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HOW MUCH IMPACT DO BANKS AND INSURANCE COMPANIES HAVE ON THE ENVIRONMENT? EVIDENCE FROM ITALY

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All companies pollute, financial firms included. How much does the financial sector pollute? How much does it impact climate change?

This paper contributes to the debate on the relationships between the European financial sector and environmental sustainability. By examining the ESG score — in particular, the environmental indicators — of a sample of Italian banks and insurance companies over the period 2015–2020, the research intends to verify (i) whether financial intermediaries adopt policies and make efforts to reduce the environmental impact of their operations; (ii) the observable trend in the environmental performance of the examined companies and (iii) the existence of a relationship between the environmental performance and the characteristics of the examined companies.

The results show an increasing trend in the environmental performance of the examined intermediaries and a wide dissemination of policies aimed at reducing their impact on the environment. According to our analysis, environmental performance is significantly related to company size. The study can be useful for managers and decision-makers in providing an in-depth analysis of the measures adopted to reduce environmental impact. In addition, it can have important repercussions on the financial markets and also for investors in increasing awareness about environmental scores.

Keywords: Banks; insurance companies; environmental score; non-financial disclosure.

JEL Classifications: G21, G22, G28

1. Introduction

The concept of "sustainable development" was introduced for the first time by the Brundtland Report (also known as *Our Common Future*) in 1987.[a] The definition provided by the World Commission on Environment and Development (WCED) considers sustainable development as an approach to economic planning that "ensure[s] that it meets the needs of the present without compromising the ability of future generations to meet their own needs." The document identifies three pillars of sustainability: environmental sustainability, aimed at guaranteeing the availability and quality of natural resources; social sustainability, aimed at guaranteeing quality of life, safety and services for citizens; and economic sustainability, aimed at guaranteeing economic efficiency and income for businesses. Environmental sustainability is connected to climate change mitigation and adaptation, as well as to the environmental impact more broadly — for instance, the preservation of biodiversity, pollution prevention and the circular economy. What role do financial institutions play in this area?

Starting from central banks and financial supervisors, they have a duty to incorporate environmental considerations into their policymaking. Failing to do so jeopardizes their ability to fulfil their mandates and reduces our chances of tackling climate change and ecological breakdown. The increased risk of pandemics like COVID-19, generated by the global economic system's destruction of nature, strengthens the case for action. Although financial regulators are not environmental watchdogs, they need to worry about environmental concerns, as the effects of natural events related to climate (and a sharp transition to a low-carbon economy) have potentially far-reaching consequences for the economy and financial system (Signorini 2017).

Among the European countries, Italy stands out for its diligence (Bank of Italy, 2021). The 'green central banking scorecard' elaborated by an independent institution (Positive Money) assigns Italy the sixth place in the 2021 ranking. The Bank of Italy was among the "greenest" central banks of the G20 countries for the support provided to the development of more sustainable finance, the integration of sustainability criteria in its investment decisions, and the initiatives to reduce the ecological footprint of institutional activities. Our research, carried out internationally, reviews the full range of policies and initiatives that an ideal green central bank would adopt across four categories: research and advocacy, monetary policy, financial policy and leading by example. Based on this literature review, expert consultation and bilateral interactions with central bankers and supervisors, the score allows us to rank G20 countries on the green policies and initiatives of their monetary and prudential authorities.

Financial institutions are "lenders" who value borrowers and could grant credit to those who demonstrate more sustainable behavior. They are also "investors" who

[a] G. Brundtland (1987), *Report of the World Commission on Environment and Development: Our common future*. United Nations General Assembly document A/42/427.

drain resources towards sustainable investments. In lending and investment activity, they are "valuers" who evaluate counterparties. By virtue of their role as lenders and investors, they can exercise a great influence over companies by encouraging them towards sustainable behaviors. For example, they could incentivize companies to invest in technologies and to adopt environmental management systems. Lastly, they are also polluters who consume natural resources.

Therefore, from the bank's point of view, there are direct and indirect impacts on climate change. The direct impact originates from the operations of the bank itself and can be considered harmful to the climate and the environment. The indirect impact, meanwhile, can come from their operations or from the emissions they finance through the risks and relationships with entrusted counterparties that fall on the credit institution (Reghezza *et al.* 2021, Rachmaninov *et al.* 2023).

Our paper intends to investigate this last issue. In our opinion, the direct impact of financial institutions on environment has not yet been properly investigated. We found little attention on this topic both in the literature and in the institutional debate.

Regarding the institutional level, the PTF[b] report[c] states: "Indirect impact vs direct impact: the PTF was given the mandate to assess whether direct impacts are material for FIs. Due to time constraints, it was decided that Stream A5 would focus on indirect impact, instead of working on comparing direct impact and indirect impact. It was directly postulated that the indirect impacts (regardless of the calculation principles) were much greater than the direct impacts. The direct impacts of FIs are dealt with by other work streams of the PTF, in the same way as any other types of companies."

According to the *Guidelines on Non-financial Reporting*,[d] "materiality" means that a company is required to disclose information on environmental, social and employee matters, respect for human rights and bribery and corruption, to the extent that such information is necessary for an understanding of the company's development, performance, position and impact of its activities. Climate-related information can be considered to fall into the category of environmental matters.

All kinds of companies pollute, including financial firms. So, how much does the financial sector pollute? This paper thus attempts to answer the following research questions:

(1) Do financial intermediaries adopt policies to reduce the environmental impact of their operations?
(2) Has the environmental performance of the analyzed companies improved over the observed time period?

[b] This refers to the European Lab Project Task Force on preparatory work for the elaboration of possible EU non-financial reporting standards (PTF-NFRS).
[c] EFRAG (2021), *Appendix 4.5*: *Stream A5 assessment report focuses on financial institutions*, February 2021, p. 9.
[d] See notes 13 and 14.

(3) Is there a relationship between environmental performance and the characteristics of the examined companies?

The analysis focuses on an Italian sample of 15 banks and five insurance companies, and it is based on a six-year dataset (from 2015 to 2020). In order to answer the research questions, we conducted a preliminary analysis of the Italian market, with the intention of extending the same analysis to the broader European context in the future, expanding both the number of observations and the countries considered. After examining the observable trends in the environmental impact of a sample of Italian banks and insurance companies, we try to verify the existence of a relationship between the environmental performance and the main features of the examined companies.

The results show a move in the direction of an improvement in environmental performance. This evidence could be related to European environmental policies. In this context, numerous regulations have been issued in recent years. The scope of regulations provides a competitive edge to those institutions applying more adequate environmental practices. Through the introduction of rules on non-financial information disclosure, the regulator intends to incentivize financial institutions to adopt better environmental performance.

This study contributes to the literature in several ways. First, it provides a complete review of the complex system of rules that regulate the non-financial disclosure of financial companies. Second, it proposes a quantification of the environmental impact of the examined companies. Third, it makes a further contribution to the literature by deepening awareness about environmental policies and scores. This is important for managers as well as regulators, especially in light of the ongoing debate on climate change.

The paper is structured as follows. Section 2 illustrates the regulatory framework. Section 3 provides an interpretative outline of the reviewed literature. The sample description and methodology are described in Sec. 4. Section 5 details the empirical research results and the discussion of the main findings, and the last section provides the conclusions, implications and future lines of research.

2. The Intricate Regulatory Framework of Environmental Disclosure

The first environmental policy tool devised by the European Commission in 1993 was the EMAS Regulation 1836/93.[e] Its scope restricted participation to companies in the industrial sector. Since April 1995, organizations could participate voluntarily. In 2001, the revised Regulation (EC) No 761/2001 ("EMAS II") extended the application of the EMAS Regulation to all sectors of economic activity, thus including

[e] Council Regulation (EEC) No. 1836/93 of 29 June 1993 allowed voluntary participation by companies in the industrial sector in a community eco-management and audit scheme.

financial institutions.[f] In 2009, the EMAS Regulation was revised and modified for a second time.[g] Regulation (EC) No 1221/2009 ("EMAS III") came into effect on 11 January 2010. This new regulation introduced the use of environmental core indicators to adequately document the environmental performance of companies. The EMAS Regulation was subsequently amended in 2017[h] and in 2018.[i]

With the launch of the "2030 Agenda" on 25 September 2015,[j] the UN General Assembly triggered a debate on a new global sustainable development framework, which has at its core the Sustainable Development Goals (SDGs). Since then, the topic of sustainability in the financial sector has been in the spotlight. Among the various aspects addressed in the UN 2030 Agenda on sustainable development, the promotion of the communication of ESG (environmental, social and governance) factors in the banking and insurance sector represents a fundamental part of the objectives set.

In December of the same year, signatories to the Paris Agreement committed to undertaking ambitious efforts to limit the increase in the global average temperature, invoking early action to reduce greenhouse gas emissions as soon as possible.[k] Within this scope, the disclosure represents a very important tool aimed at incentivizing financial institutions towards eco-sustainable behaviors Improving data availability and companies' and financial institutions' disclosure of non-financial information (i.e. information related to environment, social and employee-related matters, respect for human rights and action to address corruption and bribery) should allow better direct financial and capital flows for sustainable investment.[l] Greater disclosure should make it easier to measure, monitor and manage companies' performance and their impact on society.

Financial firms are subject to disclosing sustainability requirements. Some of these are mandatory, imposed by regulatory authorities, while others are voluntary. Under the Non-Financial Reporting Directive (NFRD) (Directive 2014/95/EU),[m]

[f]Regulation (EEC) No. 761/2001 of the European Parliament and of the Council of 19 March 2001 allowed voluntary participation by organizations in a community eco-management and audit scheme (EMAS).
[g]Regulation (EC) No. 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organizations in a community eco-management and audit scheme (EMAS) repealed Regulation (EC) No. 761/2001 and Commission Decisions 2001/681/EC and 2006/193/EC.
[h]Commission Regulation (EU) 2017/1505 of 28 August 2017 amended Annexes I, II and III to Regulation (EC) No 1221/2009 of the European Parliament and of the Council on the voluntary participation by organizations in a community eco-management and audit scheme (EMAS).
[i]Commission Regulation (EU) 2018/2026 of 19 December 2018 amended Annex IV to Regulation (EC) No. 1221/2009 of the European Parliament and of the Council on the voluntary participation by organizations in a community eco-management and audit scheme (EMAS).
[j]ONU (2015), *Transforming our world: The 2030 Agenda for Sustainable Development*.
[k]UN (2015), *Paris agreement*.
[l]European Parliamentary Research Service (2021), *Non-financial reporting directive*, https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/654213/EPRS_BRI(2021)654213_EN.pdf.
[m]Directive 2014/95/EU of the European Parliament and of the Council of 22 October 2014 amended Directive 2013/34/EU regarding the disclosure of non-financial and diversity information by certain large undertakings and groups.

large listed companies, banks and insurance companies with more than 500 employees are required to publish reports on the policies they implement in relation to:

- environmental protection;
- social responsibility and treatment of employees;
- respect for human rights;
- anti-corruption and bribery and
- diversity on company boards (in terms of age, gender, education and professional background).

The principal aim of the NFRD is to enable the investment community, consumers and other stakeholders to evaluate the non-financial performance of large companies and to encourage those companies to develop a more responsible approach to business. As required by Directive 2014/95, the European Commission has published non-binding guidelines to help companies disclose relevant non-financial information in a more consistent and more comparable manner.[n] However, the NFRD suffers from several deficiencies, including the lack of comparability, reliability and relevance of the non-financial information provided. In June 2019, the Commission published guidelines on reporting climate-related information, which consisted of a supplement to the existing guidelines on non-financial reporting (NFR).[o]

The EU Council adopted the Sustainable Finance Disclosure Regulation (SFDR) on 27 November 2019.[p] It entered into force on 29 December 2019 and will start to apply from 10 March 2021. The SFDR imposes ESG disclosure obligations on a very wide audience, including credit institutions and investment firms, insurance companies, asset management companies, corporate or professional pension institutions and other operators. In particular, the SFDR is designed to increase transparency in how sustainability risks and opportunities are integrated into the investment decisions and recommendations of financial market players, as well as to give consideration to the possible adverse sustainability impacts of investments. So, it concerns the area of investment products offered by banks and insurance companies, among others.

After a public consultation launched by the European Commission on 25 June 2020, a request was issued for technical advice mandating the European Financial Reporting Advisory Group (EFRAG) to undertake preparatory work for the elaboration of possible EU NFR standards in a revised NFRD. Consequently, the

[n]EC (2017), *Communication from the Commission — Guidelines on non-financial reporting (methodology for reporting non-financial information)*, Brussels, C/2017/4234.
[o]EC (2019), *Communication from the Commission — Guidelines on non-financial reporting: Supplement on reporting climate-related information*, Brussels, 17.6.2019 C (2019) 4490.
[p]Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 concerns sustainability-related disclosures in the financial services sector.

EFRAG published its reports submitted to the European Commission, setting out recommendations on the development of E?U sustainability reporting standards.[q]

Finally, the more recent EU regulation is the so-called 'Taxonomy Regulation' (Regulation 2020/852), which entered into force on 12 July 2020.[r] The Taxonomy Regulation both supplements and amends certain provisions in the Disclosure Regulation with regard to activities that contribute to an environmental objective, i.e. (i) proportion of turnover derived from products or services associated with environmentally sustainable economic activities; (ii) proportion of capital and operating expenditures related to assets or processes associated with environmentally sustainable activities and (iii) proportion of investments in environmentally sustainable activities selected for the financial product, including the proportion of enabling and transitional activities, as a percentage of all investments selected for the financial product.

On 21 April 2021, the Commission presented its proposal for a Corporate Sustainability Reporting Directive (CSRD), which aims to revise and strengthen the existing rules introduced by the NFRD and envisages the adoption of EU sustainability reporting standards. The draft standards were developed by the EFRAG.[s] The first set of standards would be adopted by October 2022. In its main report, EFRAG inventoried about 70 ESG KPIs that banks should be reporting across the three core legislative measures (NFRD, SFDR and Taxonomy).

In the Italian context, the main regulation is represented by the Legislative Decree No. 254 of 30 December 2016 implementing Directive 2014/95/EU. At the national level, supervisory authorities — Banca d'Italia, Consob and Ivass — intervened by issuing their own regulations. Annex 1 presents the main stages of the legislative evolution in Europe and in Italy.

3. Literature Review

Financial institutions are increasingly involved in environmental affairs and have also become an important subject of research in this field. Regarding banks' environmental impacts, Jeucken & Bouma (1999) distinguish between internal and external issues. Internal issues are related to the business processes within banks, while external issues are connected to the bank's products (green funds, direct investments, loans). This is the same as distinguishing between banks' interventions on the environment in a direct way, as firms, or indirectly, through their lending activities (Birindelli *et al.* 2019).

[q]These are the main report (Available at: https://www.efrag.org/Assets/Download?assetUrl=%2Fsites%2Fwebpublishing%2FSiteAssets%2FEFRAG%2520PTF-NFRS_MAIN_REPORT.pdf) and six separate documents comprising the assessment reports of six streams operated within the Task Force for the detailed review of the status of non-financial information and sustainability reporting.

[r]Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 concerns the establishment of a framework to facilitate sustainable investment and the amendment of Regulation (EU) 2019/2088.

[s]https://efrag.org.

Our focus is on internal issues, investigating the role of financial institutions as "polluters". On the relevance of this phenomenon, Jeucken and Bouma argue that banking is a relatively clean sector. The environmental burden of their energy, water and paper use is not comparable to many other sectors of the economy. However, the size of the overall banking sector is large enough to make its environmental impact significant.

We focus first on environmental disclosure in financial institutions. Lundgren & Catasús (2000) explore the greening potentiality for the bank sector, investigating what banks do in their ambition to enhance environmental efficiency and awareness in their activities. The authors illustrate how banks attend to the environmental issue in three dimensions (financial, physical and immaterial). Their results suggest that the direct impacts (i.e. the physical flows) of the banks' activities have already been explored, but there are areas in both the financial and immaterial dimensions that could be further investigated. Carnevale *et al.* (2011) apply value relevance analysis to a sample of 130 European-listed banks, investigating the relationship between social reporting and the value that the market attributes to banks that publicize their commitment to CSR through social reporting. The analysis for the entire sample does not provide evidence that investors attribute value relevance to social reporting (i.e. there is no significant correlation between the publication of a social report and the stock price). Cross-country analysis shows that, in some countries, the social report is value-relevant and positively affects the stock price; in others, it remains value-relevant but negatively affects the stock price.

Yusoff & Darus (2014) *conduct* content analysis of 2012 annual and sustainability reports of Islamic financial institutions in Malaysia, exploring environmental disclosure practice. The environmental information was collected using a developed CSR-environmental index. The study results reveal that the key environmental disclosures provided were related to climate change mitigation and adaptation and to the prevention of pollution type activities. Juhmani (2014) use content analysis to investigate the level of social and environmental information disclosure practices on the websites of companies listed on the Bahrain Bourse. The findings indicate that commercial banks and insurance companies disclosed the most regarding social and environmental information, while companies in the hotel and tourism sector and the industrial sector disclosed the least. The analysis also reveals that financial leverage and audit firm size had a significant relationship with the level of social and environmental information disclosure. Ebrahim *et al.* (2015) conduct an empirical review of reports published by a representative sample from the banking industry in Jordan, finding solid evidence to reject the possible influence of ROA and SIZE variables on CSRD adopted by each bank and reporting content revealed; the study accepts a possible relationship with ROE.

Carè (2017) explores and compares the environmental disclosure of global systemically important banks (G-SIBs) headquartered in the euro area by analysing environmental risk assessment and monitoring issues through a multiple case study approach. The analyzed banks highlight a lack of consistency in the type, quantity

and quality of environment and sustainability disclosure. We share the idea promoted by Nelson (2018) of non-reporting reports as a "use of sustainability" aimed at consolidating a strategic framework by the companies. In this sense, environmental disclosure should not be seen as a constraint imposed by the regulator but as a key for obtaining added value for the company. La Torre *et al.* (2018) provide an interesting insight into the relational dynamics between states, firms and society in regulating NFR. They develop a research agenda for conducting pragmatic, theory-oriented research on the Directive and corporate sustainability reporting, and they argue that the NFR Directive improves the comparability of information and enhances corporate accountability, drawing attention to some barriers that could hinder the achievement of the Directive's goals.

Birindelli *et al.* (2019) analyze the impact of women leaders on environmental performance in a sample of 96 listed banks in the Europe, Middle East and Africa region from 2011 to 2016. Gender diversity in leadership positions is explored through women in the board of directors, chief executive officer gender and the interaction between these two aspects. The results suggest that there is a non-linear relationship between women directors and the environmental performance of banks and that female chief executive officers play a strategic role in shaping this relationship, confirming the homophily perspective for the banking sector. The authors therefore suggest that gender diversity in leadership is an important driver of environmental sustainability in banks, which are increasingly involved in environmental issues either directly, as companies, or indirectly, through their lending activity. Regarding the scope of the contribution of European banks to the SDGs, Cosma *et al.* (2020) show that country of origin, legal system and adoption of an integrated report seem to differentiate banks. They use a non-financial disclosure analysis of 262 European banks and find, conversely, that the business model and stock exchange listing do not seem to represent a discriminatory factor in the banks' contribution toward the SDGs. In the same direction, the link between sustainability disclosure and the regulatory environment in which bank operates is undeniable (Carè, 2018).

In Italy, the Associazione Bancaria Italiana (ABI) conducts a survey named "BusinEsSG" on the integration of the environmental, social and business management dimensions (the ESG acronym referring to environmental, social and governance) of banking activities.[t] The analysis represents the state of the art of non-declaration financial statements published by banks in 2020 compared to the activities carried out in 2019. The results from the latest survey show that Italian banks' commitment to sustainable development has strengthened. Banks representing 81.9% in terms of total assets in the sector report initiatives consistent with the achievement of the UN's sustainability objectives (the SDGs). The main objectives reported (by over 70% of total assets in the sector) are: employment and economic growth, quality education, gender equality, sustainable cities and communities, the fight against poverty, responsible consumption and production,

[t] https://www.abi.it/Pagine/news/RilevazioneBussEssg.aspx.

the fight against climate change and clean and accessible energy. Key studies on the application of Legislative Decree n. 254/2016 in Italy are provided by Stefanin & Mattioli (2018) and Abi & Luiss (2019).

Although the role of sustainability in the insurance industry has been investigated less than for other financial sectors, including the banking sector (Chiaramonte *et al.* 2020), we found some literature dealing with the topic of ESG scores in the insurance industry. Insurance companies are both institutional investors and absorbers of risk from businesses and individuals. Porrini (2011) studies the role for the insurance sector in the design of political economic solutions for climate change consequences. According to the author, the role of insurer can be identified in two different directions: insurance coverage for claims of third parties who allege injury or property damage and insurance financial products to finance technological responses to climate change, such as mitigation and adaptation. A reliable, transparent and international coordinated policy framework is widely advocated, as well as appropriate long-term greenhouse gas emission reduction goals, to enable insurance companies to play a responsible role in tackling climate change consequences.

Trynchuk *et al.* (2019) analyze the role of universities in disseminating social responsibility practices in the insurance sector. Using a survey conducted among 536 full-time student financiers at domestic universities in September and October 2018, the research identifies peculiarities in students' perception of the social responsibility concept in Ukraine's insurance sector. The results show the low level of students' knowledge about social responsibility in the insurance sector and the low interest of insurance companies compared to foreign insurance companies. Chiaramonte *et al.* (2020) examine American listed insurers, finding that sustainability — proxied by ESG scores — enhances the stability of insurers, and this relationship is driven by environmental and social dimensions. Gharizadeh Beiragh *et al.* (2020) propose an integrated approach for sustainability performance assessment in qualitative and quantitative perspectives, evaluating 14 insurance companies using eight economic, three environmental and four social indices. The author's model identifies the three companies in the examined sample that had the best sustainability performance.

An important role must be recognized for culture and disclosure (de Polis 2019). Indeed, climate change requires an update of the insurance culture of companies, distribution networks, families and businesses. At the same time, to support the transition, it is important that companies — including insurance companies — provide quality non-financial disclosure based on scientific strategies and actions to govern the transformation process. Regarding the insurance sector, Cesari (2021) finds that the ESG issues of socially responsible investments are receiving increasing attention — that is, those investments capable of reconciling financial performance and environmental sustainability, returns and the financing of environmentally friendly companies. Eco-sustainable activities with reference to the six environmental objectives (environmental contributions to climate change mitigation or adaptation, water, the circular economy, pollution and the ecosystem) and the introduction of ESG-type ratings will make this approach increasingly concrete and widespread.

4. Data and Methodology

Our survey is based on data collected from the Thomson Reuters ESG database, that is, Refinitiv's ESG score database, which captures a company's relative ESG performance based on a large number of comparable measures grouped into three categories, each one corresponding to a specific pillar score: the environmental score (first pillar), the social score (second pillar) and the governance score (third pillar). Since we focus on environmental performance, when collecting data, we selected all the Italian financial intermediaries with available environmental scores within the database. The final sample consists of 20 Italian listed companies — 15 banks and 5 insurance companies — within the observation period of a six-year time window (from 2015 to 2020).

Note the following clarifications. First of all, Poste Italiane SpA is not a pure insurance company, but its insurance component is relevant (about 50% of total assets). Second, although there is a risk of double counting, we included both UnipolSai Assicurazioni SpA and Unipol Gruppo SpA in the sample because they are both listed on the Italian stock exchange and because they have different environmental scores. Table 1 shows the companies included in our sample and the industry to which they belong, as indicated in Refinitiv's ESG score database.

Refinitiv's ESG scoring methodology combines a number of indicators gathered into three environmental sub-categories: resource use, emission and innovation. The environmental score is thus obtained by combining the scores of the three sub-categories.

Table 1. Sample.

No.	Company name	Industry name
(1)	Assicurazioni Generali SpA	Insurance
(2)	UnipolSai Assicurazioni SpA	Insurance
(3)	Unipol Gruppo SpA	Insurance
(4)	Societa Cattolica di Assicurazione SpA	Insurance
(5)	Poste Italiane SpA	Insurance
(6)	Intesa Sanpaolo SpA	Banking
(7)	UniCredit SpA	Banking
(8)	Credito Emiliano SpA	Banking
(9)	Bper Banca SpA	Banking
(10)	Mediobanca Banca di Credito Finanziario SpA	Banking
(11)	Banca Popolare di Sondrio ScpA	Banking
(12)	Banca IFIS SpA	Banking
(13)	Banca Carige SpA Cassa di Risparmio di Genova e Imperia	Banking
(14)	Banca Monte dei Paschi di Siena SpA	Banking
(15)	Banco BPM SpA	Banking
(16)	Banca Generali SpA	Banking
(17)	FinecoBank Banca Fineco SpA	Banking
(18)	Banca Mediolanum SpA	Banking
(19)	BFF Bank SpA	Banking
(20)	Illimity Bank SpA	Banking

The resource use score reflects a company's capacity to reduce the use of materials, energy and water in the production processes and to design environmentally oriented supply chain management. In detail, the resource use sub-category evaluates, at a company level, a number of factors, such as

- The presence of an "environment management team" — an individual or a team composed of employees dedicated to environmental issues and to the implementation of the company's environmental strategy.
- The implementation of employee training programs related to the environment (resource reduction and emission reduction).
- The use of environmental criteria when sourcing/eliminating materials ("environmental materials sourcing").
- An environmental-oriented selection process of the company's suppliers ("environmental supply chain management"), as well as the adoption of a policy to reduce the company's overall environmental impact through better modelling of its supply chain (environmental supply chain policy).
- The implementation of internal policies to improve the company's water and energy efficiency ("water and energy efficiency policies") and to reduce the use of materials in its operations ("resource reduction policy").
- The setting of specific objectives to be achieved on the efficient use of resources ('resource reduction targets').
- The reporting of initiatives to reduce the environmental impact on land owned/leased for production activities ("land environmental impact reduction").
- The total direct and indirect energy consumption, the total amount of purchased energy and the total energy produced from renewable energy sources.
- The use of environmentally friendly offices/buildings (green certified) and/or the report of major refurbishments to improve the environmental efficiency of buildings/offices ("green buildings").

The emission score measures a company's capacity to reduce environmental emissions (land, air, or water emissions) in its operational processes and core activities. The main elements under investigation are

- The adoption of a policy to reduce the company's land/air/water emissions ("policy emissions") and the set of targets to be achieved on reducing emissions ('targets emissions').
- The implementation of programs to reduce the company's impact on ecosystems and species and to protect the biodiversity of sensitive areas ("biodiversity impact reduction").
- The reporting of the company's initiatives to restore/clean up the environment or stop environmental damages ('environmental restoration initiatives').
- The development of initiatives to reduce the environmental impact of staff transportation by encouraging employees to use alternative options like video and

web conferencing, public transport, carpooling, cycle-to-work schemes, eco-friendly cars, etc. ("staff transportation impact reduction").

- The reporting of initiatives to reduce the company's particulate matter emissions ("particulate matter emissions reduction").
- The company's participation in any emissions trading scheme ("emissions trading").
- The company's awareness of commercial risks and/or opportunities related to climate change, such as the development of new "green" products/services ("climate change commercial risks opportunities").
- The estimated total CO_2 and CO_2 equivalents in direct and indirect emissions and the CO_2 estimation method.
- The total amount of non-hazardous and hazardous waste produced, the total recycled and reused waste produced and the waste recycling ratio (waste recycled/total waste).
- The reporting of the company's initiatives to recycle, reuse, substitute, or phase out total waste ("waste reduction initiatives") and e-waste — that is, all types of waste containing electronically powered components ("e-waste reduction").
- The acquisition of an environmental certification ("ISO 14000 or EMS').

Finally, the innovation score measures a company's capacity to promote high environmental standards through research activities and the development of new technologies and/or products with a low impact on the natural environment. Specifically, the innovation sub-category considers a number of elements such as

- The development of specific products with a low impact on the environment during their life cycle ("environmental products") or specifically designed to be recycled or disposed of without negatively impacting the environment ("eco-design products") or to reduce noise emissions ("noise reduction").
- The company declares to be a signatory of the Equator Principles, which ensure that the large-scale projects being financed meet high environmental standards — that is, they have a low impact on the natural environment and the affected communities ("Equator Principles"), or the company claims to evaluate projects on the basis of environmental risks as well ("Equator Principles or env project financing").
- The reporting of procedures and programs to take back or recycle the company's own products at the end of their life cycle ("take-back and recycling initiatives").
- The development of products or services with features and/or applications promoting a responsible and environmentally preferable use (less emission, pollution, noise, etc.) ("product environmental responsible use").
- The development of products or technologies for the renewable energy sector or the financing of renewable energy projects ("renewable/clean energy products").
- The development of products or technologies used for water treatment/purification or to improve water efficiency ("water technologies"), as well as products/services improving the energy efficiency of buildings ("sustainable building products").

In the first step, we focused on the environmental performance of the companies in the sample over the observed time period. For this purpose, we analyzed the scores of the three environmental sub-categories provided by the Refinitiv database: the resource use score, the emission score and the innovation score. A fourth indicator, the global environmental score, was obtained through a simple average of the values of the three sub-category scores, thus reflecting the overall environmental impact and policies of the financial intermediaries in the sample.

For each indicator, we observed the time evolution by elaborating, for each year, the average value of the scores for banks, insurance companies and the whole sample. We also investigated the trend of the standard deviation and of the minimum/maximum values of the indicators to assess the alignment degree of the environmental policies within the Italian financial sector.

In the second step, we performed a sub-category analysis through a deeper evaluation of the individual measures rolled up into the three environmental sub-category scores to verify the main drivers of the environmental performance trend and the most significant sub-indicators for the analyzed intermediaries. To this end, we calculated the mean values of the data points included in the three environmental sub-categories for each year under observation. Given the presence of qualitative data, their metrics preliminarily required a conversion into quantitative data. For this purpose, we adopted a dichotomous scale, with mutually exclusive default values of 1 (when the company is compliant with the item) and 0 (when the company is not compliant with the item or when the relative information is not available).

Finally, we performed a regression analysis to investigate the relationship between the environmental performance of the Italian financial intermediaries and their main features, such as the company's dimension, financial leverage and economic performance. We developed a dynamic pooled regression model by assuming three company-specific indicators as possible predictors of environmental performance: the logarithm of total assets, as a proxy of the company dimension; the ratio of total capital to total assets, as a leverage indicator; and the return on equity (ROE), as a proxy of economic performance. All the data were collected from the Thomson Reuters Datastream database. We tested four variables as dependent variables: the three environmental sub-category scores (resource use score, emission score and innovation score) and the global environmental score. Table 2 presents the description of the variables considered in the model.

The regression models take the following form:

$$\text{Environmental Performance}_{i,t} = a + b_1\text{Talog}_{i,t} + b_2\text{LEV}_{i,t} + b_3\text{ROE}_{i,t} + \varepsilon_{i,t}, \quad (1)$$

where the dependent variable (Environmental Performance) is one of the four environmental scores, as mentioned above (ES, ResSc, EmiSc, InnSc), a is the intercept, b_{1-3} are the regression coefficients, Talog is the logarithm of total assets, LEV is the leverage indicator (total capital/total assets), ROE is the economic performance indicator, ε is the random error term and i and t are indices for observation units (banks and insurance companies in the sample) and time (fiscal years from 2015 to 2020).

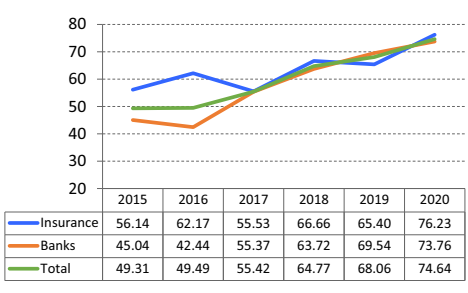
Table 2. Regression analysis variables.

Variable	Symbol	Information profile
Environmental score	ES	Global environmental performance
Resource use score	ResSc	First environmental pillar sub-category
Emissions score	EmiSc	Second environmental pillar sub-category
Environmental innovation score	InnSc	Third environmental pillar sub-category
Logarithm of total assets	Talog	Dimension
Total capital/total assets	LEV	Leverage
Return on equity	ROE	Economic performance

5. Results and Discussion

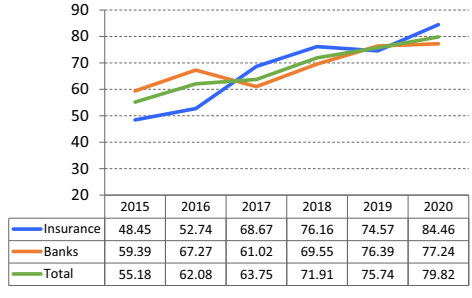
5.1. *Analysis of the environmental scores*

As stated above, in the first step, we analyzed the environmental performance of banks and insurance companies focusing on four indicators: the three environmental sub-category scores (resource use score, emission score and innovation score) and their simple average (the global environmental score). Figure 1 shows the time evolution of the mean values of the three environmental sub-category scores.



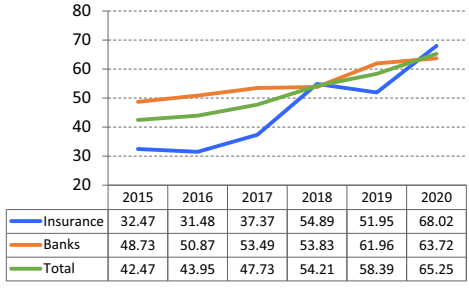
	2015	2016	2017	2018	2019	2020
Insurance	56.14	62.17	55.53	66.66	65.40	76.23
Banks	45.04	42.44	55.37	63.72	69.54	73.76
Total	49.31	49.49	55.42	64.77	68.06	74.64

(a)



	2015	2016	2017	2018	2019	2020
Insurance	48.45	52.74	68.67	76.16	74.57	84.46
Banks	59.39	67.27	61.02	69.55	76.39	77.24
Total	55.18	62.08	63.75	71.91	75.74	79.82

(b)



	2015	2016	2017	2018	2019	2020
Insurance	32.47	31.48	37.37	54.89	51.95	68.02
Banks	48.73	50.87	53.49	53.83	61.96	63.72
Total	42.47	43.95	47.73	54.21	58.39	65.25

(c)

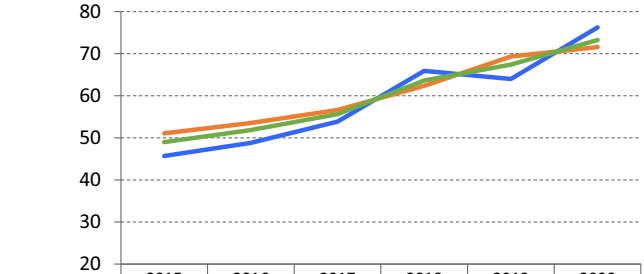
Fig. 1. (a) Resource use score (mean values), (b) Emissions score (mean values), (c) Innovation score (mean values).

The average values are reported separately for banks, insurance companies and the whole sample. By observing the figure, it is possible to note a significant increase for each of the three environmental performance indicators, for both the insurance company sub-sample and the bank sub-sample.

For the insurance companies, the growth of environmental performance is particularly evident for the innovation score (Fig. 1(c)) — whose mean value rises in the observed period +109.5%, from 32.47 (2015) to 68.02 (2020) — followed by the emissions score (+74.3%, from 48.45 to 84.46) (Fig. 1(b)) and the resource use score (+35.8%, from 56.14 to 76.23) (Fig. 1(a)). In the case of banks, the highest growth rate is observed for the resource use score (+63.8%, from 45.04 to 73.76), while the relative increase of the emissions score (from 59.39 to 77.24) and the innovation score (from 48.73 to 63.72) is about +30%. For the sample as a whole, the innovation score (+53.6%) and the resource use score (+51.4%) are confirmed as the ones with the highest growth.

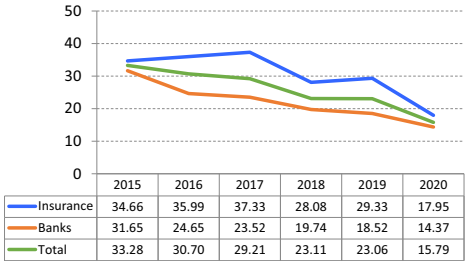
Focusing on 2020 mean values, Italian financial intermediaries' policies and practices seem to meet the highest environmental standards in the field of emissions reduction (mean emissions score of 79.82 for the whole sample) and efficient use of resources (materials, energy and water) in the production processes (mean resource use score of 74.64). Comparing the 2020 mean values of the two categories of financial intermediaries, the insurance sector achieves higher mean scores than the banking industry for each environmental indicator. Similar considerations come from the analysis of the global environmental score, whose 2020 mean values and time growth rate are higher for insurance companies (from 45.68 in 2015 to 76.24 in 2020, +66.95%) compared to banks (from 51.05 to 71.57, +40.2%), although the difference is rather minimal (Fig. 2).

Figure 3 documents the trend of the standard deviation of the four environmental performance indicators. For each indicator and for both the insurance company sub-sample and the bank sub-sample, the standard deviation decreases significantly in the observation period, which means that the efforts in the last few



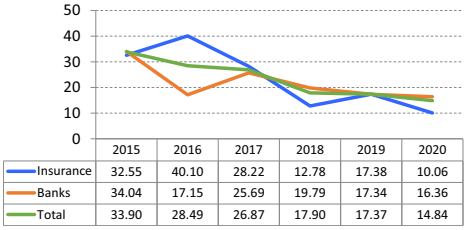
	2015	2016	2017	2018	2019	2020
Insurance	45.68	48.80	53.86	65.90	63.97	76.24
Banks	51.05	53.53	56.62	62.36	69.29	71.57
Total	48.99	51.84	55.63	63.63	67.39	73.24

Fig. 2. Environmental score (mean values).



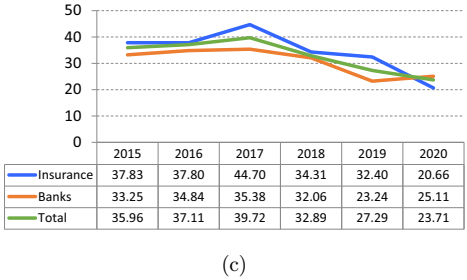
	2015	2016	2017	2018	2019	2020
Insurance	34.66	35.99	37.33	28.08	29.33	17.95
Banks	31.65	24.65	23.52	19.74	18.52	14.37
Total	33.28	30.70	29.21	23.11	23.06	15.79

(a)



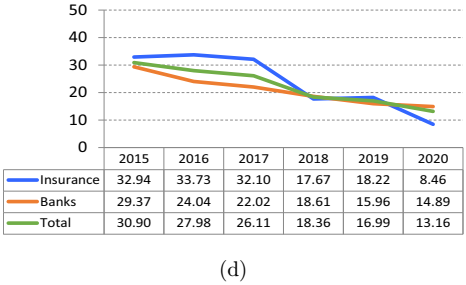
	2015	2016	2017	2018	2019	2020
Insurance	32.55	40.10	28.22	12.78	17.38	10.06
Banks	34.04	17.15	25.69	19.79	17.34	16.36
Total	33.90	28.49	26.87	17.90	17.37	14.84

(b)



	2015	2016	2017	2018	2019	2020
Insurance	37.83	37.80	44.70	34.31	32.40	20.66
Banks	33.25	34.84	35.38	32.06	23.24	25.11
Total	35.96	37.11	39.72	32.89	27.29	23.71

(c)



	2015	2016	2017	2018	2019	2020
Insurance	32.94	33.73	32.10	17.67	18.22	8.46
Banks	29.37	24.04	22.02	18.61	15.96	14.89
Total	30.90	27.98	26.11	18.36	16.99	13.16

(d)

Fig. 3. (a) Resource use score (standard deviation), (b) Emissions score (standard deviation), (c) Innovation score (standard deviation), (d) Environmental score (standard deviation).

years to achieve higher environmental standards are spread quite homogeneously among Italian financial companies; thus, environmental policies are progressively aligning within the financial sector. Higher heterogeneity occurs in the case of the environmental innovation score (Fig. 3(c)). Comparing banks and insurance companies, the latter show both a higher reduction rate and lower standard deviation values in 2020 for each indicator, with the only exception being the resource use score.

Finally, we observed the time evolution of the four indicators' minimum and maximum values for the whole sample (Fig. 4). For each environmental indicator, both values (minimum and maximum) increased in the observed period. We believe the trend of the minimum values deserves special attention. For the resource use score and the emissions score, we have a minimum value of 0 in the first two years (2015–2016), while all companies in the sample have had a positive score since 2017, which means that even the less (environmentally) performing companies — i.e. the ones less focused on environmental issues — have made some effort to reduce emissions and to promote efficient use of resources in their activities. For the innovation score, we see not only lower minimum/maximum values compared to the ones of the other indicators, but we also see a minimum value standing at 0 until 2019, which confirms the lower performance of financial institutions in the field of research on and/or implementation of innovative solutions aiming at reducing the environmental impact of their activities.

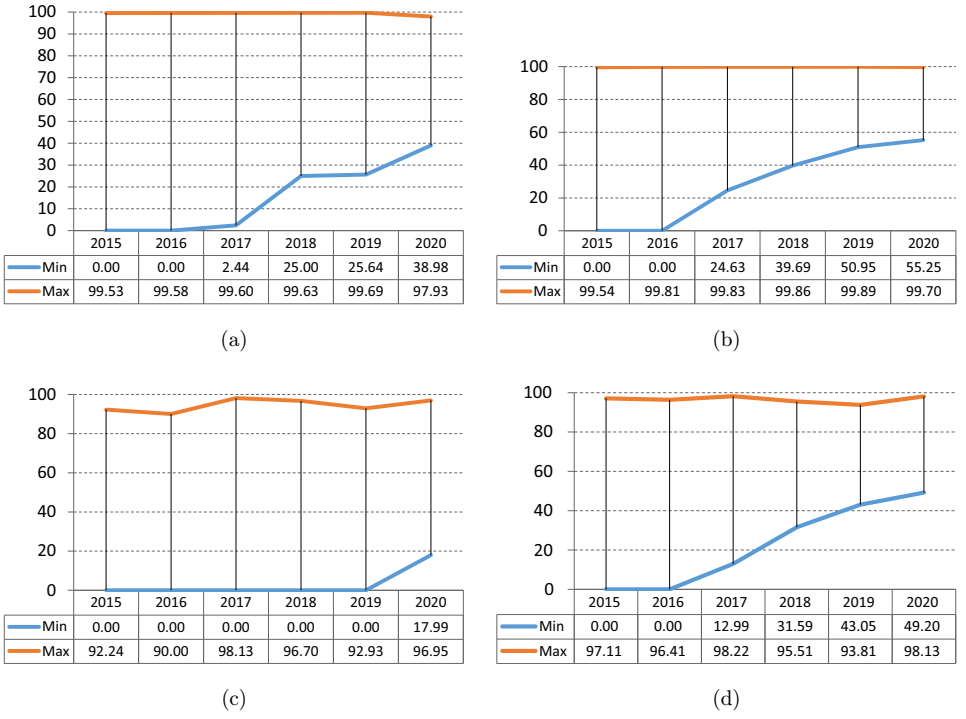


Fig. 4. (a) Resource use score (min–max values), (b) Emissions score (min–max values), (c) Innovation score (min–max values), (d) Environmental score (min–max values).

5.2. *Sub-category analysis*

After we investigated the environmental scores, we went a step further by analyzing the most significant measures underlying the three sub-category scores in order to appreciate the determinants of the improved environmental performance observed for the banks and insurance companies in our sample. Table 3 highlights the mean values of the measures included in the resource use score, which are significant for financial companies. As stated above, the mean values range from 0 (all the companies in the sample are not compliant with the item) to 1 (all the companies in the sample are compliant with the item).

Almost all the metrics have a positive trend and reach values higher than 0.5 in 2020, which means that most companies are compliant with the items. The maximum value (1) is obtained for "resource reduction policy" and "policy energy efficiency", followed by "environmental supply chain management", "policy environmental supply chain" and "environment management training", with values close to 0.8 in 2020. According to this observed data, all the banks and insurance companies in the sample have adopted internal policies to reduce the use of materials and energy consumption in their operations, while about 80% of them implemented an environmentally-oriented supply chain management approach, modeling their

Table 3. Resource use score metrics and values.

Resource use sub-category	2015	2016	2017	2018	2019	2020
(1) *Environment management team*						
Insurance companies	0.40	0.40	0.40	0.40	0.40	0.80
Banks	0.14	0.14	0.21	0.29	0.50	0.64
Total	0.21	0.21	0.26	0.32	0.47	0.68
(2) *Environment management training*						
Insurance companies	0.40	0.40	0.60	0.60	0.60	1.00
Banks	0.29	0.50	0.50	0.50	0.57	0.71
Total	0.32	0.47	0.53	0.53	0.58	0.79
(3) *Environmental materials sourcing*						
Insurance companies	0.40	0.40	0.60	0.60	0.60	0.80
Banks	0.21	0.29	0.29	0.36	0.43	0.36
Total	0.26	0.32	0.37	0.42	0.47	0.47
(4) *Environmental supply chain management*						
Insurance companies	0.60	0.60	0.60	0.80	0.80	0.80
Banks	0.29	0.36	0.50	0.57	0.64	0.79
Total	0.37	0.42	0.53	0.63	0.68	0.79
(5) *Policy environmental supply chain*						
Insurance companies	0.60	0.80	0.60	0.80	0.80	0.80
Banks	0.36	0.36	0.50	0.57	0.71	0.86
Total	0.42	0.47	0.53	0.63	0.74	0.84
(6)*Resource reduction policy*						
Insurance companies	0.80	0.80	0.80	1.00	1.00	1.00
Banks	0.43	0.57	0.57	0.79	1.00	1.00
Total	0.53	0.63	0.63	0.84	1.00	1.00
(7) *Policy water efficiency*						
Insurance companies	0.40	0.40	0.20	0.60	0.60	0.80
Banks	0.07	0.07	0.14	0.21	0.29	0.36
Total	0.16	0.16	0.16	0.32	0.37	0.47
(8)*Policy energy efficiency*						
Insurance companies	0.80	0.80	0.80	1.00	1.00	1.00
Banks	0.43	0.57	0.57	0.64	0.93	1.00
Total	0.53	0.63	0.63	0.74	0.95	1.00
(9)*Resource reduction targets*						
Insurance companies	0.40	0.40	0.40	0.40	0.40	0.00
Banks	0.14	0.14	0.07	0.29	0.29	0.21
Total	0.21	0.21	0.16	0.32	0.32	0.16
(10)*Green buildings*						
Insurance companies	0.40	0.40	0.40	0.40	0.40	0.40
Banks	0.21	0.29	0.29	0.36	0.50	0.64
Total	0.26	0.32	0.32	0.37	0.47	0.58

supply chain and selecting their suppliers by taking into account the goal of reducing the company's overall environmental impact.

In 2020, the "environmental management team" — that is, the employees' team committed to evaluating environmental issues and implementing the company's environmental policies — was present in about 64% of the banks (14% in 2015) and 80% of the insurance companies (40% in 2015). The higher environmental performance of insurance companies is confirmed by the measures of "policy water

efficiency" and "environment management team": in 2020, 80% of the insurance companies and 47% of the banks adopted internal policies to increase water efficiency; a gap is also observed for the environmentally-oriented employee training programs, which are implemented by all the insurance companies (100%) and only 71% of the banks.

Banks achieved better environmental performance compared to insurance companies in the case of "green buildings", where 64% of the banks and 40% of the insurance companies declared using green certified offices/buildings and/or reported major refurbishments to improve the environmental efficiency of their offices/buildings. The measure where both banks and insurance companies have more room for improvement is "resource reduction targets", since only a minority set specific objectives on the efficient use of resources.

The same analysis was conducted for the emissions score; the main underlying metrics are reported in Table 4. In this case, all the metrics increased during the observed period, while insurance companies achieved higher environmental standards for almost all the indicators. The most satisfying performance, with mean

Table 4. Emissions score metrics and values.

Emissions sub-category	2015	2016	2017	2018	2019	2020
(1) *Policy emissions*						
Insurance companies	0.60	0.60	0.60	0.80	0.80	1.00
Banks	0.43	0.57	0.57	0.64	0.79	0.93
Total	0.47	0.58	0.58	0.68	0.79	0.95
(2) *Targets emissions*						
Insurance companies	0.40	0.60	0.60	0.80	0.60	0.60
Banks	0.21	0.29	0.21	0.29	0.36	0.36
Total	0.26	0.37	0.32	0.42	0.42	0.42
(3) *Climate change commercial risks opportunities*						
Insurance companies	0.40	0.40	0.60	1.00	1.00	1.00
Banks	0.36	0.43	0.43	0.43	0.50	0.71
Total	0.37	0.42	0.47	0.58	0.63	0.79
(4) *Waste reduction initiatives*						
Insurance companies	0.40	0.40	0.60	0.80	0.80	1.00
Banks	0.43	0.57	0.57	0.71	0.93	0.93
Total	0.42	0.53	0.58	0.74	0.89	0.95
(5) *ISO 14000 or EMS*						
Insurance companies	0.20	0.20	0.40	0.20	0.20	0.40
Banks	0.21	0.21	0.21	0.29	0.36	0.36
Total	0.21	0.21	0.26	0.26	0.32	0.37
(6) *Environmental restoration initiatives*						
Insurance companies	0.20	0.20	0.20	0.20	0.00	0.20
Banks	0.21	0.21	0.14	0.14	0.21	0.29
Total	0.21	0.21	0.16	0.16	0.16	0.26
(7) *Staff transportation impact reduction*						
Insurance companies	0.80	0.80	0.80	0.80	0.80	1.00
Banks	0.21	0.29	0.29	0.57	0.71	0.79
Total	0.37	0.42	0.42	0.63	0.74	0.84

values close to 1 (i.e. almost all the companies are compliant with the item), is observed in the case of the following four measures: "policy emissions", "climate change commercial risks opportunities", "waste reduction initiatives" and "staff transportation impact reduction."

In detail, all the insurance companies have processes, mechanisms, programs or initiatives in place to reduce (land/air/water) emissions in their operations ("policy emissions"), to recycle or phase out their total waste ("waste reduction initiatives") and to reduce the environmental impact of staff transportation ("staff transportation impact reduction"); also, all the insurance companies are aware of the commercial risks and/or opportunities related to climate change ("climate change commercial risks opportunities"). This awareness is widespread in 71% of the banks, while for the other three mentioned measures, the level of compliance by banks ranges from 0.79 ("staff transportation impact reduction") to 0.93 ("policy emissions and waste reduction initiatives").

Both banks and insurance companies achieved lower environmental performance, although there is improvement, when it comes to defining emission reduction targets ("targets emissions") and to obtaining an environmental certification ("ISO 14000 or EMS"). The lowest mean values are in the field of "environmental restoration initiatives", since a very small part of the sample is involved in initiatives to restore/clean up the environment.

Finally, we considered the metrics underlying the innovation score. When observing the whole measures adopted by Refinitiv's ESG score methodology, we found that the innovation score sub-category is the most difficult to evaluate in the case of financial intermediaries, since most of the items are hardly applicable to the financial industry. We thus focused on the few metrics that appear consistent with the banking and insurance business, as reported in Table 5. Again, mean values grow

Table 5. Innovation score metrics and values.

Innovation sub-category	2015	2016	2017	2018	2019	2020
(1) *Environmental products*						
Insurance companies	0.60	0.60	0.60	0.80	0.80	1.00
Banks	0.36	0.50	0.50	0.57	0.71	0.86
Total	0.42	0.53	0.53	0.63	0.74	0.89
(2) *Equator Principles or env project financing*						
Insurance companies	0.40	0.40	0.40	0.40	0.40	0.60
Banks	0.29	0.36	0.36	0.43	0.57	0.71
Total	0.32	0.37	0.37	0.42	0.53	0.68
(3)*Product environmental responsible use*						
Insurance companies	0.60	0.60	0.60	0.80	0.80	1.00
Banks	0.43	0.57	0.57	0.64	0.71	0.86
Total	0.47	0.58	0.58	0.68	0.74	0.89
(4)*Renewable/clean energy products*						
Insurance companies	0.20	0.20	0.40	0.60	0.60	0.80
Banks	0.36	0.43	0.43	0.43	0.57	0.71
Total	0.32	0.37	0.42	0.47	0.58	0.74

in the observed period and document a high level of compliance in the last year (2020), with insurance companies having a better general performance, although the difference with banks is rather minimal.

The highest environmental performance, with mean values close to 0.9 for the sample as a whole (i.e. 90% of the companies in the sample are compliant with the item), is observed in the case of the development of products/services with a low environmental impact ("environmental products") and with features and/or applications promoting a responsible and environmentally preferable use ("product environmental responsible use").

Furthermore, 74% of the sample's companies declared in 2020 to have supported the development of products and/or technologies for the renewable energy sector ('renewable/clean energy products') through their activities (mainly by financing), while 68% of them claimed to evaluate large projects being supported (i.e. being financed) with a focus on the relative environmental risks, either as a signatory of the Equator Principles or on a voluntary basis ("Equator Principles or env project financing").

5.3. *Regression analysis*

In order to investigate the relationships between the environmental performance of Italian financial intermediaries, as expressed by the four observed environmental scores (resource use score, emissions score, innovation score and environmental score), as well as their respective economic and financial features, we carried out an OLS-type regression analysis. As described above (see Eq. (1)), we tested the logarithm of total assets (company dimension), the ratio total capital/total assets (financial leverage) and the ROE (economic performance) as predictors of environmental performance.

Before performing the multivariate regression analysis, we verified the correlation between the variables used in the model to rule out multicollinearity problems (Table 6).

The following Tables 7–10 summarize the results of the regression analysis, highlighting the sign of the variables and their statistical significance.

The regression results document a positive and statistically significant relationship between environmental performance and the companies' total assets for all the

Table 6. Correlation matrix.

EnvSc	InnSc	ResSc	EmiSc	Talog	LEV	ROE	
1,0000	0,8461	0,8692	0,8484	0,6763	0,3099	0,0527	EnvSc
	1,0000	0,5704	0,5215	0,6392	0,2915	−0,1837	InnSc
		1,0000	0,7052	0,5745	0,2427	0,0940	ResSc
			1,0000	0,5805	0,2151	0,1976	EmiSc
				1,0000	0,4368	−0,3441	Talog
					1,0000	0,0454	LEV
						1,0000	ROE

Table 7. Regression results with ResSc as dependent variable.

	Coefficient	Std error	t	p-value	
Const	−276.930	77.8463	−3.557	6.00E−04	***
Talog	31.2389	4.25037	7.35	6.29E−11	***
LEV	−11.5363	89.7295	−0.1286	0.898	
ROE	1	0	3.31E+00	0.0013	***
R-square: 0.399360; Correct R-square: 0.380784					

Notes: *denotes significance at 10% ($p < 0.1$);
**denotes significance at 5% ($p < 0.05$);
***denotes significance at 1% ($p < 0.01$).

Table 8. Regression results with EmiSc as dependent variable.

	Coefficient	Std error	T	p-value	
Const	−252.254	73.4567	−3.434	9.00E−04	***
Talog	34.649	4.0107	8.639	1.16E−13	***
LEV	−73.5361	84.6698	−0.8685	0.3873	
ROE	1	0	5.16E+00	0.0000013	***
R-square: 0.479923; Correct R-square: 0.463838					

Notes: *denotes significance at 10% ($p < 0.1$);
**denotes significance at 5% ($p < 0.05$);
***denotes significance at 1% ($p < 0.01$).

Table 9. Regression results with InnSc as dependent variable.

	Coefficient	Std error	t	p-value	
Const	−360.877	59.4411	−6.071	1.78E−08	***
Talog	36.2474	4.92127	7.365	3.20E−11	***
LEV	9.88573	67.177	0.1472	0.8833	
ROE	0	0	1,98E-01	0,8437	
R-square: 0.414346; Correct$R$-square: 0.398659					

Notes: *denotes significance at 10% ($p < 0.1$);
**denotes significance at 5% ($p < 0.05$);
***denotes significance at 1% ($p < 0.01$).

Table 10. Regression results with EnvSc as dependent variable.

	Coefficient	Std error	t	p-value	
Const	−333.778	65.2756	−5.113	1.59E−06	***
Talog	32.9697	3.56401	9.251	5.57E−15	***
LEV	27.8673	75.2399	0.3704	0.7119	
ROE	0.532139	0.155878	3.414	0.0009	***
R-square: 0.520263; Correct R-square: 0.505426					

Notes: *denotes significance at 10% ($p < 0.1$);
**denotes significance at 5% ($p < 0.05$);
***denotes significance at 1% ($p < 0.01$).

observed scores. This leads us to argue that the dimensional aspect is positively correlated with environmental practices; in other words, the largest banks and insurance companies are the highest performing in terms of environmental sustainability. With the only exception of the environmental innovation score, a second statistically significant correlation links environmental performance with the economic performance ROE — that is, banks and insurance companies with higher levels of profitability achieve higher environmental standards. We believe that these results are coherent with the idea that the largest and most structured intermediaries, as well as the ones with greater financial strength, also have more space to develop internal policies and procedures to improve their efficient use of natural resources and to mitigate the environmental damages associated with their economic activities.

6. Conclusions

The ongoing international debate on climate change involves the financial sector in a relevant way. Environmental sustainability is linked to climate change mitigation and adaptation, as well as to environmental impact more generally, such as biodiversity conservation, pollution prevention and the circular economy. Financial institutions have direct impacts on the environment, as polluters, as well as indirect impacts, through lending and investments.

In this study, we focused on the direct impact, carrying out an empirical analysis on a sample of 15 Italian banks and five Italian insurance companies operating in the period 2015–2020 with several aims. First, by analyzing the environmental scores provided by the Thomson Reuters Refinitiv database, we aimed to investigate the evolution of the environmental performance of the examined companies over the observed time period. For this purpose, we focused on the three environmental subcategory scores provided by the Refinitiv database (resource use, emissions and environmental innovations) and on their underlying items.

The results are positive, and the Italian financial intermediaries seem to have converged in the last few years in the direction of greater attention to environmental issues: in the analyzed period, environmental performance in the three investigated areas grew significantly for both banks and insurance companies. In 2020, environmental policies and practices within the Italian financial sector met the highest international standards in most cases, especially in the fields of emissions reduction, efficient use of energy (and other resources), and waste recycling.

In contrast, we found a lower performance of financial institutions in the field of research and/or implementation of innovative solutions aimed at reducing the environmental impact of economic activities (innovations score). However, it should be noted that the innovations score metrics do not appear to be consistent with or applicable to the financial sector. Furthermore, when comparing the two categories of financial intermediaries, we also found that, on average, the insurance sector achieves higher environmental performance than the banking industry, although we

suspect that the comparison results could have been affected by the small number of insurance companies within the sample. Our results are consistent with the exceptional diffusion of regulations in the field of environmental disclosure developed at the European level in recent years. By strengthening environmental disclosure, European regulators may have activated the market discipline mechanism, forcing banks and insurance companies to conduct their business in a more "environmentally safe mode".

In addition, our study investigated the relationship between the environmental performance of Italian financial companies and their economic and financial characteristics. Our findings suggest that the dimensional aspect and economic performance are both positively correlated with the environmental scores — that is, the largest and most structured banks and insurance companies, as well as the ones with higher levels of profitability (i.e. greater financial strength), are the highest performing in terms of environmental standards.

Although our results might have important implications for banks, insurance companies and policymakers, we are aware of a number of limitations affecting the study that could be overcome through future research. First, the sample size is limited to a relatively small number of Italian intermediaries, with a weak presence of insurance companies. Second, and consequently, the number of observations was limited and not always available for the selected companies in the first years under observation. Finally, the distinctive features of the banking and insurance industry are not always fully assessable through the environmental metrics adopted by the Thomson Reuters ESG methodology.

Therefore, it might be useful to repeat the same analysis using environmental performance data provided by different databases. Future lines of research might also address a wider geographical region to compare the environmental performance of financial institutions operating in different countries. Indeed, both academics and practitioners widely agree that the environmental performance of a company depends not only on the internal governance of the company but also on the legal and political context in which the company operates.

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