UNIVERSITÀ
DI SIENA
1240

DIPARTIMENTO DI STUDI AZIENDALI E GIURIDICI
SCUOLA DI ECONOMIA E MANAGEMENT

MASTER'S DEGREE IN INTERNATIONAL ACCOUNTING AND MANAGEMENT

Mandatory non-financial disclosures and performance: an empirical investigation into the agri-food sector worldwide

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Academic Year 2020/2021

Summary

Abstract

Focusing on the food and beverage sector, this study examines whether and how mandatory Non-Financial Disclosure (NFD) affects financial performance, as well as its moderating effect on the relationship between non-financial performance (NFP) and financial performance (FP). In so doing, the analysis involved different stakeholders' perspectives relying on different proxies of FP. I adopted the longitudinal analysis method to perform a regression analysis (OLS) with fixed effects on a balanced sample of 180 listed companies in the agri-food sector worldwide and covering eight years of observations. Furthermore, the moderation effect of the directives on the relationship between NFP and FP has been tested, focusing on the environmental and social aspects. NFD regulations regarding both social and environmental aspects positively affect firms' operating profitability and shareholder return. Nevertheless, the directives have general negative moderating effects on the relationship between NFP and FP. From a debtholder perspective, environmental regulations impact the Cost of Debt (CoD) differently from social regulations. Indeed, environmental disclosure regulations increase the CoD while their moderating role slightly decreases it. Conversely, social disclosure regulations reduce the CoD while their moderating effects partially increase it. The compliance with NFD regulations and non-financial activities lead to substantial positive consequences. This empirical analysis is one of the first to explore the influence of mandatory NFD on the relationship between non-financial and financial performance in the agri-food context and to bring attention to the direct impact of mandatory regulations on companies' financial performance. Nevertheless, the research covers a limited time frame and some relations show scarce significance. Therefore, can be interesting to test the scrutinized relationships with different statistical methods, such as "difference indifferences" or exploring the mediation effect of the regulation.

Introduction

Corporate social and environmental responsibility has become increasingly known in recent years, starting to take over the socio-economic setting (Jones et al., 2005, 2007). Consequently, companies are increasingly chasing sustainability issues instead of pursuing mere profit maximization (Nirino et al., 2019). Therefore, non-financial information is becoming a vital aspect of business management, and even more critical is the disclosure of these pieces of information to stakeholders at all levels. In the last twenty years, a number of national and international laws worldwide have been issued to foster the disclosure of Environmental, Social and Governance business performance. In this view, the directives on Non-Financial Disclosure (NFD) represent an opportunity to bond corporate sustainability and financial performance by increasing the awareness of stakeholders (Korca & Costa, 2021). At the same time, to comply with the regulation, companies can incur costs related to sustainability and reporting activities such as data collection, innovation and adaptation of supply chains, consultancy and auditing. In light of all the above, there is the need to clarify the relationship between non-financial and financial performance and non-financial disclosure and financial return, thus understanding whether being sustainable is profitable or detrimental for the business. Despite the great relevance of this topic, only a few studies investigate if the introduction of a mandatory NFD regulation plays a role in increasing or decreasing the company's financial performance. This empirical investigation aims to fill this literature gap, focusing on the agri-food sector, which is particularly connected to sustainability issues. To this end the thesis is structured as follows: Chapter 1 presents the evolution of corporate social responsibility, the disclosure of non-financial information and the NFD regulation issued worldwide. Chapter 2 reports the existing literature about the relation between NFD and financial performance, as well as the one regarding the impact of non-financial performance on financial ones. In addition, it is explained the cruciality of the agri-food sector in the sustainability's scenario. Chapter 3 highlights the aspects related to the empirical analysis: research questions, methodology and data collection. Lastly, the results are presented, proposing discussions, conclusions and hints for future research.

Chapter 1

In the last decade, both academics and practitioners have placed great attention and emphasis on environmental and social issues. Companies have begun to increasingly understand the impact they have on the environment and society, also thanks to the growing pressures exerted on them by stakeholders. Therefore, companies have started to account for their non-financial performance and to communicate them externally in the same way as the more traditional financial results (Cupertino & Vitale, 2021, p.12). The sustainability reporting, however, is only the peak of a broader process that involves the definition of medium long-term strategy from which to derive the accounting models and indicators to be used to account for companies results, supporting managers in monitoring and implementing any corrective actions (Maas et al., 2016; Vitale et al., 2019).

1.1 The evolution of CSR

The European Union, in the 2001 Green Paper, defined Corporate Social Responsibility (CSR) as "*A voluntary integration by companies, of the concerns social and environmental aspects within commercial operation and in relation with the various stakeholders*". From this definition is possible to derive that CSR includes three dimensions: 1. *Social*: equal access to resources and different opportunities for everyone, without jeopardizing the life of generations to come (WCED, 1987). 2. *Environmental:* safeguarding the environment by reducing waste and pollution. 3. *Economic:* the creation of both economic and social well-being through the production of goods and the supply of services to improve lifes' quality.

Attention to CSR has grown dramatically over time, establishing itself due to strong pressures that society and the market have exerted on companies, promoting a substantial change in business management (Conte, 2008). CSR had a long path before its establishment, which started in the 1930s. At the end of the 1970s, the three aspects of sustainability were already considered as an integral part of the business, but CSR was understood as a factor to obtain economic advantages rather than to create and spread collective well-being (Agudelo et al., 2019). At that time, was prominent the shareholders' theory, according to which the purpose of corporations was only the maximization of shareholders value. However, between 1980 and 1990 CSR began to take on a different meaning, leading to a change in the idea of the company, and Freeman introduced the stakeholders' theory, by arguing the importance of stakeholders for the survival and growth of a company. Notably, Freedman (2010) defined the stakeholders as "*any group or individual who can influence the achievement of the objectives of the companies. The stakeholders concern employees, customers, suppliers, shareholders, banks, environmentalists, government and other groups who may or may not grow the company."* The Freeman theoretical vision constituted a huge change for the economic world. Indeed, companies were no longer seen as the property of the sole shareholders but also a place made up of more people and relationships. In other words, CSR led companies to also consider the interest of the various people who interact with it.

If on the one hand a new meaning of business was established, on the other, however, CSR was seen as a factor external to the corporate strategy. The companies considered sustainability as a "limit" rather than an opportunity: they used to reduce environmental and/or social negative externalities

without changing the companies' strategies. Only in the 2000s did companies begin to evaluate the idea of CSR as an opportunity to review their organizational structure and to adopt sustainable initiatives (Orsato, 2006). This change of pace has also been influenced by international certification and guidelines for the reporting of non-financial information and the implementation of socially and environmentally sustainable activities.

In the following years, Porter and Kramer gave one of the major contributions in this field. In this regard, they stated that companies must implement a holistic approach to corporate social responsibility, through a medium-long term vision.

To sum up, it emerges that CSR has undergone a gradual evolution: from an exclusive managerial decision to part of a broader management process up to becoming an essential element in the process of defining the corporate strategy (Cupertino & Vitale, 2021). In particular, business management, if in the early 1930s was limited to the generation of profits, now aims to produce economic, social, and environmental value (Agudelo et al., 2019).

1.2 Disclosure of non-financial information

Following the emergence of the phenomenon of corporate sustainability and an increasingly competitive and globalized market, stakeholders need to be able to receive information that is not only quantitative but also qualitative. Indeed, stakeholders ask for transparency and accountability of the organizations' activities (Maas & Vermeulen, 2020). Consequently, financial data are no longer sufficient to meet their needs and as a reaction, non-financial reporting practices incredibly increase. Sustainability reporting is the dissemination of both internal and external, voluntary, and non-voluntary tools aimed at disseminating environmental, social, and ethical information (Vitale et al., 2019).

In line with this, enormous steps ahead have been made in the practices of non-financial reporting over the past twenty years (Christolfi et al., 2012). Government, citizens, employees, and other stakeholders increasingly expect organizations to account for their social and environmental impacts (Ecless & Krzus, 2010; Maas, 2011). Next to that, organizations have realized that being transparent in the disclosure of non-financial information can lead to a better reputation, benefitting the business. Consequently, more and more organizations have started to keep track and report their non-financial performance. Last but not least, Kolk claimed that the perception of organizations about their role towards the environment and society goes up thanks to sustainability reporting (Kolk, 2004).

To date, there are two main reporting solutions adopted by companies: the sustainability report and the integrated reporting. The first one provides non-financial performance' proofs to a large number of stakeholders. This qualitative information is disclosed in a separate document from the financial one, therefore not presenting the impact/correlation of the taken actions and the financial performance. At the institutional level, guidelines have been defined for the reporting of sustainable reports, with international significance. For instance, one of the most accredited standards for the disclosure of sustainable practices is the GRI (Global Reporting Initiatives) (Fasan, 2013). The GRI standards allow companies to communicate their level of environmental, social, and economic impact through globally shared indices. The main elements of this framework are the principle of materiality and involvement. Material issues are those matters that create value for the company in the long term,

while involvement requires companies to implement the expectations of the various stakeholders since they are the main addressee of the reports (Cupertino & Vitale, 2021, p.33).

Integrated reporting differs from the classic sustainability report as it integrates qualitative sustainability-related information with quantitative monetary information. In particular, integrated reporting offers the various stakeholders a future-oriented vision instead of adopting a retrospective approach (Cupertino & Vitale, 2021, p.33). The International Integrated Reporting Council (IIRC), which is a global coalition of regulators, investors, companies, standard setters and NGOs, defines the IR process "*as it brings together material information about an organization's strategy, governance, performance, and prospects in a way that reflects the commercial, social, and environmental context within which it operates*" (Integrated Reporting, 2013).

CSR assets are measurable and observable, but not always quantifiable in monetary terms. Indeed, the sustainability reporting system refers to heterogeneous issues, such as environment, impact on communities etc., that can cause difficulties in the standardization and comparison between companies. In addition, from 1980 to 2010 voluntary approaches were preferred, but they led to a legitimacy crisis, given also by the lack of third-party verification, that requested the introduction of stricter parameters. Therefore, to make the required information by stakeholders match with the reported information by organizations have arisen several non-financial reporting standards (Wallage, 2011). To name but a few:

- The ISO 26000 Social Responsibility standard, was issued in 2010 by the International Organization for Standardisation (ISO), the world's largest developer and publisher of standards.
- The UN Guiding Principles on Business and Human Rights, which have been endorsed by the UN Human Rights Council (UN HCR) in 2011,
- The Integrated Reporting Framework (IRF) issued by the International Integrated Reporting Council (IIRC) in 2014,
- The recommendation issued in 2017 by the Task Force on Climate-Related Financial Disclosure (TCFD), developed by the Financial Stability Board,
- The seventeen sustainable development goals (SDGs) set in 2015 by the United Nations General Assembly and intended to be a "*blueprint to achieve a better and more sustainable future for all"* (United Nations, 2015).

The variety of frameworks is a sign of the lack of comparability. Nevertheless, the guidelines have enhanced the quality of sustainability reports, which, without them, would have been even more confused (Lozano, 2013; Eccles & Saltzman, 2001).

In addition, sustainability reports often lack materiality and can be incomplete and selective (Wensen et al., 2011), further decreasing the comparability between reports. Lastly, Sustainability reporting tools are generally voluntary: This nature often leads to little accuracy and difficult comparability (Vitale & Cupertino, 2021).

Therefore, a more systemic approach that improves comparability and includes material issues is needed to address the requirements of different stakeholders. Consequently, the integrated report (IR) have attracted on itself the interest of academics and practitioners because it is able to address the missing linkages between financial and non-financial information of previous reports (Solomon & Maroun, 2012; Churet & Eccles, 2014). An IR represents "a holistic picture of the combination, interrelatedness and dependencies between the factors that affect the organization's ability to create value over time" (Integrated Reporting, 2013).

To sum up, in order to satisfy society expectations and information needs, firms should disclose both financial and non-financial information. As a result, stakeholders can appreciate the degree of involvement towards the social and environmental sustainability of companies and understand the linkage between sustainable practices and financial return (Deegan, 2002). The sustainability standards help companies in disclosing more similar information, even without completely removing the lack of comparability.

1.2 Mandatory vs. voluntary non-financial information

Initially, companies voluntarily reported on sustainability-related issues, without a regulatory obligation. Then, the increased global awareness of environmental and social issues made corporate non-financial disclosure assume the same importance as the traditional one, fostering a pathway of change into public policy and governmental regulation (Cupertino & Vitale, 2021; Maguire, 2012). Nowadays, both types of reporting coexist, even if any form of institutional pressure is considered more functional to improve CSR issues. At present, the majority of regulations have a "report or explain" approach, that obliges organizations that do not publish non-financial information in their reports to explain the reason for their choice.

The real effects of both types of reporting are quite unclear. Mandatory reporting seems to be meant for organizations to better account for their impacts on public goods and externalities, while voluntary reporting may be more oriented towards organizational benefits (Maas & Vermeulen, 2020). However, we cannot take these statements for granted because only limited evidence exists on this topic.

Table 1 lists some advantages and drawbacks of non-financial reporting. Organizations that follow a voluntary approach are freer to disclose their information in different periods, on a variety of different key indicators and using different formats (Habek & Wolniak, 2013). Nevertheless, voluntary reporting can lead to situations of deception by the company, such as incomplete information, "greenwashing," and partial and "self-praising" information. In other words, companies can tend to disseminate information that highlights positive social, environmental, and ethical characteristics, as an image/reputation enhancement tool, omitting data that are not in line with a sustainable business. In addition, Jeffry and Perkins (2014) advocate that stakeholders find extremely hard to assess the non-financial information disclosed in voluntary reporting because the data are often incomplete. Furthermore, through an analysis of the previous studies, they concluded that mandatory CSR reporting enhances the comparability and reliability of information disclosed (Jeffrey & Perkins, 2014).

As a consequence, due to the implementation of mandatory non-financial regulations, governments and corporations are more accountable for their behaviours, thus, they need to increase the transparency of non-financial information (Maas & Vermeulen, 2020). To prove that, a survey conducted in 2011 in Denmark on the consequences of mandatory CSR reporting, showed that the companies that did not observe the prescription of the laws almost halved within 3 years after the implementation of the regulation and the transparency and comparability between reports substantially increased.

Furthermore, Ioannou and Serafeim (2014) conducted an empirical analysis on four countries, namely, China, Denmark, Malaysia, and South Africa, highlighting that in countries with severe social and environmental challenges, the number of disclosure, the comparability and reliability of reported information considerably rise thanks to the introduction of policy regulation. Moreover, when the quality of sustainability disclosure improve, also the firm valuation does (Ioannou and Serafeim 2014). Next to that, Grewal et al. (2015) broaden the list of mandatory non-financial regulation's advantages.: through a quantitative cross-section analysis, they demonstrated that shareholders are willing to invest in companies with strong non-financial disclosure and performance. As a consequence, these companies will benefit from abnormal positive returns (Grewal et al., 2015).

On the other hand, it is possible to envisage also disadvantages linked to mandatory non-financial disclosure. For example, legally binding obligations can crate additional divisions and rise the administrative costs for organizations that operate under different legal systems (Monciardini et al., 2020). In addition, Christensen et al. (2015) found that the introduction of mandatory non-financial disclosure worsens the productivity of firms. Next to this, Kalcanci et al. (2012) claim that mandatory social and environmental disclosures deter firms from measuring and improving sustainability practices on the supply chain because they worsen investors' valuation, reducing market share and profitability.

Moreover, organizations that are motivated by institutional pressures can tend to meet minimum requirements (compliance), instead of disclosing their most material issues. Besides, critiques claim that mandatory regulations take the lead to greenwash or forms of self-interest. Therefore, without the proper monitoring and enforcement, mandatory reporting can be irrelevant as well as voluntary non-financial reporting (Habek & Wolniak, 2013).

Overall, the studies present both downsides and upsides of mandatory and voluntary non-financial disclosure. According to the existing literature, it is not possible to draw one general conclusion. Indeed, companies should choose the right system for them depending on their social, environmental, economic, and regulatory context and assess whether they are proactive or reactive players in the field (Maas & Vermeulen, 2020).

Table 1- Advantages and disadvantages of voluntary and mandatory approaches to sustainability reporting.

Approaches to reporting	Reasons for	Reasons against
Voluntary	Flexibility	Conflicts of interest
	Proximity	Inadequate sanctions
	Compliance (isomorphism)	Under-enforcement
	Collective interest of industry	Global competition
		Insufficient resources
Mandatory	Changing the corporate culture – leaders will continue to innovate above minimum requirements	Knowledge gap between regulators and industry
	Incompleteness of voluntary reports	One size does not fit all
	Comparability	Inflexibility in the face of change and complexity
	Non-reporting of negative performance (negative externalities)	Lack of incentive for innovation
	Legal certainty	Constraints on efficiency and competitiveness
	Market failures – theory of regulations	
	Reduction of non-diversifiable market risking free rider problems	
	Cost savings[78]	
	Standardisation / Level-playing-field	
	Equal treatment of investors	

Source: KPMG, United Nation Environment programme, GRI, University of Stellenbosch (2010), cited by Habek and Wolniak (2013)

1.3 Non-financial regulations worldwide

Annex 1 shows an overview of the mandatory and voluntary non-financial provisions worldwide, highlighting the emanation year, the content and to who is addressed.

During the last decade, non-financial reporting has been exclusively or mainly a voluntary practice in Europe, but in the wake of some individual initiatives, the European Union issued a directive for non-financial disclosure. For more than 6,000 big corporations in Europe is now compulsory the publication of a sustainability report, which includes their concrete actions, data and outcomes regarding environmental, social and governance issues (European Parliament and Council, 2014). The *2014 EU Directive* obliges large public-interest companies, quoted companies or with more than five thousand employees to report regarding actions taken to tackle or reduce environmental pollutions, community and workers wellbeing, respect for human rights and anti-corruption and bribery questions. The Directive is quite specific since requires companies to illustrate their business model, results and risks of the policies on the above topics, specifying how these issues apply also to the management and supervisory bodies. Reporting companies are encouraged to follow frameworks from authoritative bodies such as GRI, OECD, UN, (ISO) 26000, International Labour Organization (ILO) or SASB.

It is noteworthy that Norway, even if it is not in the European Union, transposed the 2014/95/ EU directive into Norwegian law, while Switzerland went for an independent Action Plan, which targets the main priority areas to advance the transition to a green economy, namely wastes and raw materials, consumption and production, cross-cutting tools, targets monitoring and reporting.

When it comes to the United Kingdom, there are a few interesting mandatory regulations. Firstly, the *Climate Change Act* is the first attempt to shape a method to manage and tackle climate change in the UK, by imposing striving and legally binding targets, reinforcing the institutional framework, and establishing a unique method of accountability. Besides, the government works hard to help meet those goals and gives best practices to facilitate the adaptability of people and firms to the impact of climate change. Furthermore, the 2018 Regulations imposed to large unquoted companies to disclose in their annual reports greenhouse gas emissions and electricity, fuel and energy consumption. In addition, *The Modern Slavery Act* aims to fight modern slavery, implement rigid protocols for the executors of these crimes, and safeguard transparency along the value chains.

Canada Government issued the report *Mobilizing Finance for Sustainable Growth* in order to raise awareness on sustainable finance. This report offers a bundle of practical recommendations aiming to encourage the essential market activities to embrace this new approach. In other words, global warming opportunities and risks need to become mainstream in financial services, and implemented in everyday business decisions, products and services. The regulation is a way of putting various goals together: mitigation of climate change and economic ambitions. In this way, Canada aspires to position its key industries at the forefront of the transition to a climate-smart economy.

The USA government, through time, has released regulations that cover all the ESG issues. For instance, regarding the environment, the *Clean Water Act* states that US corporations have to disclose their level of water pollution. The act is comprehensive, includes monitoring and reporting measures to ensure compliance with clean water laws. Main monitoring programs include wastewater management and oil spills and spill prevention. *The Mandatory Reporting of Greenhouse Gases Rule* entails the disclosure of greenhouse gas emissions and pollutants from USA large corporations. The reporting covers about 85 % of the nation's greenhouse gas emissions and 10,000 large sources of pollution. The voluntary *Benefit corporation Legislation* approves the institution of Benefit Corporations, which are companies committed to higher standards of accountability and transparency. Indeed, they have the corporate purpose to create a material positive impact on society and the environment and they are asked to take into consideration the impact of their decisions on all stakeholders, including the community and the environment. Lastly, they are required to make public annual sustainability reports that evaluate their compliance with third-party standards. Regarding social and governance issues, the USA issued stricter rules against trafficking in persons, while *the Civil Rights Act* aims at making more accessible the employment processes, hampering the racial and gender discrimination of employees. From 2011 to 2012 were added also lesbian, gay, bisexual and transgender as forms of "sex-stereotyping".

Regarding South America, there are many sustainability regulations, even though most of them are only voluntary. To name but a few, Argentinian *(Projecto de ley) De Responsabilidad Social Empresaria (S- 0765/12)* are legal guidelines for sustainability reporting addressed to companies operating in the country. Companies should include in their disclosures at least the information on the

following topics: business governance and transparency, internal and external stakeholders, environment and community. In Chile is worth noting the *Directive for Public Contracts No.25*, which stipulates sustainable criteria on social and environmental aspects, that suppliers should disclose. Moreover, *Circular No. 52 Referencia Legal Ley N 20.780* introduced requirements for the declaration and payment of taxes on pollutant emissions by stationary sources, establishing a system to report and monitor these matters. Even if not binding, *the Colombian Strategy for Low Carbon Development (ECDBC)* is a program for long term development, which seeks to decouple the growth of emissions greenhouse gas (GHG) from national economic growth. Besides, the plan known as "*Pact for Colombia, pact for equity*" aims to ensure the same chances to all Colombians, laying the groundwork for legality, entrepreneurship and equity. Furthermore, with this pact, Colombia creates the condition to achieve the Sustainable Development Goals by 2030. Lastly, Mexico seems to focus especially on environmental issues. Indeed, the *Climate Change Law* introduces best practices to address climate change and sets key performance indicators to measure the achievements. For example, the law requires the measurement and reporting of pollutant emissions. Whereas, *GHG Program (GEI)* is a voluntary accounting and reporting program intended for greenhouse gas emission reduction. With this provision, the purpose of the government was to develop the ability of companies to deal with everything that revolves around GHG emissions.

Australia has focused much on environmental protection. For instance, the *Energy Efficiency Opportunities Act* intends to identify and evaluate energy efficiency practices and to push their implementation in large energy-using industries, as a way to improve cost-effective energy efficiency. *Carbon Credits (Carbon Farming Initiative) Act* has the objective to remove greenhouse gases (GHGs) from the atmosphere and avoid emissions through incentives for GHG offsetting projects and to increase carbon abatement. The *Modern Slavery Bill,* conversely, commits companies to report within six months of their fiscal year-end the structure of their supply chains, the risk of modern slavery practices therein, and the actions they are taking to assess and address those risks.

Turkey focuses its attention on a variety of issues: consumers, environment and workers. The purpose of the *Consumer Protection Law No. 4077* is to protect consumers' health, safety and economic interests. Moreover, the provision aims at raising consumer awareness of their rights, such as the reimbursement in case of losses and to reduce their exposure to serious hazards. The *Energy Efficiency law No. 5627* wants to foster the efficient use of power resources, minimise their waste and offer an education about the theme of energy efficiency. The act is also intended to control energy prices and introduces administrative sanctions for those who do not comply with it. Besides, the government is committed to giving support to energy efficiency projects. Lastly, *Environment Law No. 2872* requires regular reporting on air and water contamination, and companies' waste management of batteries, tires, electric and electronic equipment.

When it comes to South Africa, the *National Greenhouse Gas Emission Reporting* introduce a single national system of reporting for the see-through disclosure of greenhouse gas emissions, which will be used to build a national Greenhouse Gas inventory, while the *Employment Equity Act* aims at eliminating unfair discrimination in the workplace and ensuring equal opportunities to minorities, women, or people with disabilities.

Asian countries seem to put particular attention to the environment. For instance, it is worth noting the *Green Securities Policy*, which imposes highly polluting activities to disclose their environmental performance. Similarly, *Law No. 52/2005/QH11 on Environmental Protection* state the necessity to prepare and submit an Environmental Impact Assessment (EIA) or an environmental protection plan (EPP) to dedicated agencies before establishing or expanding a business.

South Korea issued the *Environmental Reporting Guidelines* in response to climate change, to annually monitor the condition of the environment. This allows companies to make adjustments where necessary, and study the strategy for the following years. Likewise, Singapore focuses its attention on the safeguard of the environment. Besides the simplification of the energy regulation, the government requires large corporations to provide information on their energy consumption and greenhouse gas emissions.

Japan has a multifaceted packet of regulations. The *Act on Promotion of Female Employment* obliges companies with 300 or more employees to employ a minimum number of women and ensure their empowerment. To make sure that this happens, the government impose companies to measure and divulge this information to the public. The *Guidance for Integrated Corporate Disclosure and Company-Investor Dialogues for Collaborative Value Creation guide* is intended to reduce information asymmetries and favour the joint understanding between companies and investors. Thus, companies need to transparently and diligently disclose their performance.

In the middle east, Malaysia issued the *Main Markets Listing Requirements CSR description*, which aims at pushing publicly traded companies to include in their yearly report information regarding non-financial performance. Indonesia focused on a Presidential Regulation related to SDGs implementation and on *Regulation No. 51/POJK.03/2017Msa, which* makes compulsory an annual sustainability report for any public business, financial institution, and large corporation. India is more concerned with social matters. Indeed, India issued many disclosure recommendations to monitor companies behaviour on the themes of employment, working hours, health, safety and accidents at work. At the same time, the federal government decided that larger companies should submit also an annual *Environmental Audit Report* to the relevant State Pollution Control Board (SPCB).

In conclusion, it is worth mentioning that some Nations such as Zimbabwe, Russia, South Arabia, Thailand, Taiwan and Brazil have been issued neither mandatory nor voluntary regulations. These States, for different reasons, show scarce Institutional attention regarding environmental and social issues.

Overall, most of the mandatory regulations are addressed to big corporations, multinationals or quoted companies, just a few consider also the small and medium enterprises. In the last twenty years the number of mandatory and voluntary regulations has considerably increased, to face the criticalities of our times. 2000 has been a turning point of the proliferation of new norms and regulations, especially regarding the environment. Contrarily to what we could expect, after 2015, years when was signed Agenda 2020, there has been only a slight increase in the emanation of new rules.

Undoubtedly, the awareness of public opinion on these hotspots, and stakeholders that are more and more demanding towards sustainability issues, have obliged governments to take action. Therefore, institutional pressure has become a powerful tool to improve corporate social and environmental responsibility matters.

Chapter 2

2.1 NFD and performance

Non-financial disclosure (NFD) has recently gained prominence, fostered by institutional pressure. Indeed, governments worldwide have started to issue various mandatory non-financial regulations. The mandatory NFD raises awareness among stakeholders, managers and shareholders regarding the importance of sustainability matters and constitutes a chance to bond corporate financial profitability and sustainability performance (Korka & Costa, 2021). On the other hand, the costs to adapt to the new requirements constitutes a burden for companies (De Micco et al. 2021; Jayaraman & Wu, 2019). This contraposition has caught the attention of many researchers through the years, who have tried to understand whether the introduction of a mandatory NFD regulation, besides fostering sustainability, represents a profitability driver or, conversely, harms financial performance. In detail, there is a front of researchers who argue sustainability is detrimental to financial performance, others who claim sustainability is beneficial to financial performance, and the third group simply believes this relationship is too intricate to be explained.

Furthermore, there are both encouraging and unfavourable prospects for non-financial reporting on companies' performance, not only the financial ones. For example, non-financial disclosure enhances the quality and transparency of information reported (IIRC, 2012). In turn, transparency leads to more comparability, which can hamper or deter the competitive position of an organization. In fact, depending on whether companies compare fine or poorly with others, comparability can help or impede companies. For example, comparability is crucial in the funding considerations of banks (Eccles & Krzus, 2010). Moreover, sustainability reporting produces an increased stakeholder engagement (Krzus, 2011) and, as a consequence, organizations can better manage organizational and reputational risks (Eccles & Saltzman, 2011). Further, it seems that do exists a connection between operating performance and the disclosure of non-financial information as confirmed by Churet and Eccles (2014). Lastly, Ioannou and Serafeim (2014) stated that sustainability disclosure regulation generates, on average, long-run benefits for companies that responded by increasing disclosure. Some examples of this long-term value creation are the attraction and retention of high-quality personnel, gaining of social legitimacy that mitigates the risk of negative regulatory, legislative or fiscal action and reduction of consumer price sensitivity.

2.1.1 NFD and financial performance

Many researchers have tried to understand whether the introduction of NFD can be beneficial or harmful for companies' financial outcomes. The literature is dense of contrasting studies: Most of them aimed to prove that NFD *directly* affects financial performance, while others have investigated its *moderation* effects. Furthermore, some scholars have explored the above-mentioned effects in various regional contexts and sectors.

Bose et al. (2017) stated that disclosure of non-financial activities has a positive association with firms financial results. Indeed, the analysis demonstrated how non-financial disclosure is able to increase firms' market share lowering the information asymmetry between companies and financial

markets. This mechanism contributes to boosting firms' financial performance. The study of Omran et al. (2019) demonstrated that non-financial performance disclosure is beneficial for those manufacturing firms that follow a quality strategy, while Khlif et al. (2015) endorsed the positive relationship between NFD and financial performance, but they found the application only in those context with strong environmental and social institutional pressures. In addition, Raimo et al. (2021), studying a wide sample of international companies, discovered that firms that deal well with transparency in the disclosure of ESG information are subject to a lower cost of debt financing. Besides, other studies found a negative relation to firm size: the larger the firms, the greater is the benefit deriving from a reduction in the cost of debt. Essentially, big corporations keen on sustainability are generally more resistant to negative shocks, and able to reach important scale economies, besides having preferred access to external funds (Graham et al., 2008).

However, the literature presents also studies without evidence of the relationship between non-financial disclosure and financial returns, such as the one of Phan et al. (2020). Others claim that mandatory NFD produces negative market reactions. Specifically, Grewal et al. (2015) concluded that the equity market perceives the introduction of disclosure regulation regarding non-financial aspects, in two different ways: on the one hand, it perceives the regulation as a cost for firms with weaker non-financial disclosure and performance. On the other, investors are keen to invest in firms with strong non-financial performance and disclosure. Therefore, the latter show positive abnormal stock returns after the entry into force of the regulation (Grewal et al., 2015). Another study highlighted that the implementation of the European regulation 2014/95/EU negatively impacted companies profitability, resulting particularly unfavourable for ROE and OROA (Cupertino et al., 2021 (b)).

The literature about the relationship between financial and non-financial performance is huge. To name some examples, the work of Gregory et al. (2014) demonstrates how firms presenting strong ESG dimensions can perform better than their peers because, for example, they are able to retain better human capital, they use more efficiently their resources and are keener to innovate. These characteristics lead to competitive advantages, which generate unusual positive returns, increasing profitability. Another example is the capacity of well-performing companies regarding non-financial issues to manage their business and operational risks. Indeed, companies with high sustainability scores generally better manage the risks, even the tail ones, thanks to their compliance to higher standards (Godfrey et al. 2009; Jo & Na, 2012; Oikonomou et al., 2012). In addition, Hoepner et al. (2017) observed that volatility and worst-case loss rarely or mildly affect companies able to deal with sustainability issues. Lastly, thanks to the contributions of various researches we can describe the mechanism through which well-performing companies are able to achieve higher valuations and a reduced cost of capital. Indeed, firms that put in place sustainability practices can resist systemic market shocks. Therefore, the markets rate the company with a lower beta, which entails a lower yield rate. On balance lower Cost of Capital leads companies to obtain higher valuations (Eccles et al. 2014); El Ghoul et al., 2011; Gregory et al., 2014)

To the best of my knowledge, only a few studies are investigating the *moderation* effect that mandatory regulation has on the relationship between non-financial and financial performance. Cupertino et al. (2021) (b) found that, although companies' profitability is negatively impacted by the

directive 2014/95/EU, the EU regulation produces a positive moderating effect on the relationship between non-financial and financial performance. The moderation effect particularly impacts shareholders' return and the operating profitability. Contrariwise, the study highlighted a scarce significance in the moderating relation with the Cost of Debt. Indeed, the lack of significance may be due to the short-term approach of debtholders, which are not affected by the introduction of the regulation. In addition, the study found out that the positive moderating effect fully balances the costs needed to pursue non-financial performance (Cupertino et al., 2021 (b)). Another study conducted by Oware & Mallikarjunappa (2020) investigated the moderation effect that mandatory CSR reporting has on the association between CSR expenditure and financial outcome of Indian listed companies. The results show that mandatory non-financial reporting is not capable of moderating the correlation between CSR expenditure and financial performance in the short and long term, whereas it significantly moderates stock price return (SPR). This may be due to the fact that market players consider suitable the introduction of the norm for the equity market, supporting the institutional theory (Oware & Mallikarjunappa, 2020).

Although many studies were conducted in Europe and other developed countries, the last-mentioned study contributed to the debate providing insight into an emerging economy. Buallay et al. (2019) further enriched this stream of literature with a research focused on the Mediterranean countries. The findings show that CSR disclosures negatively affect operational and market performance, while non-financial disclosures are irrelevant for stock markets' performance. Hence, investors do not consider the non-financial disclosure as a critical factor worth paying a premium for. In addition, firms do not use non-financial disclosure as a method to improve their competitive position or financial return. These results differ from previous empirical analyses implemented in non-Mediterranean areas, reinforcing the point of Ioannou & Serafeim (2014), for which these relations are extremely context-dependent.

Tuppura et al. (2016) followed the stream of studies intended to investigate the connection between corporate sustainability performance and corporate financial performance with an eye towards the differences generated by geographical and industrial contexts. This is because, environmental performance is critical in some industries, bonded for example to the environment and land, such as agriculture, whereas for others is more material the societal side, for example, for the education or service sectors (Tuppura et al., 2016). Therefore, the study above-mentioned focused on four industries, extremely different from one another, namely, clothing, energy, food and forest sectors. The former are consumer-oriented industries, while the latter are capital-intensive businesses. The results showed bidirectional causality between sustainability performance and financial performance in the clothing, energy and forest industries, while in the food does not. Therefore, the researchers got the point of what they wanted to prove, that is the context-dependencies of these relations. These results can be also expanded to the relationship between non-financial reporting and monetary gain.

To sum up, the literature regarding the relation between non-financial performance and financial performance is very extended and made up of contrasting results. Similarly, empirical analyses about the role played by NFD in decreasing or improving financial returns have shown mixed results. Moreover, these relations are context-dependent: the geographical area and the sector influence the impact that NFD has on financial performance.

2.2 Theoretical background of CSR issues in the Agri-food & Beverage sector

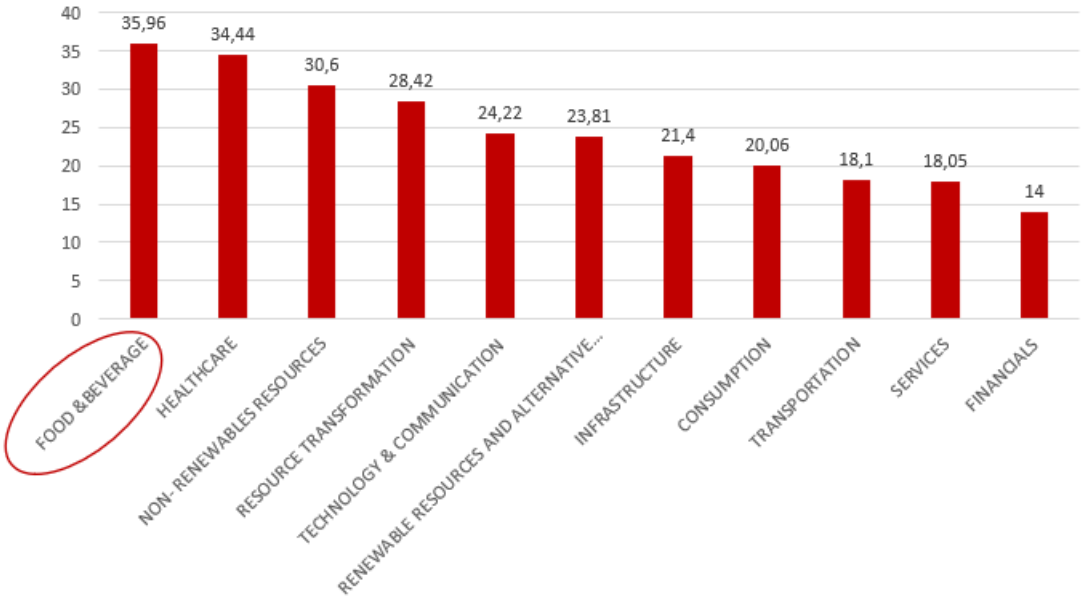
The current attention to business ethics and environmental responsibility issues creates considerable challenges for the agri-food & beverage sector.

The food sector is heavily impacted by sustainability issues, and consumers increasingly expect from companies a responsible attitude, rising quality standards and transparency (Wiese & Toporowski, 2013). Customers want to have access to critical information, such as the origin of their food, its ingredients and workers' wellbeing along value chains (Raimo et al., 2020). In addition, customers ask for information regarding the commitment of firms in tackling the problems of obesity, animal cruelty and the excessive use of pesticides and genetically altered products (Deblonde et al., 2007; Lamberti & Lettieri, 2009). The increasing importance of corporate social and environmental responsibility in the sector is mainly due to the nature of the products and the complex, labour-intensive nature of food supply chains (Maloni & Brown, 2006). Correspondingly, serious environmental and social threats jeopardize the food business, which in turn undermine firms' productivity and trustworthiness (Manning, 2016). Generally, the vertically and horizontally fragmented supply chain affect market competition and make the products hardly traceable. In addition, the industry suffers from low margins, peaks of financial indebtedness throughout the year, short shelves life and seasonality of products (Gangi et al., 2020).

Modern food practices are coping with the huge challenge of nurturing an increasing population with healthy food while preserving the world's natural resource base for future generations (Riccaboni et al., 2018). In a nutshell, the food sector accounts for over 90% of scarcity-weighted water use, it is responsible for the 25% of greenhouse gas emissions in a year, the loss of biodiversity and water and air pollution. In addition, the agri-food business is incredibly subjected to climate change, which is the cause of land degradation (BCFN, 2019). Therefore, the threat of potentially devastating events, the lack of healthy and nutritious food, clean water, etc. bring the food industry to the centre of the modern discussions about sustainability practices and it is asked to play a pivotal role in the achievement of sustainable development.

Tables 2 and 3 show that Food and Beverage is the sector that impacts the most the achievement of sustainable development because it affects to greater or less extent all SDGs. The most relevant SDGs for the food and beverage sector are SDG 2 "Zero hunger", a call to eliminate the famine in the world, SDG 13 "climate action", a call to concrete actions aimed at mitigating the climate crises, and SDG 12 on "Responsible Consumption and Production", which aims to reduce food waste along value chains (United Nations, 2020). Even SDG 14 "Life below water" aims at food systems free from plastic, preserving the marine eco-systems (Weber & Hogberg-Saunders, 2018). Extremely relevant is also SDG 15 "Life on land", which promotes actions intended to reduce land degradation, deforestation, loss of biodiversity and desertification. However, since all SDGs are connected, for instance, I cannot increase health and well-being (SDG 3) without reducing hunger (SDG 2), this sector is crucial to achieving all the goals of Agenda 2030.

Table 2 – Sector ranking for SDGs



All SDGs in ranking order with SASB sectors. Source: (Consolandi, 2019).

Table 3 – Food and beverage sector: SDG impact

	Food & Beverage							
Sustainable Development Goals	Agricultural Products	Alcoholic Beverages	Food Retailer & Distributors	Meat, Poultry & Dairy	Non-Alcoholic Beverages	Processed Foods	Restaurants	Tobacco
SDG1	20.00	25.00	45.00	20.00	20.00	25.00	40.00	0.00
SDG2	38.42	36.84	57.89	84.21	47.37	68.42	63.16	0.00
SDG3	32.00	26.00	34.00	48.00	34.00	24.00	26.00	12.00
SDG4	0.00	9.09	18.18	9.09	18.18	18.18	0.00	18.18
SDG5	37.50	25.00	31.25	37.50	25.00	18.75	31.25	0.00
SDG6	33.33	45.45	36.36	66.67	57.58	36.36	51.52	15.15
SDG7	30.43	30.43	30.43	39.13	39.13	21.74	21.74	0.00
SDG8	22.86	22.86	34.29	31.43	25.71	17.14	28.57	0.00
SDG9	15.00	10.00	10.00	10.00	10.00	5.00	5.00	0.00
SDG10	10.53	10.53	26.32	10.53	10.53	10.53	26.32	0.00
SDG11	4.35	13.04	13.04	17.39	13.04	4.35	13.04	0.00
SDG12	27.78	27.78	19.44	41.67	27.78	19.44	25.00	0.00
SDG13	40.00	50.00	30.00	60.00	60.00	20.00	20.00	0.00
SDG14	21.05	31.58	26.32	42.11	31.58	26.32	42.11	0.00
SDG15	45.95	40.54	37.84	81.08	43.24	32.43	35.14	8.11
SDG16	20.83	29.17	25.00	25.00	29.17	8.33	20.83	4.17

Source: (Consolandi, 2019)

Indeed, the food business needs to be environmentally and socially sustainable. Firstly, food systems depend on the environment and hence, should not contribute to depleting its resources (Ericksen et al., 2009). Secondly, new markets opportunities are rising from sustainable and critical consumers (Vermeir & Verbeke, 2008). Lastly, sustainable business practices can lead to increased efficiency in resource use (Willard, 2012).

To reach a complete transition towards sustainability the AF&B sector needs to make a complete makeover that requires updated strategies, sustainable processes and the development of sustainable products (Coppola & Ianuario, 2017; Augustin et al., 2016; Ingenbleek, 2015). However, even though

the sector has made giant leaps, financial losses are still a limit to the full shift towards sustainability. Indeed, it is crucial to allocate financial resources to complement the other activities (Cupertino et al., 2021 (a)).

2.2.1 The relationship between sustainability performance and financial performance in the Agri-food & Beverage sector

Given the close bond between the agri-food sector and sustainability, gives rise to the need of having agri-food centred detailed studies. Therefore, the topic "How much it pays being sustainable in the AF&B sector" has obtained great attention from academics and practitioners through time, and it has demonstrated that different points of view can influence company performance differently.

Wiek & Weber (2014) observed that in the USA context food businesses such as fast-foods are more profitable than sustainability-oriented ones, despite their indifference about sustainability issues. Indeed, consumers are not always disposed to pay higher prices for food produced sustainably (Ingenbleek, 2015). In fact, producing healthy food with sustainable practices is costly and, often, companies are not rewarded for their commitment. What is more, the rearrangements of business activities to comply with sustainability standards is even more expensive (Guzman et al., 2011).

Tuppura et al. (2016) found out that CSP and CFP are not correlated in the food industry (measured through ROA). This may be due to the fact that stakeholders do not value the companies' attitude towards CSP or that sustainability-oriented companies cannot clearly communicate their attempts to stakeholders. In addition, the food sector carries with it a past of sustainability deny, which may have created a lack of trust among consumers and investors (Maloni & Brown, 2006).

The analysis of Partalidou et al. (2020) showed that the attention of companies toward environmental issues in business operations produces economic results (Endrikat et al., 2014). Indeed, environmental sustainability becomes a profitable investment for companies, while the initial cost to convert processes and create innovative products is completely overcome by improved financial performance obtained through enhanced environmental performance (Ambec and Lanoie, 2008). Nevertheless, environmental performances do not produce the same positive results on operating income. Producers cannot completely shift the costs sustained to integrate environmental initiatives on prices, otherwise, they would be too high. Therefore, environmental protection commitment results in an expense rather than a profit. In the same train of thought, the study of Nirino et al. (2019) demonstrated that companies keen on GHG emission reduction, environmental protection, waste lessening etc. do not have a financial return in terms of ROE and ROS, while ROA is negatively affected. Indeed, the costs that a company incurs to implement environmental-related strategies are considerably high (Franceschelli et al., 2018). On the contrary, companies keen on corporate social responsibility have generally positive financial returns, in terms of ROA, ROE and ROS. Accordingly, a higher level of both consumer and workers satisfaction rise companies performance in the AF&B sector. The study of Cupertino et al. (a) (2021) further investigates this point, showing that environmental activities affect negatively the firm's short-term operating profitability, especially for bad performing companies. Thus, the sustainability investments needed to improve the ESG performance of non-sustainable companies produce their effects in the long run, penalising profitability shortly.

Furthermore, companies with lower environmental sustainability standards may fail to attract investors, retain customers or engage other stakeholders, losing profitability in the short term (Cupertino et al., 2021(a)). Contrarily, corporate social sustainability seems to be in positive relation to CFP. The researchers confirmed what other studies evidenced: social sustainability activities require modest investments, while environmental ones demand more time and investments to achieve the same financial returns and performance.

Besides these results, the research of Cupertino et al. (2021a) found out the impact of sustainability on multiple issues, namely sustainable products, strategies, and processes on short-term firms' profitability (ROA). Indeed, companies with strong sustainability profiles are able to increase their return shortly. In fact, firms' profitability is positively associated with their commitment to meet high-quality sustainability standards for production. In addition, meeting customer expectations compensate companies with improved efficiency. Likewise, processes environmental innovation activities are in positive relation with CFP. Therefore, the implementation of eco-innovation involving process and supply chain management is the key driver to foster sustainability and corporate profitability.

Gangi et al. (2020) aimed at providing innovative evidence on the effect that corporate environmental and social responsibility (CESR) can have on firms' Cost of Debt, Return on Equity and operating profitability in the food industry. Moreover, they studied how firm size and degree of indebtedness influence CESR and financial results. The findings display that CESR is in positive and significant relation with profitability (both for ROE and EBITDA), while CESR negatively impacts the COD. Furthermore, smaller firms seem to have higher profitability and lower COD than larger firms and from a high level of indebtedness, we can expect negative financial performance. Therefore, in the food industry, a positive attitude towards CESR seems to help firms efficiently allocate capital and meet superior stakeholders' expectations. In addition, CESR engagement improves reputation and gives a perception of greater reliability to lenders. Companies can also invest to further improve CESR practices thanks to a greater funding capacity due to a reduced level of risk, establishing a virtuous circle (Gangi et al., 2020).

Under this perspective, also standard boards such as GRI and SASB, identify the sustainability issues that are able to impact firm value in the long run. Specifically, they identify the issues that are relevant for each sector. Materiality is a concept of relevance, thus if it has an impact on the traditional value drivers, e.g., growth, return on capital, risk management and cash flow. Table 4 is a SASB materiality map for the AF&B sector, which categorizes sustainability issues that particularly impact the financial and operating results of companies within the industry. The table shows, for example, that supply chain management is strongly material for agriculture, as well as product quality and safety, and waste and hazardous material management. Therefore, actors performing well on these aspects can gain a positive financial return while impacting positively the environment and the dimension of social capital and governance. Indeed, if the company is performing particularly well on the ESG material issues of its sector can obtain a positive return, because investors value these dimensions worth the investment, and at the same time, it pursues SDGs' targets. Thus, do well by doing good.

Table 4 – Food & Beverage sector: Materiality map and Material issues' financial relevance

		Food & Beverage							
Dimension	General Issue Category	Agricultural Products	Alcoholic Beverages	Food Retailer & Distributors	Meat, Poultry & Dairy	Non-Alcoholic Beverages	Processed Foods	Restaurants	Tobacco
Environment	Ghg Emissions	23.08%		38.46%	23.08%	23.08%			
	Air Quality								
	Energy Management	23.08%	23.08%	38.46%	23.08%	23.08%	23.08%	23.08%	
	Water & Wastewater Management	46.15%	38.46%		23.08%	46.15%	38.46%	23.08%	
	Waste & Hazardous Materials Management			38.46%				23.08%	
	Ecological Impacts				46.15%				
Social Capital	Human Rights & Community Relations								
	Customer Privacy								
	Data Security			53.85%					
	Access & affordability								
	Product Quality & Safety	53.85%		46.15%	46.15%		38.46%	38.46%	
	Customer Welfare			38.46%	38.46%	53.85%	53.85%	38.46%	61.54%
	Selling Practices & Product Labeling		46.15%	38.46%		38.46%	23.08%		30.77%
Human Capital	Labor Practices			53.85%				38.46%	
	Employee Health & Safety	38.46%			23.08%				
	Employee Engagement,Diversity & Inclusion								
Business Model & Innovation	Product Design & Lifecycle Management		23.08%		53.85%	23.08%	23.08%		
	Business Model Resilience								
	Supply Chain Management	61.54%	38.46%	46.15%	23.08%	30.77%	30.77%	23.08%	
	Materials Sourcing & Efficiency	30.77%	38.46%		23.08%	38.46%	23.08%		
	Phsical impacts Of Climate Change								
Leadership & Governance	Business Ethics								
	Competitive Behavior								
	Management Of the Legal & Regulatory Environment								
	Critical Incident Risk Management								
	Systemic Risk Management								
	Avg FIR industry	**39.56%**	**34.62%**	**43.59%**	**32.31%**	**34.62%**	**31.73%**	**29.67%**	**46.15%**
	Materiality Intensity Ratio (MIR)	**26.92%**	**23.08%**	**34.62%**	**38.46%**	**30.77%**	**30.77%**	**26.92%**	**7.69%**

Source: (Consolandi, 2019). Available at: https://www.sasb.org/standards/materiality-finder/find/

2.2.2 The association between non-financial disclosure and financial performance in the Agri-food & Beverage sector

Another stream of studies focused on the direct relationship between non-financial disclosure and performance in the AF&B sector, aiming at better understanding if all practices connected to CSR are beneficial or detrimental to companies. For instance, Guthrie et al. (2008) discovered that agri-food Australian companies prefer to make use of annual reports and corporate websites to disclose their non-financial information. Sommer et al. (2015) suggest that firm size in the AF&B sector positively influence the level of information divulged. Robkob and Ussahawanitchakit (2009) found proof that CSR reporting depends greatly on corporate accounting policy. Lastly, since this sector influences and is influenced by Nature and climate change and many standards and legal rules try to draw a path towards more awareness, firms are intrinsically and extrinsically motivated to make public their non-financial information (Shnayder et al., 2016).

To the best of my knowledge, the literature about the relation between non-financial disclosure and financial performance in the AF&B sector is modest. Namely, the study of Raimo et al. (2020) assessed the influence of ESG disclosure on the cost of equity capital in the F&B sector, demonstrating that is negatively affected, probably due to the efficacy of non-financial disclosure to reduce information asymmetries and attract long-term investments. These considerations, although valid in all sectors, are crucial for the F&B sector. In fact, transparency is one of the leading factors that ensure agri-food companies a competitive advantage, since customers highly value traceability and food and drink quality. The study of Garzòn and Zorio (2021) added an in-depth about developing countries to the analysis of Raimo et al. (2020). The findings confirm the tendency of environmental reports to negatively affect the cost of equity. This result seems in line also with Gupta (2018), who demonstrated that environmental disclosures decrease the cost of equity, particularly in developing countries where the social capital is low. Finally, the research of Buallay (2021) investigated the connection between sustainability reporting and agriculture's operational, financial and market

performance (i.e. ESG scores, ROA, ROE and TQ). The findings highlighted that sustainability report disclosure does not affect the agriculture sector's operational performance. Indeed, the operating profitability produced by making public non-financial information does not exceed the cost of the disclosure. Secondly, there is no link between non-financial disclosure and ROE in the agriculture sector, because investors believe useless to spend money on social and environmental disclosure, which places companies in a position of disfavour (Barnett, 2007; Lee & Faff, 2009). In addition, the study showed that ESG disclosure has no impact on market performance. Eventually, the study confirmed that firm size is a determinant for ESG disclosures. Indeed, the larger the company, the greater will be the disclosure of information. Contrarily, a high level of indebtedness makes firms significantly less motivated to provide ESG information (Buallay, 2021).

Following the last insights, the literature is dense of studies about the link between non-financial and financial performance, and about the impact of non-financial disclosure on companies' financial performance. However, despite much has been said on the effectiveness of *mandatory* non-financial disclosure, the above-mentioned literature lacks insight into the effect of Mandatory NFD on performance. In addition, to the best of my knowledge, only a few studies aim to understand how the association between NFP and FP is related to a third moderating variable, namely the regulation. Therefore, in light of all the above, I aim to fuel the debate investigating whether and how mandatory non-financial disclosure impacts companies' financial returns. In addition, I aim to probe the ability of sustainability practices to affect financial performance and to study the moderating effect of the directive on the association between non-financial and financial performance. Since the literature suggests that multi-industry analyses impede show the industry differences, obfuscating the mechanisms between corporate social and environmental responsibility and its financial performance, I focused on the agri-food sector. This latter, being strictly bound to sustainability issues and playing a pivotal role in the achievement of SDGs, seemed the perfect research field.

Chapter 3

3. Research questions

To sum up, the current empirical investigation has the goal to answer the following research questions:

R1: Does mandatory non-financial disclosure regulation positively or negatively impact financial performance of companies in the Agri-food sector worldwide?

R2: Does non-financial performance positively or negatively impact financial performance in companies in the Agri-food sector worldwide?

R3: Does Mandatory NFD regulation positively or negatively moderate the relationship between non-financial and financial performance in Agri-food sector companies worldwide?

These research questions are analysed from three different points of view, i.e. debtholders, shareholders and managers.

3.1 Method

3.1.1 Data collection

I performed a panel analysis on financial and non-financial data of Agrifood global listed firms. My study covers an interval of eight years, from 2012 to 2020, analysing how the above-mentioned relationships between financial and environmental and social performance work in the short term. To this end, I conducted the sampling process based on data available in Refinitiv Eikon Datastream Worldscope and Asset4®, which are rigorous and reliable databases well-known by academics and practitioners. At the initial stage, the sample included 467 listed firms. This initial version was downsized, eliminating firms with missing financial and ESG disclosure data. Then, I decided to only consider firms that presented an observation for every year and every variable, to obtain models with a good significance level. Eventually, I elaborated a strongly balanced panel data, covering the annual observations from 180 companies. The following Table 5 shows the sampling process and Table 6 and Table 7 exhibit respectively the industry and geographical distribution of the database used. The sample is quite representative from a geographical point of view because it contains OECD and non-OECD countries. Moreover, the sample includes companies from each sub-industry in the agri-food sector, resulting extremely descriptive.

Table 5 – Sampling process

	Companies
Universe	**467**

Sampling process					
Time	**Companies with ESG missing data**	**Companies with CFP missing data**	**Companies with missing ESG and CFP missing data**	**Final Yearly Unbalanced Sample**	**Final Yearly Balanced Sample**
2012-2013	259	2	261	206	**180**
2013-2014	255	3	258	209	**180**
2014-2015	243	4	247	220	**180**
2015-2016	207	5	212	255	**180**
2016-2017	173	6	179	288	**180**
2017-2018	131	9	140	327	**180**
2018-2019	97	19	116	351	**180**
2019-2020	12	21	33	434	**180**

Table 6 – Sample industry distribution

Industry	Companies	%	Cum.
Beverages	38	21,11	21,11
Drug & Grocery Stores	32	17,78	38,89
Food Producers	83	46,11	85
Retailers	27	15	100
Total	**180**	100	

Table 7 – Sample geographical distribution

Country	Companies	%	Cum.
Australia	7	3,89	3,89
Belgium	2	1,11	5
Brazil	7	3,89	8,89
Canada	5	2,78	11,67
Chile	4	2,22	13,89
China	2	1,11	15
Colombia	1	0,56	15,56
Denmark	1	0,56	16,11
Finland	1	0,56	16,67
France	6	3,33	20
Germany	1	0,56	20,56
Hong Kong	8	4,44	25
India	4	2,22	27,22
Indonesia	3	1,67	28,89
Ireland	3	1,67	30,56
Italy	1	0,56	31,11
Japan	23	12,78	43,89
Malaysia	6	3,33	47,22
Mexico	5	2,78	50
Netherlands	4	2,22	52,22
Norway	2	1,11	53,33
Philippines	2	1,11	54,44
Poland	2	1,11	55,56
Russia	2	1,11	56,67
Singapore	5	2,78	59,44
South Africa	10	5,56	65
South Korea	6	3,33	68,33
Spain	2	1,11	69,44
Switzerland	7	3,89	73,33
Taiwan	3	1,67	75
Thailand	2	1,11	76,11
Turkey	1	0,56	76,67
United Kingdom	15	8,33	85
United States	27	15	100
Total	**180**	**100**	

3.1.2 Methodology

Below are shown the statistical methods and the variables used in my empirical analysis, justifying how and why I designed the analytical models.

Firstly, I performed the Pearson Test to investigate the linear association between the variables chosen and to examine the relationship between NFP and FP. Then, I checked for collinearities to prevent possible biases and lastly, to better set the analysis, I performed the Hausman test, checking for no systematic differences between the coefficient estimators of both fixed and random regression approaches (Baum, 2006). Accordingly, I adopted the OLS regression approach because the effects

highlighted in all defined models were fixed, rejecting the null hypothesis for any confidence level. Every statistical analysis was developed using STATA software.

Table 8 describe and report the variables used in my analysis. Regarding the dependent variables, since the various performance's dimensions are affected differently by the disclosure of different non-financial aspects (Cupertino et al., 2021(b)), as demonstrated from preceding analyses such as the ones of Chi et al. (2020), Nekhili et al. (2017), Bose et al. (2017) and Omran et al (2019), I distinguished between debtholder, shareholder and managerial perspectives of corporate performance. Therefore, using Datastream Worldscope I included financial data which assess the companies' financial performance from different viewpoints (i.e. *Cost of Debt*, *Return on Equity* (ROE), and *Operating Return on Assets* (OROA)).

Further, I elaborated two dichotomous independent variables, i.e. *Environmental Regulation* and *Social Regulation.* Rather than simply showing the presence or absence of the regulations, through these dummy variables I pointed out also their contents, distinguishing the environmental and social issues treated (Tamini & Sebastianelli, 2017). These variables take value 1 in presence of a mandatory NFD regulation containing respectively environmental aspects or social aspects in that country, while they become 0 when the regulation is absent. To this end, I consulted the Carrots and Sticks' website and the 2020 report. C&S is a prominent report and online source on sustainability reporting regulation, instruments, frameworks and guidance (C&S, 2020). Users have the access to hundreds of voluntary and mandatory reporting provisions from more than 80 countries. In Annex 1 are listed all regulations taken into account to build the database. I used variable 1 only when there was a "mandatory" regulation in that country, meaning legally mandated with penalties or fines imposed on those who fail to comply with the legal rule.

Next, as independent variables, I selected Refinitiv Eikon Asset4® scores, which measure how firms perform on sustainability's dimensions. Asset4® is a worldwide leading database of ESG information, which collect data from corporates' websites, annual reports, ESG reports, bylaws and codes of conduct. Each company is assigned a score from 0 to 100 that indicates the percentage of ESG related information disclosed. Therefore a score equal to 0 shows the absence of sustainability practice in that firm, while a score equal to 100 entails a complete ESG information disclosure. Therefore, I used the variables *ResourceUseScore, EmissionScore, EnvInnovScore, ProductRespScore, WorkforceScore, HumanRightScore and CommunityScore* to assess specific sustainability corporate issues, namely: (i) climate change effects (e.g. pollution and GHG emissions), (ii) employee-related matters (e.g. health and safety at work and working conditions), (iii) respecting of human rights and corporate citizenship (e.g. protection and development of local communities, the fighting against bribery and corruption and stakeholders' engagement), and (iv) integrated sustainability practices (e.g. product responsibility, CSR strategy and management attitude towards sustainability).

Table 8 – Variables description

Variables	Description
Cost of Debt	It is due to the ratio between Total interest Cost Incurred and the Total Debt. The cost of debt is the effective interest rate that a company pays on its debts to creditors
ROE	It is computed as (Net income / Average shareholders' equity) * 100. ROE is considered esteem of companies' profitability and how efficient it is in generating returns.
OROA	It is computed as (Earnings before interest and taxes / average total assets). OROA is used to determine a company's operating efficiency. It is the amount of income generated per money invested in its operating assets.
EnvRegulation	It is a dummy variable that takes value 1 when there is a mandatory NFD regulation including environmental aspects, while it takes value 0 in case of the absence of a mandatory NFD regulation treating environmental aspects.
SocRegulation	It is a dummy variable that takes value 1 when there is a mandatory NFD regulation including social aspects, while it takes value 0 in case of the absence of a mandatory NFD regulation treating social aspects.
ResourcesUseScore	It reflects in terms of percentage (i.e. 0-100%) the corporate capacity to minimize the waste and to effectively use the company' material resources. It represents the corporate ability to find eco-innovation to improve the supply chain.
EnvInnovScore	it reflects in terms of percentage (0-100%) the company's capability to constantly innovate its processes, create eco-designed products, and technologies that are not harmful to the environment.
WorkforceScore	It reflects in terms of percentage (0-100%) the company's commitment towards workers' wellbeing. The capacity of the corporation to offer healthy and safe workplaces and equal opportunities, and to avoid mistreatments.
HumanRightScore	It evaluates in terms of percentage (0-100%) the company's commitment towards respecting the fundamental human rights conventions.
EmissionsScore	It measures in terms of percentage (i.e. 0-100%) the company's ability to reduce its environmental emission (e.g. GHG, pollutants, etc.) in its processes.
CommunytyScore	It measures in terms of percentage (0-100%) the company's commitment towards being a good citizen, protecting public health and respecting business ethics.
ProdRespScore	It estimates in terms of percentage (0-100%) the company's capability to produce quality products and to offer quality services, preserving customers' health, safety and privacy.
CSRStrategyScore	It estimates in terms of percentage (0-100%) the company's attitude to implement sustainability issues into its strategy, which guides its day-to-day activities.
ManagementScore	It evaluates in terms of percentage (0-100%) the management's commitment to sustainability practices and the company's ability to operate towards good corporate governance principles.
CashFlowSales	It assesses available operational slack resources and measures the corporate ability to generate cash flow from its sales volume.
QuickRatio	It assesses financial available slack resources to execute business activities. It measures those current assets available to cover current liabilities.
lnMV	It is computed as (share price * n. ordinary shares in issue). The logarithmic form helps to normalize the data.

In addition, I included some control variables to promptly mitigate possible endogenous effects due to unobservable firms or industry-specific features (Cupertino et al., 2021(b)). Notably, I chose features designed by Refinitv Eikon as control variables. Thus, this study supposes that managerial dedication to sustainability has an impact on the way the company is managed and its returns. Therefore, I included the management sustainability micro-score (i.e. *ManagementScore*) as a control variable. Furthermore, according to Ruggiero and Cupertino (2018), I deemed that firm dimension can be a discriminant against financial and non-financial business issues. Consequently, I added the logarithm of firms' market value (i.e. *lnMV*) as a control variable for firm size. In addition, in line with Bourgeois and Singh (1983), I used *CashFlowSales,* which assesses available operational slack resources, and *QuickRatio,* which measures the financial available slack resources. Indeed, companies through their slack resources are better able to activate core business activities and implement sustainability activities. Lastly, I used control industry dummies *(i.e. Industry*) to consider differences between subsectors that may modify the examined relations (Andersen & Dejoy, 2011; Hull & Rothenberg, 2008).

Further, I set a one-year lag between dependent and independent variables for each analytical model to better appreciate the effects of the non-financial disclosed information on subsequent financial performance (Cupertino et al., 2021(b)), to envisage possible short-term effects in the relations and minimize potential distortive effects (Li, 2016).

3.1.3 Descriptive statistics

Table 9 – Descriptive statistics

Variables	Mean	Median	Standard Deviation	Variance	Min	Max
OROA	7,19822	7,454408	13,15004	172,9236	-233,3737	47,05816
ROE	12,85384	11,065	20,75804	430,8962	-144,27	243,38
CostOfDebt	37,62735	23,83026	68,30132	4665,07	0	1347,951
ResourceUseScore	50,27711	52,125	30,81511	949,5711	0	99,8
EmissionsScore	49,72867	51,16	30,16823	910,1218	0	99,8
EnvInnovScore	30,2986	21,45	32,4849	1055,269	0	95,59
WorkforceScore	57,93297	60,42	27,04276	731,3109	1,1	99,83
HumanRightScore	36,56363	32,66	34,24723	1172,872	0	98,68
CommunytyScore	52,58971	53,635	30,24213	914,5864	0	99,83
ProdRespScore	54,54786	58,26	30,78155	947,5037	0	99,74
CashFlowSales	7,823424	8,18	28,8015	829,5266	-555,23	46,68
QuickRatio	0,9099236	0,75	0,9155238	0,8381838	0,06	15,08
CSRStrategyScore	47,88364	49,13	31,59971	998,5419	0	99,59
ManagementScore	54,0357	54,675	26,965	727,1112	0,6	99,74
lnMV	8,51344	8,519685	1,403744	1,970498	1,373716	12,61276

Table 10 – Pearson correlation results

Variables	OROA	ROE	CostOfDebt	ResourceUseScore	EmissionsScore	EnvInnovScore	WorkforceScore	HumanRightsScore	CommunityScore	ProdRespScore	CashFlowSales	QuickRatio	CSRStrategyScore	ManagementScore	lnMV
OROA	1														
ROE	0.650***	1													
CostOfDebt	0.007	0	1												
ResourceUseScore	0.110***	0.154***	-0.071***	1											
EmissionsScore	0.115***	0.117***	0.03	0.778***	1										
EnvInnovScore	0.064**	0.130***	0.054**	0.514***	0.505***	1									
WorkforceScore	0.137***	0.151***	-0.096***	0.706***	0.670***	0.317***	1								
HumanRightsScore	0.102***	0.110***	-0.045*	0.659***	0.565***	0.406***	0.593***	1							
CommunityScore	0.167***	0.235***	-0.156***	0.592***	0.456***	0.364***	0.557***	0.566***	1						
ProdRespScore	0.071***	0.148***	0.016	0.648***	0.563***	0.480***	0.564***	0.506***	0.451***	1					
CashFlowSales	0.480***	0.286***	0.03	0.124***	0.135***	0.076***	0.104***	0.111***	0.105***	0.090***	1				
QuickRatio	-0.298***	-0.201***	0.023	-0.213***	-0.171***	-0.121***	-0.206***	-0.172***	-0.204***	-0.171***	-0.476***	1			
CSRStrategyScore	0.099***	0.136***	-0.077***	0.654***	0.612***	0.411***	0.619***	0.583***	0.554***	0.520***	0.110***	-0.189***	1		
ManagementScore	0.025	0.066**	-0.055**	0.305***	0.236***	0.221***	0.226***	0.232***	0.296***	0.277***	0.019	-0.103***	0.276***	1	
lnMV	0.334***	0.322***	0.02	0.480***	0.416***	0.402***	0.315***	0.486***	0.412***	0.385***	0.307***	-0.308***	0.446***	0.168***	1

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

Table 9 above shows the main descriptive statistics for each direct variable, indirect variable and control variable investigated. Furthermore, Table 10 above reports the covariance matrix obtained by performing the Pearson correlation test. The results present different levels of statistical significance, but in most cases is the highest (i.e. $\rho<0.01$). I did not perform the linear dependence study for the industry dummies since they have low statistical significance.

To exclude the possibility of collinearity effects within the principal examined variables, I performed a mean-variance inflation factor (VIF) for each defined model. The result is a number lower than 2, which implies the absence of multicollinearity effects in all regressions of the analysis (Allison, 1999) as shown in Table 11.

Table 11 – Collinearity test

Variables	VIF	SQRT VIF	Tolerance	R-Squared
OROA	2,16	1,47	0,4627	0,5373
ROE	1,84	1,36	0,5441	0,4559
CostOfDebt	1,09	1,04	0,9191	0,0809
EnvRegulation	1,48	1,22	0,6734	0,3266
SocRegulation	1,42	1,19	0,7055	0,2945
ResourceUseScore	4,09	2,02	0,2443	0,7557
EmissionsScore	3,06	1,75	0,3267	0,6733
EnvInnovScore	1,6	1,27	0,6167	0,3833
WorkforceScore	2,9	1,72	0,3395	0,6605
HumanRightsScore	2,21	1,49	0,4526	0,5474
CommunityScore	1,98	1,41	0,5056	0,4944
ProdRespScore	2	1,42	0,495	0,505
CSRStrategyScore	2,2	1,49	0,4532	0,5468
ManagementScore	1,16	1,08	0,8623	0,1377
CashFlowSales	1,6	1,27	0,6223	0,3777
QuickRatio	1,39	1,18	0,7199	0,2801
lnMV	1,8	1,34	0,5559	0,4441
Mean VIF	**1,998824**			

3.1.4 Models

The models are set to understand two perspectives: on the one hand, the issues of environmental sustainability, and on the other, the issues of social sustainability. Accordingly, I separated the models into two sections: Specific models with environmental sustainability variables, i.e. Model 1 (A-B-C-D), 3 (A-B-C-D) and 5 (A-B-C-D) and models with social variables, i.e. 2 (A-B-C), 4 (A-B-C) and 6 (A-B-C). The dependent variables EnvRegulation and SocRegulation were treated as further diversification parameters. In making separate models, I broke down residual multicollinearity effects in the investigated models. In all models and variants were used the same control variables, i.e. cash flows sales, quick ratio and the logarithm of Market Value, while, regarding non-financial control variables, were used CSRScore, and ManagementScore. For example, Model 1 applies the OROA as dependent variable and the dummy EnvRegulation as independent variable. Then, all four variants of the model show an environmental sustainability score plus a moderation variable, which is the

multiplication between EnvRegulation and the environmental sustainability score above mentioned. Table 12 shows the general equations set for the six analytical models and their 21 variants.

Table 12 – Models

Model	Equation
1A	$(\text{OROA})_{i,t} = \alpha_0 + \alpha_1(\text{EnvRegulation})_{i,t-1} + \alpha_2(\text{ResourceUseScore})_{i,t-1} + \alpha_3(\text{EnvRegulation} * \text{ResourceUseScore})_{i,t-1} + \alpha_4(\text{CashFlowsSales})_{i,t-1} + \alpha_5(\text{QuickRatio})_{i,t-1} + \alpha_6(\text{CSRStrategyScore})_{i,t-1} + \alpha_7(\text{ManagementScore})_{i,t-1} + \alpha_8(\text{lnMV})_{i,t-1} + \alpha_9 \sum_{k=1}^{4} \text{Industry}_{i,t-1} + \varepsilon_{i,t-1}$
3A	$(\text{ROE})_{i,t} = \beta_0 + \beta_1(\text{EnvRegulation})_{i,t-1} + \beta_2(\text{ResourceUseScore})_{i,t-1} + \beta_3(\text{EnvRegulation} * \text{ResourceUseScore})_{i,t-1} + \beta_4(\text{CashFlowsSales})_{i,t-1} + \beta_5(\text{QuickRatio})_{i,t-1} + \beta_6(\text{CSRStrategyScore})_{i,t-1} + \beta_7(\text{ManagementScore})_{i,t-1} + \beta_8(\text{lnMV})_{i,t-1} + \beta_9 \sum_{k=1}^{4} \text{Industry}_{i,t-1} + \varepsilon_{i,t-1}$
5A	$(\text{Cost of Debt})_{i,t} = \gamma_0 + \gamma_1(\text{EnvRegulation})_{i,t-1} + \gamma_2(\text{ResourceUseScore})_{i,t-1} + \gamma_3(\text{EnvRegulation} * \text{ResourceUseScore})_{i,t-1} + \gamma_4(\text{CashFlowsSales})_{i,t-1} + \gamma_5(\text{QuickRatio})_{i,t-1} + \gamma_6(\text{CSRStrategyScore})_{i,t-1} + \gamma_7(\text{ManagementScore})_{i,t-1} + \gamma_8(\text{lnMV})_{i,t-1} + \gamma_9 \sum_{k=1}^{4} \text{Industry}_{i,t-1} + \varepsilon_{i,t-1}$
1B	$(OROA)_{i,t} = \delta_0 + \delta_1(EnvRegulation)_{i,t-1} + \delta_2(EmissionsScore)_{i,t-1} + \delta_3(EnvRegulation * EmissionsScore)_{i,t-1} + \delta_4(CashFlowsSales)_{i,t-1} + \delta_5(QuickRatio)_{i,t-1} + \delta_6(CSRStrategyScore)_{i,t-1} + \delta_7(ManagementScore)_{i,t-1} + \delta_8(lnMV)_{i,t-1} + \delta_9 \sum_{k=1}^{4} Industry_{i,t-1} + \varepsilon_{i,t-1}$
3B	$(ROE)_{i,t} = \alpha_0 + \zeta_1(EnvRegulation)_{i,t-1} + \zeta_2(EmissionsScore)_{i,t-1} + \zeta_3(EnvRegulation * EmissionsScore)_{i,t-1} + \zeta_4(CashFlowsSales)_{i,t-1} + \zeta_5(QuickRatio)_{i,t-1} + \zeta_6(CSRStrategyScore)_{i,t-1} + \zeta_7(ManagementScore)_{i,t-1} + \zeta_8(lnMV)_{i,t-1} + \zeta_9 \sum_{k=1}^{4} Industry_{i,t-1} + \varepsilon_{i,t-1}$
5B	$(Cost\ of\ Debt)_{i,t} = \eta_0 + \eta_1(EnvRegulation)_{i,t-1} + \eta_2(EmissionsScore)_{i,t-1} + \eta_3(EnvRegulation * EmissionsScore)_{i,t-1} + \eta_4(CashFlowsSales)_{i,t-1} + \eta_5(QuickRatio)_{i,t-1} + \eta_6(CSRStrategyScore)_{i,t-1} + \eta_7(ManagementScore)_{i,t-1} + \eta_8(lnMV)_{i,t-1} + \eta_9 \sum_{k=1}^{4} Industry_{i,t-1} + \varepsilon_{i,t-1}$
1C	$(OROA)_{i,t} = \alpha_0 + \theta_1(EnvRegulation)_{i,t-1} + \theta_2(EnvInnovScore)_{i,t-1} + \theta_3(EnvRegulation * EnvInnovScore)_{i,t-1} + \theta_4(CashFlowsSales)_{i,t-1} + \theta_5(QuickRatio)_{i,t-1} + \theta_6(CSRStrategyScore)_{i,t-1} + \theta_7(ManagementScore)_{i,t-1} + \theta_8(lnMV)_{i,t-1} + \theta_9 \sum_{k=1}^{4} Industry_{i,t-1} + \varepsilon_{i,t-1}$
3C	$(ROE)_{i,t} = \iota_0 + \iota_1(EnvRegulation)_{i,t-1} + \iota_2(EnvInnovScore)_{i,t-1} + \iota_3(EnvRegulation * EnvInnovScore)_{i,t-1} + \iota_4(CashFlowsSales)_{i,t-1} + \iota_5(QuickRatio)_{i,t-1} + \iota_6(CSRStrategyScore)_{i,t-1} + \iota_7(ManagementScore)_{i,t-1} + \iota_8(lnMV)_{i,t-1} + \iota_9 \sum_{k=1}^{4} Industry_{i,t-1} + \varepsilon_{i,t-1}$
5C	$(Cost\ of\ Debt)_{i,t} = \lambda_0 + \lambda_1(EnvRegulation)_{i,t-1} + \lambda_2(EnvInnovScore)_{i,t-1} + \lambda_3(EnvRegulation * EnvInnovScore)_{i,t-1} + \lambda_4(CashFlowsSales)_{i,t-1} + \lambda_5(QuickRatio)_{i,t-1} + \lambda_6(CSRStrategyScore)_{i,t-1} + \lambda_7(ManagementScore)_{i,t-1} + \lambda_8(lnMV)_{i,t-1} + \lambda_9 \sum_{k=1}^{4} Industry_{i,t-1} + \varepsilon_{i,t-1}$
1D	$(OROA)_{i,t} = \mu_0 + \mu_1(EnvRegulation)_{i,t-1} + \mu_2(ProductRespScore)_{i,t-1} + \mu_3(EnvRegulation * ProductRespScore)_{i,t-1} + \mu_4(CashFlowsSales)_{i,t-1} + \mu_5(QuickRatio)_{i,t-1} + \mu_6(CSRStrategyScore)_{i,t-1} + \mu_7(ManagementScore)_{i,t-1} + \mu_8(lnMV)_{i,t-1} + \mu_9 \sum_{k=1}^{4} Industry_{i,t-1} + \varepsilon_{i,t-1}$
3D	$(ROE)_{i,t} = \nu_0 + \nu_1(EnvRegulation)_{i,t-1} + \nu_2(ProductRespScore)_{i,t-1} + \nu_3(EnvRegulation * ProductRespScore)_{i,t-1} + \nu_4(CashFlowsSales)_{i,t-1} + \nu_5(QuickRatio)_{i,t-1} + \nu_6(CSRStrategyScore)_{i,t-1} + \nu_7(ManagementScore)_{i,t-1} + \nu_8(lnMV)_{i,t-1} + \alpha_{10} \sum_{k=1}^{4} Industry_{i,t-1} + \varepsilon_{i,t-1}$
5D	$(Cost\ of\ Debt)_{i,t} = \xi_0 + \xi_1(EnvRegulation)_{i,t-1} + \xi_2(ProductRespScore)_{i,t-1} + \xi_3(EnvRegulation * ProductRespScore)_{i,t-1} + \xi_4(CashFlowsSales)_{i,t-1} + \xi_5(QuickRatio)_{i,t-1} + \xi_6(CSRStrategyScore)_{i,t-1} + \xi_7(ManagementScore)_{i,t-1} + \xi_8(lnMV)_{i,t-1} + \xi_9 \sum_{k=1}^{4} Industry_{i,t-1} + \varepsilon_{i,t-1}$
2A	$(OROA)_{i,t} = \rho_0 + \rho_3(SocRegulation)_{i,t-1} + \rho_2(WorkforceScore)_{i,t-1} + \rho_3(SocRegulation * WorkforceScore)_{i,t-1} + \rho_4(CashFlowsSales)_{i,t-1} + \rho_5(QuickRatio)_{i,t-1} + \rho_6(CSRStrategyScore)_{i,t-1} + \rho_7(ManagementScore)_{i,t-1} + \rho_8(lnMV)_{i,t-1} + \rho_9 \sum_{k=1}^{4} Industry_{i,t-1} + \varepsilon_{i,t-1}$
4A	$(ROE)_{i,t} = \varsigma_0 + \varsigma_1(SocRegulation)_{i,t-1} + \varsigma_2(WorkforceScore)_{i,t-1} + \varsigma_3(SocRegulation * WorkforceScore)_{i,t-1} + \varsigma_4(CashFlowsSales)_{i,t-1} + \varsigma_5(QuickRatio)_{i,t-1} + \varsigma_6(CSRStrategyScore)_{i,t-1} + \varsigma_7(ManagementScore)_{i,t-1} + \varsigma_8(lnMV)_{i,t-1} + \varsigma_9 \sum_{k=1}^{4} Industry_{i,t-1} + \varepsilon_{i,t-1}$
6A	$(Cost\ of\ Debt)_{i,t} = \sigma_0 + \sigma_1(SocRegulation)_{i,t-1} + \sigma_2(WorkforceScore)_{i,t-1} + \sigma_3(SocRegulation * WorkforceScore)_{i,t-1} + \sigma_4(CashFlowsSales)_{i,t-1} + \sigma_5(QuickRatio)_{i,t-1} + \sigma_6(CSRStrategyScore)_{i,t-1} + \sigma_7(ManagementScore)_{i,t-1} + \sigma_8(lnMV)_{i,t-1} + \sigma_9 \sum_{k=1}^{4} Industry_{i,t-1} + \varepsilon_{i,t-1}$
2B	$(OROA)_{i,t} = \tau_0 + \tau_1(SocRegulation)_{i,t-1} + \tau_2(HumanRightsScore)_{i,t-1} + \tau_3(SocRegulation * HumanRightsScore)_{i,t-1} + \tau_4(CashFlowsSales)_{i,t-1} + \tau_5(QuickRatio)_{i,t-1} + \tau_6(CSRStrategyScore)_{i,t-1} + \tau_7(ManagementScore)_{i,t-1} + \tau_8(lnMV)_{i,t-1} + \tau_9 \sum_{k=1}^{4} Industry_{i,t-1} + \varepsilon_{i,t-1}$

4B	$(ROE)_{i,t} = \upsilon_0 + \upsilon_1(SocRegulation)_{i,t-1} + \upsilon_2(HumanRightsScore)_{i,t-1} + \upsilon_3(SocRegulation * HumanRightsScore)_{i,t-1} + \upsilon_4(CashFlowsSales)_{i,t-1} + \upsilon_5(QuickRatio)_{i,t-1} + \upsilon_6(CSRStrategyScore)_{i,t-1} + \upsilon_7(ManagementScore)_{i,t-1} + \upsilon_8(lnMV)_{i,t-1} + \upsilon_9 \sum_{k=1}^{4} Industry_{i,t-1} + \varepsilon_{i,t-1}$
6B	$(Cost\ of\ Debt)_{i,t} = \varphi_0 + \varphi_1(SocRegulation)_{i,t-1} + \varphi_2(HumanRightsScore)_{i,t-1} + \varphi_3(SocRegulation * HumanRightsScore)_{i,t-1} + \varphi_4(CashFlowsSales)_{i,t-1} + \varphi_5(QuickRatio)_{i,t-1} + \varphi_6(CSRStrategyScore)_{i,t-1} + \varphi_7(ManagementScore)_{i,t-1} + \varphi_8(lnMV)_{i,t-1} + \varphi_9 \sum_{k=1}^{4} Industry_{i,t-1} + \varepsilon_{i,t-1}$
2C	$(OROA)_{i,t} = \chi_0 + \chi_1(SocRegulation)_{i,t-1} + \chi_2(CommunityScore)_{i,t-1} + \chi_3(SocRegulation * CommunityScore)_{i,t-1} + \chi_4(CashFlowsSales)_{i,t-1} + \chi_5(QuickRatio)_{i,t-1} + \chi_6(CSRStrategyScore)_{i,t-1} + \chi_7(ManagementScore)_{i,t-1} + \chi_8(lnMV)_{i,t-1} + \chi_9 \sum_{k=1}^{4} Industry_{i,t-1} + \varepsilon_{i,t-1}$
4C	$(ROE)_{i,t} = \psi_0 + \psi_1(SocRegulation)_{i,t-1} + \psi_2(CommunityScore)_{i,t-1} + \psi_3(SocRegulation * CommunityScore)_{i,t-1} + \psi_4(CashFlowsSales)_{i,t-1} + \psi_5(QuickRatio)_{i,t-1} + \psi_6(CSRStrategyScore)_{i,t-1} + \psi_7(ManagementScore)_{i,t-1} + \psi_8(lnMV)_{i,t-1} + \psi_9 \sum_{k=1}^{4} Industry_{i,t-1} + \varepsilon_{i,t-1}$
6C	$(Cost\ of\ Debt)_{i,t} = \omega_0 + \omega_1(SocRegulation)_{i,t-1} + \omega_2(CommunityScore)_{i,t-1} + \omega_3(SocRegulation * CommunityScore)_{i,t-1} + \omega_4(CashFlowsSales)_{i,t-1} + \omega_5(QuickRatio)_{i,t-1} + \omega_6(CSRStrategyScore)_{i,t-1} + \omega_7(ManagementScore)_{i,t-1} + \omega_8(lnMV)_{i,t-1} + \omega_9 \sum_{k=1}^{4} Industry_{i,t-1} + \varepsilon_{i,t-1}$

3.2 Results and discussion

Tables 13 and 14 show the findings highlighted by the regressions of Models 1 to 6. The asterisks represent the p-value of the results, namely $\rho<0.01$, $\rho<0.05$, $\rho<0.1$. The higher the number of asterisks, the higher the findings' significance. The numbers in brackets embody the standard errors, while the symbol § identifies those variables omitted by Stata to avoid collinearity in the models.

In the light of the empirical findings of Model 1 (A-B-C-D), the direct impact of EnvRegulation on OROA shows a positive sign. Despite the regulation could appear as a cost, as stated by Grewal et al. (2015), the result of the analysis stresses that environmental NFD regulation positively impacts the operating profitability of the company in the short term. Accordingly, the regulation on environmental issues leads the management to improve the production efficiency, better allocating financial, human and material resources. In turn, improved business activities foster profitability, as identified by Gregory et al. (2014). However, this result is in contrast to what was said in the paper of Cupertino et al. (b) (2021), which asserted the negative relation between the mandatory regulation and the firm's OROA. A possible explanation can derive from the peculiarities of the Agri-food sector, which is particularly subjected to environmental agents, but it also greatly influences the environment. Furthermore, the agri-food sector is more subject to sustainability issues than any other sector. Therefore, these companies efficiently ed effectively allocating the resources according to the regulation, they impact positively the companies' profitability in the short term and produce good externalities for the environment. The positive relation between EnvRegulation and OROA can be seen in all the variants of model 1, albeit with different intensities. Furthermore, the findings highlight a favourable impact of non-financial performance on financial ones, especially product responsibility-related activities (ProductRespScore), that seems to particularly impact the OROA. With a $\rho<0.01$, the company's responsibility towards the production of quality and sustainable goods and services improves positively the operating profit in the short run. This finding, in complete contrast with the one of Cupertino et al. (b) (2021), can be explained by the importance that sustainability plays in the Agri-food sector. Further, the result reinforces the position of Ioannou & Serafeim (2014) and Tuppura et al. (2016), for which the relationship between non-financial and financial performances

are very context and sector dependent. While both the regulation and the sustainability attitude produce a positive effect on the OROA, the combined effect of institutional pressure and sustainability activities has a penalizing effect on the OROA in the short term. This repercussion can be seen in all the variants of Model 1, not in absolute terms, rather in relative: The regulation moderates the relationship making OROA slightly decreasing in the short term. Indeed, to comply with the regulation, the manager leads the company to make some efforts regarding environmental issues, which produce temporary repercussions on profitability. This conclusion is unlike the reference literature of Cupertino et al. (b) (2021) and Oware & Mallikarjunappa (2020). However, to the best of my knowledge, this study is the first that inspects the moderation effect of the regulation specifically in the Agri-food sector.

With Model 3 (A-B-C-D), it is inspected the point of view of owners, investors of risk capital and shareholders, and the capacity of a company of generating profit from equity capital. Results show that, in contrast to Cupertino et al. (b) (2021), mandatory environmental regulation positively impacts the ROE, increasing the equity capital, while the combined effect of EnvRegulation and the company's attitude towards environmental sustainability (EnvRegulation*ResourceUseScore, EnvRegulation*Emissionscore, etc.) is negative in the short term. The regulation's impact on the relation between NFP and FP is greater than the impact of innovation towards environmental sustainability, which needs more time to produce its effects. In fact, the investments in sustainability innovation generate their financial and non-financial effects in the medium/long run (Cupertino et al., 2021 (a)). Therefore, in the one-year lag between explanatory and dependent variables the profitability is negatively affected.

Taken separately, the variables of non-financial nature (i.e. ResourceUseScore, EmissionsScore, EnvInnovScore and ProductRespScore) have a positive effect on the ROE. These results comply with Ambec & Lanoie (2008) and Gangi et al. (2021). Thus, a firm's effort to reduce environmental impact is a predictor of ROE and can be a profitable investment. In addition, it can be started a virtuous circle for which superior environmental performance improve financial return, completely outperforming the costs needed to implement sustainability practices. Notably, the effect of EnvInnovScore on ROE is particularly positive and higher than in the other relation seen till now (with a coefficient of 0.08 and a $\rho<0.01$). Hence, fostering the processes of environmental sustainability in the supply chain and the production of innovative products create a determinant effect. SASB materiality map confirms what was just said. Indeed, "Product Quality and Safety" and "Supply Chain Management" are of particular financial relevance for investors and particularly impact the SDGs achievement (Consolandi, 2019).

Regarding Model 5 and its variants A-B-C-D, it can be found that the regressions' results show a low significance, contrarily to Model 1 and 3, where this latter is quite high ($\rho<0.01$). The reason can be an intrinsic weakness of the Cost of Debt. Indeed, despite the database used being extremely reliable, the information on the Cost of Debt were often missing. Still, the findings highlight that the NFD regulation regarding environmental issues rises the Cost of Debt in the short term. Since the company needs to implement sustainable environmental practices or processes to comply with the regulation, it may need some funds. Therefore, the company may choose to finance its overall operations through debts such as bonds or loans, that as a consequence increase the cost of debt. Our evidence is in

contrast with the position of Fonseka et al. (2019) and Luo et al. (2019), for which mandatory environmental disclosure reduces the Cost of Debt, but improves the findings of Cupertino et al. (b) (2021), that were not able to explain the relation. Indeed, they supposed that the disclosures of sustainability information are irrelevant for debtholders since they are mostly oriented on shorter-term profitability. In the same train of thought, the correlation between RescourceUseScore and the Cost of Debt is positive, since the necessity of the company to establish eco-efficient solutions requires funds. These reasons are in contrast with Raimo et al. (2021), which considered a longer time frame, though. Therefore, we can expect that the introduction of an NFD regulation will allow companies to benefit from a lower cost of debt over the long run. Indeed, the policy will cause a reduction in information asymmetries and agency costs (Raimo et al., 2021). However, the only moderation effect on the Cost of Debt is due to the combined effect of the regulation and the sustainable use of resources, which slightly decreases it (Model 5A).

Model 2 and 4 show quite similar results. It is worth noting that the regulation regarding social issues positively impacts the operating profitability and the ROE. These results are justifiable since social sustainability activities do not need strong investments to comply with the regulation as environmental ones. Therefore they produce financial returns in the short term, as confirmed by Cupertino et al. (a) (2021). In addition, the research proves a positive relationship between the sustainability attitude of a company (e.g. WorkforceScore and CommunityScore) and operational performance (Model 2 A-C). Indeed, meeting stakeholders expectations increases a firm's OROA through improved employee's wellbeing and reinforced relations with the surrounding community (Perrini et al., 2009). Furthermore, the findings highlight how social outcomes positively influence the equity's return, supporting the position of Franceschelli et al. (2018) (Model 4 A-C). However, the effect of SocRegulation*CommunityScore impacts the OROA but not the ROE. In this regard, regulations concerning community aspects are often quite elusive and mild, because the definition of "good citizenship" is extremely varied and difficult to define. Nevertheless, in an internal context, the manager is keener to pay attention to the aspect of good citizenship, being closer to the community. Thus, the moderation effect exists and slightly decrease the operating profitability (Model 2C). On the contrary, It is more difficult for shareholders to incorporate this mild directive on their expectations, and as a result, SocRegulation*CommunityScore doesn't affect the ROE (Model 4C). Despite the absence of a direct effect between HumanRightScore and OROA (Model 2B) and HumanRightScore and ROE (Model 4B), the combined effect of the regulation and HumanRightScore reduces the operating profit and the ROE, resulting in a cost.

Model 6 shows quite opposite results to model 5. Indeed, SocialRegulation has a negative influence on the Cost of Debt, diminishing it. This means that the disclosure of social information and the higher level of transparency induced by the regulation brings a lower cost of debt financing in the short term. This evidence validates the findings of Najah & Jarboui (2013) regarding social disclosure aspects and Raimo et al. (2021), who argue a negative association between mandatory information disclosure and the cost of debt capital. In addition, the obtained findings suggest that a positive attitude towards the welfare of the workforce diminishes the Cost of Debt (Model 6A). Indeed, the social dimension of sustainability has increased its sensibility due to the last years' events, which brought investors, lenders and credit institutions to be ever more attentive to workers' welfare and how companies behave towards their internal stakeholders. What is more, the agri-food sector is particularly exposed

to the theme of the workforce's welfare since many issues can emerge along its labour-intensive value chains. For instance, the illegal recruitment of the workforce, and the inadequate return of food producers caused by the disproportionate bargaining power of retailers. Anyway, the norms have not completely absorbed what the pandemic has carried on with social sustainability, and it is only moving its first steps ahead (e.g. remote working).

On the other hand, the effect of SocRegulation*WorkforceScore worsens the Cost of Debt. The positive moderating role of the regulation on the relationship between social sustainability performance and financial performance has two possible explanations. Firstly, on the one hand, banks are incentivised to grant loans because the regulation gives them a guarantee. On the other, companies are pushed to ask for funds to comply with the regulation. Therefore, since banks are themselves businesses, to a growth in demand, they react with a rise in the interests rates. Secondly, the regulation, besides pushing to perform better towards social indications, encourages the companies to disclose more accurately their non-financial information, decreasing the information asymmetries. Accordingly, credit institutions reshape the interest rates. Banks value these pieces of information with less shortsightedness and increase the interest rates. In other words, banks introduce also non-financial indices in the creditworthiness, which improve the debt measurement act. While before, due to the exclusive use of financial indices, information asymmetries and lack of transparency, banks used to apply wrongly downturned interests.

Concerning the control variables, the findings highlight that including environmental and social issues in the company's strategy may penalize the short-term profitability and ROE. Indeed, it takes time and money to integrate social and environmental factors in decision-making procedures and along the value chains (Folajin et al., 2014). However, according to Kim et al. (2012), I believe that the real realisation of sustainability strategies in the agri-food sector is crucial to fulfilling the expectation of stakeholders and shareholders, producing positive results in the longer term. Further, slack resources play a key role in the short term gain of a business. Indeed, in line with Cupertino et al. (b) (2021), operational Slack resources have a positive impact on OROA and ROE, while financial available slack resources slightly decrease the firm's profitability. The size positively impacts the operating financial performance, the return on equity, and the cost of debt. These findings are in contrast with former results, which argue a negative relation between firm size and CoD due to fewer difficulties of big corporations in gaining access to loans (Graham et al., 2008; Petersen & Rajan, 1994).

3.2.1 Conclusions

Overall, I have been able to answer all the research questions with a good level of significance, demonstrating that do exists a direct relationship between the introduction of mandatory non-financial disclosure regulation and companies' financial performance. These regulations, besides supporting transparency, comparability and completeness of the information disclosed, foster sustainability activity and practices along the whole value chain. These virtuous practices towards social and environmental sustainability have as well an impact on firms' financial resources. Lastly, in most cases, the regulation produces a moderating effect on the relationship between non-financial and financial performance, slightly decreasing the companies' profit. On balance, the choice to divide the empirical analysis into two branches, investigating the results from the environmental and social point

of view has been successful, because it produced different results. For instance, EnvRegulation impacts positively the Cost of Debt, but SocRegulation negatively affects the Cost of Debt. Therefore, investigating the content of the regulation, instead of simply studying the presence or absence of an NFD regulation, has allowed me to go into details and find the peculiarities of each relation. Furthermore, the three relations have led to different results depending on the combination of non-financial and financial variables. Overall, I can claim that the introduction of a mandatory non-financial disclosure regulation on social and environmental aspects is beneficial for the operating profit and the return on equity, while its moderating role slightly decreases the OROA and the ROE. Similarly, the companies' attitude towards social and environmental sustainability produces positive results on the operating ROA and the equity's return. The Cost of debt needs to be treated independently since its scarce significance has allowed doing only some preliminary conjecture.

In addition, I have reinforced the idea that these relations are extremely context-dependent, indeed many findings were different from the reference literature, that focused on none specific sector. For example, the study of Cupertino et al. (b) (2021) has similar research questions to mine but examines the relationship between performance and mandatory disclosure, and the moderating role of the directive without focusing on any specific sector and it shows quite opposite results to mine.

The control variables presented interesting results even if they were not the main aim of the research: they have a substantial significance and produce a meaningful effect in these relations. For instance, the higher the size, the higher the return. The greater is the sustainability attitude incorporated into the company's strategy, the lower will be the return in the short term. However, the relations with the cost of debt show reversed effects. Indeed, the higher the size and greater the attitude towards sustainability in the company strategy, the higher will be for a company the cost of debt financing.

Finally, this thesis provides some practical implications for the agri-food sector. Indeed, compliance with NFD regulations and non-financial activities lead to substantial positive consequences. Managers must be aware of the corporate dimensions that are more material for their business in order to contemporarily pursue better financial returns and positively impact the environment and people. For instance, food producers should pay more attention to product labelling, while farmers on the management of waste. In pursuing these aims under institutional pressure, companies may be negatively affected shortly. Anyway, this combined effect is only relative and the regulation alone is able to enhance sustainability standards, improving sustainability performance and firm's profitability.

Table 13 – Results

IVs & CVs	Model 1A DV: OROA	Model 1B DV: OROA	Model 1C DV: OROA	Model 1D DV: OROA	Model 3A DV: ROE	Model 3B DV: ROE	Model 3C DV: ROE	Model 3D DV: ROE	Model 5A DV: CostOfDebt	Model 5B DV: CostOfDebt	Model 5C DV: CostOfDebt	Model 5D DV: CostOfDebt
EnvRegulation	2.588253***	2.494462***	2.136377***	2.543749***	4.155693***	3.746872	2.887363***	3.629343***	4.891068***	2.30152	2.221114**	3.027457
	(0.5313419)	(0.5234351)	(0.3566774)	(0.5548866)	(1.098608)	(1.082082)	(0.7339239)	(1.149671)	(2.02339)	(1.967885)	(1.34079)	(2.117265)
ResourceUseScore	0.0156862*				0.0477975***				0.0955269***			
	(0.0087548)				(0.0181014)				(0.0333388)			
EmissionsScore		0.0069473*				0.0272189*				0.0769441**		
		(0.0087359)				(0.0180953)				(0.0329083)		
EnvInnovScore			0.0182426**				0.0825689***				0.0994451***	
			(0.0089107)				(0.0183353)				(0.0334964)	
ProductRespScore				0.0239613***				0.0673608***				0.0818605**
				(0.0087252)				(0.0180777)				(0.0332924)
EnvRegulation*ResourceUseScore	-0.0289735***				-0.0786429***				-0.0607274*			
	(0.0093569)				(0.0193464)				(0.0356318)			
EnvRegulation*EmissionsScore		-0.0258005**				-0.0699646***				0.0005082		
		(0.0093385)				(0.0193435)				(0.0351782)		
EnvRegulation*EnvInnovScore			-0.0378915***				-0.1129676***				-0.0514886	
			(0.0097551)				(0.0200727)				(0.0366704)	
EnvRegulation*ProductRespScore				-0.0287901***				-0.0651022***				-0.0306023
				(0.0097126)				(0.0201235)				(0.03706)
CashFlowsSales	0.2102228***	0.210712***	0.209943***	0.2125698***	0.182569***	0.1805942***	0.178197***	0.1902877***	0.0453237**	0.0397216**	0.0421476**	0.0457145**
	(0.0043251)	(0.0043263)	(0.0043274)	(0.0043335)	(0.0101832)	(0.0102042)	(0.0101989)	(0.0102217)	(0.0187552)	(0.0185574)	(0.0185225)	(0.0188245)
QuickRatio	-0.3303016**	-0.2778638*	-0.274541*	-0.0919732	-1.076542***	-1.112786***	-1.200624***	-0.9480288***	0.4868432	0.4083511	0.2677612	0.5407506
	(0.1597073)	(0.1594655)	(0.1596799)	(0.1597882)	(0.3302124)	(0.3303129)	(0.3285684)	(0.3310656)	(0.6081774)	(0.6007103)	(0.6002546)	(0.6096991)
CSRStrategyScore	-0.0146385***	-0.0131248**	-0.0149003***	-0.0205104***	-0.0215084**	-0.0180238*	-0.0250095***	-0.0349528***	0.0015255	-0.0178256	0.0126205	0.0049513
	(0.0052814)	(0.0051638)	(0.0046162)	(0.0048177)	(0.0109198)	(0.0106962)	(0.0094987)	(0.0099817)	(0.0201119)	(0.0194521)	(0.0173529)	(0.0183826)
ManagementScore	-0.0002113	0.0001455	0.0012167	-0.0003113	0.0130563	0.013261	0.0136537	0.0128206	-0.0360252**	-0.0282238	-0.0333494**	-0.0353493**
	(0.0047489)	(0.0047068)	(0.0047297)	(0.0047512)	(0.009819)	(0.0097496)	(0.0097322)	(0.009844)	(0.0180843)	(0.0177307)	(0.0177796)	(0.018129)
lnMV	0.9486575***	0.952064***	0.9700682***	0.8698249***	2.683294***	2.695407***	2.585731***	2.487641***	1.927908***	1.91142***	1.829336***	1.907563***
	(0.1065727)	(0.1040453)	(0.1054572)	(0.1036807)	(0.2203507)	(0.2155168)	(0.216896)	(0.2149163)	(0.4056368)	(0.3973885)	(0.3914411)	(0.3964254)
Beverages	$	$	$	-1.333948***	$	$	$	-4.093087***	$	$	$	0.5258029
				(0.4067395)				(0.8427249)				(1.551984)
DrugGroceryStores	1.360779***	1.392479***	1.405741***	$	4.495402***	4.525281***	4.241744***	$	0.2978414	0.2897537	-0.0651726	$
	(0.4009697)	(0.4003536)	(0.4020066)		(0.8290483)	(0.8292826)	(0.8271962)		(1.526923)	(1.508142)	(1.511187)	
FoodProducers	0.6530003**	0.6783003**	0.6366982**	-0.7113118**	1.037032	1.072863	0.931543	-3.025939***	2.951398**	2.944569**	2.866318**	3.290638**
	(0.3252505)	(0.3240351)	(0.3234083)	(0.3456089)	(0.6724911)	(0.6719985)	(0.6654467)	(0.7160682)	(1.238578)	(1.220648)	(1.215728)	(1.31873)
Retailers	0.4869479	0.4282627	0.4299036	-0.6532627	0.2251191	-0.0201193	0.0356742	-3.677774***	0.8227508	0.2744677	0.6506202	1.540136
	(0.4313859)	(0.4311969)	(0.4297621)	(0.4275903)	(0.8918378)	(0.8931706)	(0.8843068)	(0.8859258)	(1.64275)	(1.624329)	(1.615524)	(1.637544)
_cons	-3.863939***	-3.602065***	-3.703791***	-2.499116***	-15.59961***	-14.79481***	-13.62327	-10.45203***	-1.050194	0.312414	2.143015	-0.7037324
	(1.017273)	(0.9846782)	(0.957344)	(0.9842126)	(2.103323)	(2.039638)	(1.969896)	(2.039193)	(3.873885)	(3.709306)	(3.598762)	(3.755431)
F(11,1428)	282.19	280.42	280.07	278.97	90.08	88.82	89.28	91.61	8.01	9.08	8.83	8.26
Observations	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440

*** p<0.01, ** p<0.05, * p<0.1; $ - omitted because of collinearity; - not included in the model

Table 14 – Results

IVs & CVs	Model 2_A DV: OROA	Model 2_B DV: OROA	Model 2_C DV: OROA	Model 4_A DV: ROE	Model 4_B DV: ROE	Model 4_C DV: ROE	Model 6_A DV: CostOfDebt	Model 6_B DV: CostOfDebt	Model 6_C DV: CostOfDebt
SocRegulation	1.882199*** (0.5849449)	1.82323*** (0.3498203)	1.726678*** (0.4857986)	4.178814*** (1.196785)	3.783791*** (0.7287222)	2.008694*** (0.9956039)	-3.060192* (2.144991)	-1.083162 (1.306977)	2.728863 (1.817754)
WorkforceScore	0.0147056** (0.0072727)			0.0353692** (0.0148799)			-0.0858837*** (0.0266691)		
HumanRightsScore		-0.0055669 (0.0060395)			-0.0075997 (0.0125811)			0.0123416 (0.0225644)	
CommunityScore			0.023645*** (0.0067169)			0.0528061*** (0.0137657)			-0.0626756** (0.0251332)
SocRegulation*WorkforceScore	-0.0145706* (0.0092296)			-0.035766* (0.0188836)			0.0936146*** (0.0338449)		
SocRegulation*HumanRightsScore		-0.0202604*** (0.0072042)			-0.0400309*** (0.0150074)			0.089582*** (0.0269161)	
SocRegulation*CommunityScore			-0.0134788* (0.0082031)			0.0053676 (0.0168117)			-0.0033144 (0.0306944)
CashFlowsSales	0.2085648*** (0.0049462)	0.2078606*** (0.0048593)	0.2090875*** (0.0049462)	0.1806608*** (0.0101198)	0.1810798*** (0.0101226)	0.17788*** (0.0101369)	0.0376454** (0.0181376)	0.0400458** (0.018155)	0.0411362** (0.0185077)
QuickRatio	-0.3960128** (0.1615732)	-0.481344*** (0.1576189)	-0.2938339* (0.1607452)	-1.222093*** (0.3305752)	-1.213029*** (0.3283411)	-1.1431*** (0.3294338)	0.3208862 (0.5924883)	0.2776205 (0.5888859)	0.2487738 (0.6014736)
CSRStrategyScore	-0.0240429*** (0.0053982)	-0.0108658** (0.0049252)	-0.0278016*** (0.0049958)	-0.0390505*** (0.0110447)	-0.0140822 (0.0102598)	-0.0545512*** (0.0102384)	0.040364** (0.0197953)	-0.0081868 (0.0184011)	0.0481913** (0.0186931)
ManagementScore	0.0021778 (0.0047563)	-0.0028628 (0.0047038)	-0.0029704 (0.0048061)	0.0081458 (0.0097313)	0.0072702 (0.0097985)	0.0002926 (0.0098498)	-0.0283654* (0.0174414)	-0.0309* (0.0175739)	-0.0213357 (0.0179836)
lnMV	0.8778989*** (0.1022734)	1.015437*** (0.1061015)	0.8371511*** (0.1043107)	2.345941 (0.2092491)	2.64231*** (0.2210237)	2.142632*** (0.2137762)	2.282554*** (0.3750362)	1.635379*** (0.3964101)	2.449458*** (0.3903083)
Beverages	§	§	§	§	§	§	§	§	§
DrugGroceryStores	9294664** (0.4023611)	1.182775*** (0.392632)	0.9149915** (0.3994406)	3.755622*** (0.8232221)	4.392813*** (0.8179047)	3.67342*** (0.8186202)	0.4483127 (1.475457)	-0.2106962 (1.466928)	0.0765778 (1.49462)
FoodProducers	0.4538642 (0.3237107)	0.6070118* (0.3197187)	0.4105099 (0.3220965)	0.8645245 (0.6623051)	1.101172* (0.6660166)	0.7080635 (0.6601099)	3.34049*** (1.187046)	2.869556** (1.194513)	3.472945*** (1.205215)
Retailers	0.0458266 (0.4320385)	0.2034593 (0.4205212)	-0.0460693 (0.4314541)	-0.2479165 (0.8839413)	0.1375042 (0.8760018)	-0.784456 (0.8842294)	0.4023317 (1.584284)	0.5213751 (1.571126)	0.9990408 (1.614408)
_cons	-2.178095** (0.9328415)	-2.992833*** (0.9484823)	-2.02624** (0.9502982)	-11.77164*** (1.908573)	-13.51798*** (1.975815)	-9.542044*** (1.947557)	2.813628 (3.420727)	5.855359* (3.543662)	-0.5035085 (3.555811)
F(11, 1428)	274.61	287.51	272.72	87.81	89.98	88.33	9.15	10.28	8.98
Observations	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440	1,440

*** p<0.01, ** p<0.05, * p<0.1; §: omitted because of collinearity; : not included in the model*

3.3 Originality, limitations and hints for future researches

Researching the mandatory non-financial disclosure regulations around the world and studying how these latter, directly and indirectly, impact the companies' financial outcomes, was useful to enrich the literature with worldwide insights. Indeed, the previous studies were mainly focused on single geographical contexts (e.g., Europe, USA and India). In addition, I especially improved the scarce literature about the moderating role of the regulation, which, to the best of my knowledge, was explored just by Cupertino et al. (b) (2021) and Oware & Mallikarjunappa (2020), producing valuable insights on the agri-food sector. Many previous investigations on the relationship between non-financial and financial performance focused on the agri-food sector, but I've been one of the first to examine the moderation effect of the regulation considering more than one financial variable contemporarily, thus highlighting the perspective of managers, debtholders and shareholders.

On the other hand, this empirical analysis has some limits. Firstly, the analysis covers only eight years, focusing on the effects in the short term. Therefore, future research can concentrate on a longer time frame to have a broad overview of the effects of NFD regulations in the examined relationships. This might be done by extending the year lag between dependent and explanatory variables. Moreover, it may be interesting to study the scrutinised relationship through the "difference in differences" statistical method or other regressions approaches to further decrease possible endogenous effects and increase the significance of the results. In addition, could be interesting to analyse the scrutinised relationship using different financial variables. In the same way, some independent variables regarding the governance issues can enlarge the study to the third dimension of ESG. Lastly, I decided to concentrate on the moderating effect of the regulation since was the most cited in the literature, but it can be also reasonable to investigate the mediation effect of the regulation to understand how the association between NFP and FP is related to the third (mediating) variable "Regulation".

The scarce significance obtained in Model 5 and 6 is a further shortcoming. Connected to this, further research can fully examine the reasons for the increase in the cost of debt due to the combined effect of SocRegulation and social sustainability performance.

Annex 1

Nation	Legislation	Year of emana-tion	Mandatory/ Voluntary	Topics	To whom it is addressed
Argentina	(Projecto de ley) De Responsabilidad Social Empresaria (S- 0765/12), Updated proposal (S-0476/14) 2014	2014	Mandatory	E; G; Eco	All Companies
	Registro Unico de Organizaciones de Responsabilidad Social	2016	Mandatory	E; S; G	All Companies
	Corporate Social Respon-sibility bill (Proyecto de ley) 0999-S/12	2012	Voluntary	S	All Companies
Australia	Modern Slavery Bill	2017	Mandatory	S; G; Eco	All Companies
	Energy Efficiency Opportunities Act, 2006 (amended in 2007)	2007	Mandatory	E; G	Large private and listed companies
	Carbon Credits (Carbon Farming Initiative) Act	2011	Mandatory	E; S; G	All Companies
	Corporations Act - Sect 299	2001	Mandatory	S; G; Eco	All Companies
	National Greenhouse and Energy Reporting	2007	Mandatory	E; S; G	All Companies
Brazil	\	\	\	\	\
Canada	CSR Implementation Guide for Canadian Business.	2014	Voluntary	E; S; G; Eco	All Companies
	Final Report of the Expert Panel on Sustainable Finance	2019	Voluntary	E; S; G	All Companies
	The National Pollutant Release Inventory (NPRI)	1999	Mandatory	E	All Companies
Chile	Plan de Acción Nacional de Consumo y Producción Sustentables 2017-2022	2018	Voluntary	E; S; G	All Companies
	Directive for Public Contracts No.25	2016	Mandatory	E; S	All Companies

	Circular No. 52 Referencia Legal Ley N 20.780	2014	Mandatory	E	Large private and listed companies
China	Green Securities Policy	2008	Mandatory	E; G	Large private and listed companies
	Guidelines on Environmental Protection in foreign investment and corruption	2013	Voluntary	E; Eco	All Companies
	Measures on Open Environmental Information (for Trial Implementation)	2008	Mandatory	E	All Companies
Colombia	Colombian Low Carbon Development Strategy (ECDBC)	2013	Voluntary	E	Large private and listed companies, Agriculture Sectors
	Law 1901 for the Creation of BIC societies	2018	Voluntary	E; S	All Companies
	Resolution 200	2018	Voluntary		All Bic societies
	Law 1955 - National Action Plan for Development 2018-2022	2018	Mandatory	S; G	All companies
	National Program for Voluntary Report on GHG Emissions	2012	Voluntary	E	All Companies
Europe	Directive 2014/95/EU	2014	Mandatory	E; S; G	public-interest entities with >=500 employees
	EU Directive Integrated Pollution Prevention and Control (IPPC) 2008/1/EC	2008	Mandatory	E	Public organizations / agencies
	EU Pollutant Release and Transfer Register (PRTR) (REGULATION 166/2006/EC)	2006	Mandatory	E	Large private and listed companies
	EU Modernisation Directive 2003/51/EC	2003	Mandatory	E; S; Eco	Large private and listed companies
	EU Resolution on Palm Oil and Deforestation	2017	Mandatory	E	Public organizations/agencies
Hong Kong	New Companies Ordinance Cap 622	2014	Voluntary	\	Large private and listed companies

India	Indian Factories Act	1987	Voluntary	S	All Companies
	Corporate Social Responsibility Voluntary Guidelines	2009	Voluntary	\	All Companies
	Environment (Protection) Act, Annual 'environmental audit report'	1986	Mandatory	E	All Companies
	National Voluntary Guidelines on Social, Environmental & Economic Responsibilities of Business	2011	Voluntary	E; S; G; Eco	All Companies
	The Companies Act (Section 135 CSR)	2013	Mandatory	\	All Companies
Indonesia	Limited Liability Companies Law No. 40/2007	2007	Mandatory	G; Eco	Large private and listed companies
	Regulation no. 47/2012	2012	Mandatory	E; S	Large private and listed companies
	Regulation No. 51/POJK.03/2017	2017	Mandatory	E; S; G; Eco	All Companies
	POJK 29/04/2016 – Annual Report for Issuers and Public Listed Companies	2016	Mandatory	E; S; G; Eco	Large private and listed companies
	The Indonesian Corporate Governance Manual	2014	Voluntary	G	Large private and listed companies
	PERPRES 57/2017 on SDGs Implementation	2017	Voluntary	E; S; G; Eco	All Companies
Japan	Act on Promotion of Female Employment	2015	Mandatory	S	Large private and listed companies
	Bill for the Promotion of Work Style	2018	Mandatory	S	All Companies
	Guidance for Integrated Corporate Disclosure and Company-Investor Dialogues for Collaborative Value Creation	2017	Voluntary	S; G	All Companies
	Environmental Reporting Guidelines, 2007, 2012	2012	Voluntary	E; Eco	All Companies

	Law concerning the Rational Use of Energy, Act on Promotion of Global Warming Countermeasures	1979	Mandatory	E	Large private and listed companies
	Mandatory GHG Accounting System	2005	Mandatory	E	Large private and listed companies
Malaysia	Main Markets Listing Requirements CSR description	2007	Mandatory	G	Large private and listed companies
Mexico	Climate Change law, 2012.	2012	Mandatory	E	Large private and listed companies
	GHG Program (GEI), 2004.	2004	Voluntary	E	All Companies
	Official Mexican Standard NOM-002-SEMARNAT-1998 on Wastewater Quality	1996	Mandatory	E	All Companies
New Zealand	\	\	\	\	\
Norway	Act amending the Norwegian Accounting Act	2013	Mandatory	E; S; G	Large private and listed companies
	Business and Human Rights: National Action Plan on the follow-up of the UN Guiding Principles	2015	Voluntary	E; S; G; Eco	All companies operating internationally
	The Norwegian Accounting Act, 1998	1998	Mandatory	E; S; G	all Norwegian-registered companies, subjects of taxation
	Transposition of EU NFR Directive: New Accounting Act Draft	2017	Mandatory	E; S; G	Large private and listed companies
Peru	\	\	\	\	\
Philippines	Corporate Social Responsibility Act, 2011.	2011	Mandatory	S; Eco	Large private and listed companies
Singapore	Revised Code of Corporate Governance, 2012.	2012	Voluntary	E; G	Large private and listed companies
	Energy Conservation Act, 2012.	2012	Mandatory	E	Large private and listed companies

South Africa	Air Quality Act of 2004 And its Amendment Bill	2014	Voluntary	\	All Companies
	Broad-Based Black Economic Empowerment Act 2003 as amended by Act 46 of 2013 and Code of Good Practices	2014	Mandatory	\	All Companies
	Employment Equity Act, 1998 and its Amendment Bill	2012	Mandatory	S	All Companies
	National Environmental Management Act (NEMA), 1998	1998	Voluntary	\	All Companies
	The Consumer Protection Act of 2008 (Entry into force 2011)	2011	Voluntary	\	All Companies
	National Greenhouse Gas Emission Reporting regulations (within National Environment Management: Air Quality Act (39/2004)	2017	Mandatory	E	All Companies
South Korea	Environmental Reporting Guidelines, 2007.	2007	Voluntary	E	All Companies
	The First Framework Plan for Response to Climate Change	2016	Voluntary	E	Public sector organ-isations
	Environmental Information Disclosure Policy	2012	Mandatory	E	Large private and listed companies
	Disclosure on Executive Gender	2013	Mandatory	G	Large private and listed companies
Switzer-land	UN Guiding Principles on Business and Human Rights	2016	Voluntary	S	All Companies
	CSR Action Plan	2015	Voluntary	E; S; G; Eco	All Companies
	Report to the Federal Council: Green Economy: Report and Action Plan	2013	Voluntary	E	All Companies
Taiwan	\	\	\	\	\

Thailand	\	\	\	\	\
Turkey	Consumer Protection Law No. 4077 as amended by Act No 4822	2003	Mandatory	E; S	All Companies
	Energy Efficiency law No. 5627	2007	Mandatory	E	Large private and listed companies
	Environment Law No. 2872 of 1983, amended by law No. 5491	2006	Mandatory	E	All Companies
	Labour Law No. 4857, 2003.	2003	Mandatory	S; G	All Companies
	Occupational Health and Safety Law No. 6331, 2012.	2012	Mandatory	S	All Companies
United Kingdom	Modern Slavery Bill	2015	Mandatory	S; Eco	All Companies
	Transposition of EU NFR Directive: The Companies, Partnerships and Groups (Accounts and Financial Reporting) Regulations 2016	2016	Mandatory	E; S; G	Large private and listed companies
	Bribery Act	2010	Mandatory	G	All Companies
	Climate Change Act, 2008	2008	Mandatory	E	Large private and listed companies
	DEFRA Environmental Reporting Guidelines: Including streamlined energy and carbon reporting guidance	2019	Voluntary	E	All Companies
	The Companies Act 2006 (Strategic Report and Directors' Report) Regulations 2013	2013	Mandatory	E; S; G; Eco	All Companies
	The Equality Act 2010 (Specific Duties and Public Authorities) Regulations 2017	2017	Mandatory	S; G	Large private and listed companies
	Transparency in Supply Chains etc.: A practical guide	2015	Voluntary	S; Eco	All Companies

	The UK Corporate Governance Code (2018)	2018	Mandatory	G	Large private and listed companies
United States	Benefit Corporation Legislation	2012	Voluntary	G	All Companies
	Clean Water Act (CWA)	1972	Mandatory	E	Large private and listed companies
	Federal Acquisition Regulation; Ending Trafficking in Persons	2015	Mandatory	S	All Companies
	Mandatory Greenhouse Gas Reporting Rule	2014	Mandatory	E	Large private and listed companies
	SECTION 709(c), Title VII, Civil Rights Act of 1967 as Amended by the Equal Employment Opportunity Act of 1972	1972	Mandatory	S; G	All Companies, with 100+ employees
	The Sarbanes-Oxley Act	2002	Mandatory	S; G	All Companies
	The Toxic Release Inventory (TRI)	1988	Mandatory	E	All Companies
	Title 40 Part 711 TSCA Chemical Data Reporting Requirements	2011	Mandatory	E	Large private and listed companies : Manufacturers, importers, etc.
Vietnam	Law No. 52/2005/QH11 on Environmental Protection	2005	Mandatory	E	All Companies
Zimbabwe	\	\	\	\	\

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