من الشركات المصرية

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مستخلص البحث

نظرا لأن الاقتصاد المصري يمثل نموذجا للاقتصاديات النامية، تهدف هذه الدراسة إلي اختبار العلاقة بين الأداء البيئي وقدرة الشركة على الحصول على قروض (ائتمان) مصرفية. وذلك للشركات المقيدة في البورصة المصرية في الفترة من ٢٠١٣ إلى ٢٠٢٢. وتتفق أهمية هذه القضية مع رؤية مصر ٢٠٢٠-٢٠٣٠، حيث بدأت مبادرة Go Green في مصر عام ٢٠٢٢.

تناولت العديد من الدراسات العلاقة بين الأداء المالي للشركة والحصول على الائتمان إلا أن هناك القليل من الدراسات التي تناولت على وجه التحديد علاقة الأداء البيئي والحصول علي الائتمان المصرفي. لذلك ، فإن المجال المثير للدراسة هو كيفية تأثير الأداء البيئي على قدرة الشركة على الحصول على قروض مصرفية في الدول النامية ، نظرا لعدم وجود إجماع واضح في الدراسات السابقة حول تلك العلاقة من حيث كونها خطية او غير خطية وخصائص الدول سواء كانت متقدمة او نامية.

تم استخدام نموذج المربعات الصغرى المرجحة لاختبار العلاقة. وكشفت نتائج التحليلات الإحصائية أن الأداء البيئي يؤثر بشكل إيجابي على حصول الشركة على الائتمان المصرفي، وهذا يتوافق نظريا مع نظرية أصحاب المصلحة ونظرية الإشارات. ويوضح الارتباط الإيجابي بين الأداء البيئي والائتمان المصرفي كيف تقدر الشركات المصرية المدرجة مساهمتها في حماية البيئة وتستخدم البنوك التي تكافئ الشركات الصديقة للبيئة للحصول على التمويل الذي تحتاجه. كما يوضح مدى الجهد الذي بذلته مصر بشكل عام والبنك المركزي المصري بشكل خاص في السعي لتنفيذ سياسة الائتمان الأخضر، والتي تأتي ضمن خطة مصر الاستراتيجية للتحول نحو الاقتصاد الأخضر في الشرق الأوسط.

الكلمات المفتاحية: الائتمان المصرفي؛ الاداء البيئي؛ الايزو ١٤٠٠١؛ الاقتصاد الاخضر؛ النمو المستدام.

Examining the Association between Environmental Performance and the Company's Ability to Access Bank Credit: Evidence from Egyptian Companies

Abstract:

With Egypt's economy serving as a model for developing countries, this study investigates the relationship between environmental performance and a company's ability to obtain bank loans. For the period from 2013 - 2022, an empirical analysis is applied to the Egyptian listed companies. The importance of this issue is consistent with Egypt's vision 2020-2030. Go green initiative started in Egypt in 2022.

Therefore, a compelling area for studying will be how environmental performance influences a company's ability to obtain bank loans in developing nations, given the lack of consensus evident in earlier studies about this relationship in terms of being linear or non-linear and the characteristics of countries, whether developed or developing.

The weighted least squares model was used as a base for the investigation. The statistical analyses' findings revealed that environmental performance positively affects the company's access to bank credit, and this is theoretically consistent with stakeholder theory and signaling theory. The positive correlation between environmental performance and bank credit demonstrates how the Egyptian listed companies value their contribution to environmental protection and use banks that reward environmentally friendly businesses to get the financing they require. It also shows the extent of the effort made by Egypt in general and the Central Bank of Egypt in particular in seeking to implement the green credit policy, which comes within Egypt's strategic plan to transform towards a green economy in the Middle East.

Keywords: Bank credit; Environmental performance; ISO 14001; Green economy; Sustainable growth.

1. Introduction

To maintain a balance between economic growth and environmental conservation, the principle of sustainable development was evolved. Environmental degradation is a serious challenge to sustainable and environmentally friendly development because of economic growth of developing nations. (Huang and Ji, 2017; Tian and Lin, 2019). That is why governments and financial institutions in those countries seek to coordinate economic growth, protect the environment, and act as an engine for corporate environmental responsibility by removing credit restrictions, reducing its cost, and adopting green financial policies (Tian and Lin, 2019; Zhang et al., 2019; Zhou et al. 2022; Zhang et al., 2023).

Non-financial performance in general and the way firms behave in terms of the environment particularly have attracted the attention of the public worldwide (Abrams et al., 2021 and Ghosh et al., 2022).

Along with financial performance, companies should also consider environmental performance, where it helps companies improve information transparency; enhances stakeholder engagement; raising stock prices; and improving competitive advantage while reducing company risks and capital costs (Karplus et al., 2021; Zhu et al, 2022; Ho et al, 2021). Companies with outstanding environmental performance are seen as carrying more leverage (Sharfman and Fernando, 2008), access to financial markets (Farza et al., 2021), and a reduced level of risk (Godfrey et al., 2009). The relationship between business performance and the environment must fundamentally be strategic. The relationship between business performance and the environment must ultimately be sustainable and planned. (Li et al, 2023). In line with this notion, companies that incorporate environmental goals into their organizational strategy are said to be using sustainable business methods (Dijkstra et al., 2020; Boakye et al, 2021).

By more effectively allocating capital to environmentally friendly businesses and reducing credit allocations to businesses with poor environmental performance, the credit policy tied to environmental performance seeks to allocate bank credit while causing a shock to the cost of external financing. (Hong et al., 2021; Lee and Lee, 2022; Li et al., 2022; Wei Su et al, 2022; and Zhao et al, 2023). Contractual terms like the need for collateral may be affected by environmental performance. High collateral requirements discourage businesses from requesting bank loans (Berger et al., 2011).

Researchers are attempting to determine how environmental performance influences a company's access to bank credit in poor countries because some businesses are under more financial pressure than others. This will be an interesting research question.

The rest of this study is structured as follows: The efforts Egypt has made towards sustainable development are discussed in section 2; the literature review and developing hypotheses are covered in section 3. Section 4 outlines the problem of the study, while section 5 clarifies research's questions, importance, and objectives. The research methodology including sample selection, period of the study and variables' measures will be explained in section 6. Section 7 introduces research hypotheses.

Section 8 presents the data analysis, whereas section 9 presents the results. However, section 10 identifies research contributions and finally, section 11 presents conclusion & future recommendations.

2. Egypt's Efforts for Sustainable Development

Egypt is taking successive steps and measures to lead the transition to a green economy in the Middle East region. Egypt launched the National Climate Change Strategy 2050 at the Conference of the Parties to the United Nations Climate Change Convention (COP26). Egypt also hosted the Climate Summit in 2022. Egypt sought to improve the infrastructure for financing climate activities to achieve sustainable economic growth. By working to promote green banking, green credit lines, and promoting innovative financing mechanisms that give priority to adaptation measures, such as green bonds, which are debt instruments issued to obtain funds allocated to finance projects related to the climate or environment. The initial offering of sovereign green bonds in the Middle East and North Africa was made by The Ministry of Finance in Egypt. in September 2020, which contributes to putting Egypt on the path of sustainable financing (Egypt State Information Service, central bank of Egypt).

Numerous industries, including those in the energy, agricultural, waste-management, and water sectors, benefit from the green economy. In addition to their function in lowering pollution and environmental degradation, their projects also help to create jobs, raise living standards, boost the competitiveness of the national economy, and reduce poverty.

The International Network for Greening the Financial System (NGFS), one of the most significant specialized organizations in the world around the green economy, welcome Egypt's Central Bank, it was announced in 2022. The multinational network works to implement the tenets of the Paris Climate Agreement and the United Nations's sustainable development goals. Through sharing experiences and implementing global best practices, it also intends to strengthen the financial industry's role in managing environmental and climate change risks and providing funding for green initiatives.

In addition to the Central Bank's efforts to preserve banking stability, promote the green economy in line with national trends towards achieving sustainable growth in all fields, and provide the necessary financing for projects that contribute to the desired development, joining the International Network for the Green Financial System is a significant step. The Central Bank has already taken several actions in this direction, including issuing the guiding principles for sustainable financing in July 2021. These principles call for developing the necessary skills and knowledge, promoting sustainable finance, involving stakeholders, managing climate change risk, incorporating sustainability principles into the bank's internal operations and work, and creating reports.

Egypt's hosting of the COP27 climate summit in 2022 and issuing green bonds is an indication that the government is pushing for a greener future that includes more green financing in the coming years.

3. Review of the Literature and Development of Hypotheses

3.1. Theoretical Framework

According to *the stakeholder theory*, holds that Credit limitations on polluting businesses lessen the conflict between businesses and stakeholders. (Zhang et al., 2021; Wen et al., 2021). As a result, it may be said that environmental performance and a company's ability to obtain bank financing are positively correlated.

Stakeholder theory shows that environmental performance is a focal point for investors, regulators, and stakeholders that helps companies lower the likelihood of dispute with stakeholders and achieve more sustainable development (Liang and Langbein, 2021).

According to Boakye et al. (2021), stakeholders will have a more favorable opinion of businesses that exhibit high environmental performance, have fewer negative reactions to the unfavorable events that these businesses encounter, and be more willing to supply their own resources. According to Li et al. (2023) Stakeholders have the power to exert pressure on an organization to alter its business practices. Responding to stakeholder pressures can help an organization gain a competitive edge by improving financial performance and building credibility with stakeholders. Accordingly, signaling theory postulates that businesses take the initiative to scale back their polluting initiatives in order to secure funding and to portray a "green" image to the general public and banks. According to the theory of signals, it can be inferred that there is a positive correlation between the environmental performance and the company's ability to obtain bank credit (Hu et al., 2021).

Other research examined the connection between environmental performance and a company's ability to obtain credit using the natural resource-based view (NRBV), which assumes achieving good environmental performance necessitates reallocating resources to environmental goals. As a result, it can be said that there is a bad correlation between a company's environmental performance and its ability to obtain bank loans (Boakye et al., 2021; and Zhu et al., 2022).

Other studies dealt with the Socioemotional Wealth (SEW) theory. Li et al., (2023) concluded that it is possible to explain the connection between environmental performance and business financial success. through a U-shape since the initial expense of investing in environmental protection would result in declining corporate earnings show that businesses sometimes sacrifice financial gains to accomplish non-financial goals. It may be deduced that there is a non-linear link, represented by the U-shape, between the company's ability to obtain financing and how well it protects the environment. The relationship is initially negative up until a certain point before becoming positive.

3.2. *The practical impact of the application of a bank credit policy related to environmental performance.*

There are differing views among researchers regarding the practical effects of applying credit policy related to environmental performance. Some of them contend that the application of credit policy associated with environmental performance fosters better risk management, enhances the credibility of financial institutions, and slows the growth of non-performing loans, all of which have a favorable impact on the profits made by banks (Xu, 2022; and Zhou et al., 2022).

According to Zhang (2021) a company's reputation suffers when it performs poorly in terms of the environment. This results in uncertainty about the company's ability to continue operating and to generate profits, which exposes banks to both direct and indirect risks. Additionally, it faces reputational concerns because of funding unsustainable businesses. Credit risks can also arise because of the assets that banks use as collateral for loans losing value and harming the environment.

According to Su et al., (2022), companies that practice environmental responsibility are more likely to be given credit and have fewer collateral requirements. While Li et al., (2022) discovered that following the introduction of a credit-associated policy by performance, the volume of debt financing of highly contaminated enterprises reduces. According to Liu et al., (2019), the implementation of a performance-related credit strategy may decrease the ability of highly contaminated enterprises to obtain funding, resulting in lower bank borrowing and a shorter debt maturity.

The performance of the bank will be negatively impacted, according to researchers who have a different point of view, because financial institutions face difficulties with high risk, poor earnings, and high costs due to the lengthy duration and low interest rate (Song et al., 2019).

According to the previous review, there is no consensus regarding the practical effects of adopting the credit system for environmental performance. Considering this, the main hypothesis can be formulated as follows:

"There is a statistically significant relationship between environmental performance and the company's access to bank credit."

The researchers derived the following observations considering the literature analysis discussed above:

- There were numerous theories that addressed the connection between environmental performance and access to financing for the business. All these theories agreed that environmental performance influenced the company's access to credit, but they disagreed about the pattern of this effect.

- Previous studies considers different perspectives when studying the link between environmental sustainability and a business's ability to obtain bank credit, especially when addressing that relationship in developed and developing countries, where these studies found an impact, but differed on the pattern of this effect.

- Previous studies have produced conflicting results regarding the actual effects of applying the bank credit policy in relation to environmental performance; some of them hold that doing so has a positive impact on financial institutions' performance, while others hold that it has a negative impact.

This study intends to determine the association between environmental performance and a company's ability to obtain bank financing in a developing economy for companies listed on the Egyptian Stock Exchange.

4. Research Problem

According to numerous studies (Khan et al., 2019; Wellalage and Kumar, 2021; and Zhang, 2021) there is a strong correlation between the environment and finance, and one of the key factors influencing lending decisions and terms is the environmental performance of the company. This is because the availability of finance prevents environmental degradation. Some companies face more financing constraints than others, which prompts managers to bear some risks when making investment decisions to achieve high returns and increase shareholders' wealth, in accordance with the principle of maximizing the interest of shareholders (Chen and Ma, 2011). While stakeholder theory indicates that companies with good environmental performance attract stakeholders and investors who prefer to invest in environmentally friendly companies, which helps move stock prices and market value of companies (Zhang et al, 2022). According to Wellalag et al., (2022), COVID-19 has caused financial strain and shocks for most of the world's nations. If trust between a corporation and its stakeholders is built on environmental performance, this can be seen of as a guarantee during times of crises like epidemics.

The financial gap linked to environmental performance could restrict business expansion. Many businesses have discovered ways to avoid tempting investment possibilities due to the inability to obtain external financing; this phenomenon is more prevalent among highly polluting businesses (Ho et al., 2020). Due to their limited access to financing, businesses in nations with significant climate risks also tend to have low levels of debt in relation to their overall assets or equity (Kling et al., 2021).

Prior studies on the connection between environmental performance and bank lending constraints did not reach a consensus, and this was attributed to several reasons. A nonlinear link was discovered by several of them (Lahouel et al., 2020). Others highlighted the diversity of the nations in which businesses operate as well as the features of businesses (Lassala et al., 2017). Although the connection between a company's financial performance and capital restrictions has been the subject of numerous research. Few studies, however, have particularly explored the links between environmental performance and credit restrictions. Therefore, a curious topic for investigation would be how environmental performance influences a company's ability to obtain finance from banks in developing nations.

It can be concluded from the abovementioned analysis that the connection between a company's environmental performance and its ability to obtain bank credit is a very rich topic and deserves further research due to the existence of a noticeable

disagreement in previous studies about that relationship in terms of being linear or non-linear and the characteristics of countries, whether developed or developing. Using data from the Egyptian stock market, as a developing economy, we examine the influence of a company's environmental performance on its ability to obtain bank credit.

5. Research Questions, Importance and Objectives

5.1. Research Questions:

The present research attempts to discover a link between environmental performance and a company's ability to obtain bank credit for the Egyptian listed companies. By reviewing the finance literature, the main research question to be investigated could be stated as follows:

"How is the company's ability to get bank loans impacted by its environmental performance?"

This question could be explored and answered through the following sub-questions:

1. What are the fundamental factors in the Egyptian market to determine the company's ability to access bank credit?

2. How does the company's environmental performance affect its ability to obtain bank loans in the Egyptian context?

3. Do banks reward environmentally friendly companies when making lending decisions?

5.2. Research Importance

The research adds new evidence to the finance literature on how a company's environmental performance affects its ability to obtain bank credit and provides important evidence for financial managers as well as investors.

- Using ISO 14001 to measure and evaluate a company's environmental performance due to the availability of its information, which is considered one of the good measures of environmental performance.

- Focusing on the Egyptian market as an emerging market that differs from the markets of developed countries, as the Egyptian market is a market in which companies rely primarily on providing their financing needs through financial institutions, especially banks. Therefore, the Egyptian market provides a good environment to understand how a company's environmental performance impacts credit availability.

5.3. Research Objectives

The main goal of the current research is investigating how a company's environmental performance affects its ability to obtain bank loans using data from the Egyptian stock market. This Main objective could be achieved through the following sub-objectives:

- Identifying the determinants of obtaining bank credit for the Egyptian companies' market.

- Identifying how the company's environmental performance restricts its ability to obtain bank credit in the Egyptian market.

- Studying whether banks operating in the Egyptian banking sector reward environmentally friendly companies when making lending decisions or not.

6. Research Methodology

6.1. Sample Selection

The population of this study consists of Egyptian non-financial companies that are listed on the EGX 100. Due to the accessibility of the data, the sample is a control sample. A sample of Egyptian companies' annual reports from January 2013 to December 2022 were employed to gather the data. The final sample is made up of 720 firm-year observations for 72 listed Egyptian companies, whose annual reports were gathered using the Thomson Reuters Database, Mubasher website, investing website, and companies' websites. The sample selection criteria will be shown as follows:

1. The banking sector and the financial services sector were eliminated from the sample due to their special financial nature.

2. Companies for which data related to research variables are not available during the research period were excluded from the sample.

3. Listed companies but not actively traded also excluded.

4. Excluding companies that have not received loans from banks.

6.2. Variables' Measurement:

6.2.1. Dependent Variable (Bank Credit)

Previous studies used leverage (BC) to measure the company's ability to obtain credit, which is the ratio of the company's total debt to its total assets. If companies are financially constrained by environmental performance, they will not be able to obtain bank credit and will therefore have low leverage – but they may still be risky (Kling et al, 2021).

The ability of the company to obtain bank credit was measured by the research using the ratio of bank loans to total assets. Additionally, the dependent variables in the model are all lagged by one period to prevent endogeneity issues brought on by reverse causation (Wang et al., 2008).

6.2.2. Independent Variables

6.2.2.1. Company's Environmental Performance

Previous studies relied on many proxies used to measure companies' environmental performance. For example, a questionnaire about environmental performance that is

specific to green investments was created by Clemens (2006). Pollution rating was the only metric employed by Earnhart and Lizal (2007) for measuring environmental performance. As a measure of environmental performance, Naila (2013) employed regulations pertaining to the environment.

Zhang, (2021) relied on the extent to which companies use energy efficiency measures with pollution as a measure of environmental performance. Financial institutions, especially banks, view companies that have these measures to fight pollution as achieving better environmental performance that helps them obtain credit.

Studies have shown that a company's ISO 14001 certification, which requires businesses to mitigate the effects of their activities, reflects strong environmental performance (Tian and Lin, 2019).

Yuan et al., (2022) and Zhao et al., (2023) also used a dummy variable to measure environmental performance, where highly polluting companies get one while other companies get zero.

some other studies (Heras-Saizarbitoria et al., 2011) have employed third-party certification as a measure of a company's environmental performance. Although some nations lack data on the discharge of pollutants, other studies used the emission of contaminants. Additionally, according to some studies (Monasterolo and De Angelis, 2020; Bolton and Kacperczyk, 2021; and Peng et al., 2021), using a single type of pollution discharge to measure a company's environmental performance is complicated.

Li et al., (2023) agreed in using an index of environmental practices, consisting of 10 elements that are verified to be available in the company. Boakye et al., (2021) used an indicator to measure environmental performance. The use of a variety of environmental performance indicators as a performance evaluation tool is done so to give a more comprehensive framework that can be used for future research.

Our research relied on the use of the company's ISO 14001 certification for environmental considerations as a measure of the company's good environmental performance, since it takes one for companies holding an ISO 14001and zero otherwise.

6.2.3. Control Variables:

To solve the problem of omitted variables, we include many control variables in the model (Wellalage et al, 2022).

1. Company Size (SIZE)

The research relied on a measure of the size of the company, we use the natural logarithm of total assets, in line with previous studies (Hoang et al, 2020; Zhang & Wellalage, 2022).

2. Age of the Company

The study relies on calculating the natural logarithm of the difference between the year of observation and the year of establishment to calculate the age of the company (Hao et al, 2019; Ghosh& Dutta, 2022; and Zhang and Wellalage, 2022).

3. Tangible Assets (TANG)

According to earlier studies, the research relied on employing the ratio of tangible assets to total assets as a measure of tangible assets (Lin et al., 2018; and Chen & Matousek, 2020).

4. Return on Assets (ROA)

The research relied on using the ratio of net income before extraordinary items to total assets (Lin et al., 2018; and Chen & Matousek, 2020).

5. Corporate Growth

Research has relied on using sustainable growth rate as measure of potential expansions by identifying the percentage increase in sales revenue (Lin et al., 2018; and Chen & Matousek, 2020).

6. Cash Holding (Cash)

The research relied on using the cash to total assets ratio (Lin et al., 2018; and Chen & Matousek, 2020).

7. Corporate Governance

Since corporate finance and environmental performance are affected by corporate governance (Lin, Ma, 2011; and Amore & Bennedsen, 2016). The research relied on the use of agency cost, which is calculated by dividing sales revenues by the total of administrative and sales expenses.

8. Cash Flow Deficit

The research relied on the use of a dummy variable to measure the cash flow deficit, which takes one if the company suffers from a deficit and zero otherwise (Ho et al, 2021).

Table (1)
Study Variables and Measurements

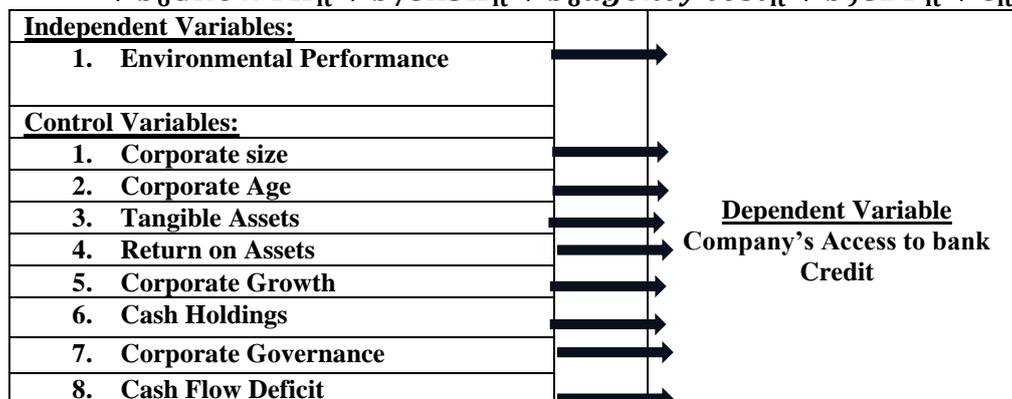| Variables	Name & Abbreviation	Specification	Reference	Expected Sign
Dependent variable	Leverage (LEV)	the ratio of a firm's total debt to total assets.	Kling et al., (2021)	
Independent variables	Environmental performance (EP)	ISO 14001 certificate reflects good environmental performance	Tian and Lin, (2019)	+
Control variables	Corporate size (size)	The natural logarithm of total assets.	Zhang et al, (2022)	+

Corporate age (age)	The natural logarithm of corporate age in the current year.	Hao et al., (2019)	+
tangible assets (TANG)	The ratio of tangible assets to total assets.	Chen et al, (2020)	+
return on assets (ROA)	net income divided by the total assets.	Abrams et al, 2021	-
Corporate growth (Growth)(SGR)	The percentage increase in corporate operating revenue.	Xing et al, (2021)	+
cash holding (Cash)	The cash and cash equivalents as a percentage of total assets.	Chen et al, (2020)	-
corporate governance (agency cost)	The sales and management expenses as a percentage of sales revenue.	Xing et al, (2021)	-
Cash flow deficit (CFD)	A dummy variable where it takes one if the company is running a deficit and zero otherwise.	Ho et al, (2021)	+

Source: Prepared by the researchers

6.3. The Research Model

The association between a company's environmental performance and its ability to obtain bank loans for companies listed on the Egyptian Stock Exchange was examined in this study using panel data regression. The following model can be developed when statistical data processing was done using EVIEWS version 8 in accordance with the goals of this study:

$$LEV_{IT} = b_0 + b_1 EP\ ISO_{it} + b_2 SIZE_{it} + b_3 AGE_{it} + b_4 TANG + b_5 ROA_{it} + b_6 GROWTH_{it} + b_7 CASH_{it} + b_8 agency\ cost_{it} + b_9 CDF_{it} + \varepsilon_{it}$$

Independent Variables:		
1. **Environmental Performance**		
Control Variables:		
1. **Corporate size**		**Dependent Variable**
2. **Corporate Age**		**Company's Access to bank**
3. **Tangible Assets**		**Credit**
4. **Return on Assets**		
5. **Corporate Growth**		
6. **Cash Holdings**		
7. **Corporate Governance**		
8. **Cash Flow Deficit**		

Source: Prepared by the researchers

7. Research Hypotheses

The following hypotheses might be used to test the relationship between the research variables considering the research problem and the conflicting viewpoints regarding how the research variables affect the company's access to credit:

H1: There is a significant negative relationship between environmental performance and the company's access to bank credit.

H2: There is a significant positive relationship between the size of the company and the company's access to bank credit.

H3: There is a significant positive relationship between the age of the company and the company's access to bank credit.

H4: There is a significant positive relationship between the percentage of tangible assets and the company's access to bank credit.

H5: There is a significant inverse relationship between the company's profitability and the company's access to bank credit.

H6: There is a significant positive relationship between the company's growth rate and the company's access to bank credit.

H7: There is a significant inverse relationship between the percentage of cash holdings and the company's access to bank credit.

H8: There is a significant negative relationship between agency costs and a company's access to bank credit.

H9: There is a significant positive relationship between the cash flow deficit and the company's access to bank credit.

8. Statistical Analysis

8.1. Descriptive Statistics:

The descriptive statistics for the study's variables are displayed in table (2).

Table (2)
Descriptive Statistics

	Mean	Median	SD.Dev	Jarqu-Bera Prob.
Dependent variable				
BC	0.17	0.11	0.18	0.00
Independent and control variables				
EP ISO	0.35	0.00	0.48	0.00
Age	1.52	1.55	0.25	0.00
Agency cost	0.12	0.10	0.11	0.00
Cash	0.10	0.06	0.11	0.00
CFD	0.44	0.00	0.50	0.00
ROA	0.04	0.04	0.13	0.00
SGR	0.10	0.08	0.31	0.00
SIZE	6.10	6.03	0.78	0.00
Tangibility	0.51	0.55	0.25	0.00

The average bank credit ratio indicates that 17% of the companies in the research sample rely on bank loans of different durations, which indicates a decrease in the overall operating risks of those companies. The average environmental indicator indicates that the percentage of companies that obtained the ISO certificate for environmental considerations reached 14001 to 35%.

The average age of the companies was 1.52 years, while the average cost of the agency was 12%, as well as the average cash rate of 10%, While the average cash flow was 44% and the average rate of return on assets was 4%. While the average sustainable growth rate was 10%, The average size of the companies in the sample was 6.10 while the percentage of tangible assets was 51%.

The Jarque-Bera test for the normal distribution of variable data test indicates that all variables achieve a significance of less than 0.05, which shows that the variable data is not distributed normally. Several studies have indicated that if the number of observations exceeds 30 observations, it does not cause any problems (Field 2009, p. 134) and the study has reached 720 observations. Therefore, the variables are normally distributed.

8.2. Correlation Analysis

The findings of the correlation analysis, which examines at the degree of linear correlation between regression factors, are shown in table (3). The variables were analyzed using Pearson correlation to make sure there were no multiple linear relationships between them. Where there is no correlation that is more than 0.8, it can be said that there is no multilinear link between the independent variables (Field 2009, p. 224).

Furthermore, a test of variance amplification factors (VIF) was performed which shows that all values of independent variables are less than 5 and therefore, according to our findings, no factors should be left eliminated from the multivariate analysis because there is no dependence between the explanatory variables (O'Brien, 2007).

Table (3)
Pearson Correlation Matrix among Dependent & Independent Variables

	BC	EP ISO	Age	Agency	Cash	CFD	ROA	SGR	SIZE	Tang	VIF
BC	1										
EP ISO	0.05	1									1.47
Age	-0.02	0.01	1								1.06
Agency	-0.03	-0.08 ***	-0.12 ***	1							1.21
Cash	-0.24 ***	0.01	0.05 *	-0.08 ***	1						1.11
CFD	-0.04	0.01	-0.02	0.08 ***	-0.18 ***	1					1.05
ROA	-0.11 ***	0.02	-0.05	-0.32 ***	0.15 ***	-0.06 **	1				1.24
SGR	0.09 ***	0.10 ***	0.002	-0.21 ***	-0.05	-0.02	0.18 ***	1			1.09
SIZE	0.22	0.06	-0.10	-0.15	-0.04	-0.07	0.25	0.15	1		1.17

	***	*	***	***		**	***	***			
Tang	0.24 ***	0.03	0.10 ***	-0.02	-0.19 ***	0.05 *	-0.17 ***	0.02	-0.20 ***	1	1.22

Significance Levels:
 *** Correlation is significant at the 0.01 level.
 ** Correlation is significant at the 0.05 level.
 * Correlation is significant at the 0.1 level.

According to table (3), there is no significant association between the company's ability to obtain bank financing and its achievement of the ISO 14001 certification. Additionally, there is a little correlation between agency costs, the company's net cash flow deficit, and its ability to obtain bank credit. Additionally, there is a considerable inverse relationship between the company's age, cash on hand, rate of return on assets, and ability to acquire bank loans. In addition, table (3) shows that the ratio of tangible assets to total assets, firm size, and the company's ability to obtain bank credit all have a substantial positive link with the sustainable growth rate.

8.3. Data Quality Testing:

To determine the type of the suitable model for our analysis, we use several statistical tests:

First: Testing for the presence of autocorrelation where the Lagranage Multiplier coefficient indicates that the value of Sig. <.05 indicates the existence of the linear correlation problem for the remainder and Lag 1 was taken for the dependent variable.

Second: we investigate whether the regression of the least squares (OLS) is appropriate by using the Breusch Pagan test to test Heteroskedasticity of error variance across observations, where the test parameter indicates that Sig. <.05, which indicates a difference in error variance. As a result, the regression of the least squares OLS becomes inappropriate. This problem is addressed by using Weighted least square regression (WLS).

Third: Heterogeneity test due to the researcher's reliance on the use of Panel Data method, and therefore the possibility to contain heterogeneity is noticeable, as this approach depends on two main ways, namely Fixed effects, and Random effects. The advantage of this method is that it provides strong estimates of the coefficients of the regression model more than cross-sectional analysis or time series analysis (Gujarati, 2003).

The researchers distinguished between the method of fixed effects, and Random effect method by doing the Hausman test, and the P-value result was less than 5%, so the Fixed effects method was applied, which gives a constant unbiased coefficient to deal with the problem of heterogeneity (Adams et al, 2022).

The results of the data quality and significance test showed a problem of difference in error variance across observations, so the appropriate model is the Weighted least squares (WLS) model (Hoang et al, 2020).

8.4. Regression analysis and testing hypotheses:

Table (4) shows the result of the weighted least squares model.

Table (4)
Weighted Least Squares Model with Fixed Effect

Independent Variables	Fixed effect WLS		
	Coef	T-Statistic	Prob.
(Constant)	-0.06	-1.28	0.20
Lev(-1)	0.60	26.54	0.00***
EP ISO	0.01	2.03	0.04**
Age	-0.02	-1.10	0.27
Agency cost	-0.11	-3.28	0.00***
Cash	-0.02	-0.62	0.54
CFD	0.01	1.15	0.25
ROA	-0.40	-10.98	0.00***
SGR	0.03	2.55	0.01***
SIZE	0.02	4.74	0.00***
Tang	0.04	2.58	0.01***
Model indicator			
R^2	0.6359		
Probability of (F-statistics)	0.0000***		
Significance Levels:			
*** Correlation is significant at the 0.01 level.			
** Correlation is significant at the 0.05 level.			

Testing the main hypothesis which states that "There is a significant negative relationship between environmental performance and a company's access to bank credit."

The results of table (4) show that the first hypothesis, according to which there is a significant connection between a company's environmental performance and getting the ISO certificate for environmental considerations 14001 and being able to access bank credit, is not true, where the environmental performance factor of the Egyptian companies listed in the sample is estimated at 0.01 and this indicates that the company's obtaining the ISO certificate for environmental considerations 14001 leads to encouraging banks to grant loans to these companies, which refers to the role of banks in preserving the environment and encouraging Non-polluting companies on expansion.

The results of table (4) indicate the acceptance of the second hypothesis, where he size of the company and the company's ability to obtain bank credit are positively correlated, which indicates that large companies can obtain bank credit easily due to their ability to pay bank credit obligations and the availability of liquidity to them.

The results of table (4) indicate the rejection of the third hypothesis, where there is an inverse non-significant relationship between the age of the company and obtaining

bank credit, this indicating that modern companies can obtain bank credit, which indicates that modern companies are encouraged to grow and expand.

The results of table (4) indicate the acceptance of the fourth hypothesis, where there is a significant positive relationship between the ratio of tangible assets and the company's access to bank credit, which in turn indicates that increasing the ratio of tangible assets to total assets leads to an increase in the need for bank credit.

The results of table (4) indicate the acceptance of the fifth hypothesis, where there is a positive relationship between the company's profitability and the company's access to bank credit, this suggests that raising a company's profitability ratio reduces the requirement for bank borrowing and increases the reliance on internal sources of funding.

The results of table (4) indicate the acceptance of the sixth hypothesis, where there is a positive relationship between the company's growth rate and the company's access to bank credit, this indicates that companies with high growth rates rely on bank credit to finance their expansions.

The results of table (4) indicate the acceptance of the seventh hypothesis, where there is an inverse non-significant relationship between cash retention and the company's access to bank credit, this indicates that the increase in the cash ratio pushes companies to reduce their dependence on bank credit.

The results of table (4) indicate the acceptance of the eighth hypothesis, where there is an inverse relationship between the ratio of agency costs and the company's access to bank credit, this indicates that the company that applies governance procedures well does not need to rely on bank credit to finance its expansions and relies heavily on its internal sources due to the existence of control over the actions of its managers.

The results of table (4) indicate the acceptance of the ninth hypothesis, where a positive but insignificant correlation exists between the cash flow deficit and the company's access to bank credit, and this indicates that the company that suffers from a deficit in net cash flow depends on bank credit to fill this deficit.

The results of table (4) indicate a positive relationship between the previous decisions of banks regarding bank credit as an independent variable and the decisions to grant bank credit now, which indicates that the company's previous dealings with banks have a positive impact on the company's access to bank credit in the current year.

9. Discussion of the results

The research was interested in testing the impact of the environmental performance of companies listed on the Egyptian Stock Exchange on their ability to obtain bank credit, especially considering the interest of the Arab Republic of Egypt in sustainable development and the orientation of the Central Bank of Egypt to the green credit

policy and the hosting of the Arab Republic of Egypt for the climate conference "COP27". The statistical analysis of the data yielded the following results:

- Agency expenses, profitability, sustainable growth rate, firm size, and the proportion of tangible assets are among some of the essential factors that affect a business's ability to obtain bank credit for companies in the Egyptian economy.

- Companies' environmental performance, as measured by their ISO 14001 certification, has a positive impact on their ability to obtain bank credit, which shows that the research findings are in line with the theory of stakeholder, which holds that stakeholders appreciate enterprises with strong environmental performance more highly and are prepared to give those companies the resources they require (Boakye et al, 2021). It also holds that placing credit restrictions on polluting companies mitigates the contradiction between the company and stakeholders (Zhang et al, 2021; and Wen et al, 2022). The results agree with the Signaling theory, as this theory believes that the company improves its reputation by disseminating sound information, whether financial or environmental, and seeks to reduce environmental pollution to obtain funding and provide a positive signal to the banks and public (Hu et al, 2021).

- Previous transactions between the company and banks affect the approval of banks to grant bank credit to companies in the current year, which indicates the importance of maintaining a good reputation for companies with banks that enables them to finance their expansions by obtaining credit from banks.

10. Research Contributions

This research adds new evidence to the finance and accounting literature through the following main points:

- Offering important support for financial managers as well as for investors about the impact of the company's environmental performance on obtaining credit.

- Using ISO 14001 as a measure of a company's environmental performance is possible because of the information it provides, which is regarded as being accurate.

- Focusing on the Egyptian market as an emerging market that differs from the markets of the developed countries, given that the Egyptian market is a market in which companies rely primarily on providing their financing needs through financial institutions, especially banks. Therefore, the Egyptian market provides a good environment to understand how the company's environmental performance affects its obtaining credit. These aims are consistent with Egypt's vision 2020-2050.

- This study offers empirical evidence that may be useful in assessing sustainable financial practices. For instance, banks choose eco-friendly businesses when deciding which companies to lend money to.

11. Conclusion and Future Recommendations

With Egypt's economy serving as a model for developing countries, this study investigates the relationship between environmental performance and a company's capacity to acquire bank loans. The significant of this issue is congruent with Egypt's 2020–2030 vision and the "go green" initiatives that Egypt began in 2022. For companies listed on the Egyptian Stock Exchange between 2013 and 2022, an empirical study is used. The weighted least squares model was used as a statistical technique for the investigation. The statistical analysis's findings showed that environmental performance positively affects the company's access to bank credit, and this is theoretically consistent with stakeholder theory and signaling theory. It also demonstrates the extent of the efforts made by Egypt and the Central Bank of Egypt to implement the green credit policy. Considering the review of the prior finance literature and the results achieved, the researcher recommends the following:

- The research in practice can be used to send a signal to companies operating in Egypt that banks reward companies that adopt good environmental performance to enable them to finance their operations and achieve sustainable growth.

- The implementation of a credit policy based on environmental performance lowers the rate of non-performing loans, boosts effective risk management, and ultimately improves banks' reputation

- The research helps banks to reassure the ability of companies to pay their financing obligations, as poor environmental performance leads to damage to the reputation of companies, which leads to uncertainty about the company's ability and profits, which exposes banks to risks.

- Egypt continues to improve the infrastructure for climate finance by working to promote green banking, green lines of credit, and promoting innovative financing mechanisms that prioritize environmental adaptation measures.

- The research helps academics by proposing future studies that address other measures of environmental performance of companies, as well as conducting a comparative study between polluting and non-polluting industries, as well as encouraging researchers to address different aspects of the environment such as climate and its impact on financing. Conducting a study of the relationship between the impact of COVID-19 on the company's ability to obtain bank credit.

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