

RESEARCH ARTICLE

The predictive ability of legitimacy and agency theory after the implementation of the EU directive on non-financial information

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Email: silvia.panfilo@unive.it**Abstract**

Directive 2014/95/EU (the EU Directive) requires large companies to disclose information on the way they operate and manage social and environmental challenges, thus shifting the disclosure of non-financial information (NFI) from the voluntary to the mandatory realm. Building on the idea that regulatory changes can shape stakeholder expectations, we hypothesized that legitimacy (agency) theory's ability to predict NFI disclosure after the implementation of the EU Directive, and hence after NFI disclosure became mandatory, would decrease (increase). By relying on a hand-collected data set measuring NFI disclosure, we have found that legitimacy theory maintains its predictive ability in the new mandatory setting, while agency theory's predictive ability partially increases.

KEYWORDS

agency theory, EU Non-Financial Reporting Directive, legitimacy theory, NFRD, non-financial information disclosure

1 | INTRODUCTION

The European Union recently adopted new rules on the disclosure of non-financial information (NFI). Directive 2014/95/EU (the EU Directive) requires large companies to disclose information on the way they operate and manage social and environmental challenges, with reporting becoming mandatory in 2017. This regulation constitutes a huge step forward because it shifts the disclosure of NFI from the voluntary to the mandatory realm. Moreover, the EU Directive creates conditions that allow researchers to conduct a natural experiment to explore several research questions on the role of NFI in the capital markets, the decision-making processes of companies, and for investors and other stakeholders.

We contribute to the growing academic literature on NFI disclosure (for a review, see Hahn & Kuhnen, 2013) by testing whether the EU Directive modified the predictive ability of the two main theories that have been used to predict NFI disclosure: the legitimacy and agency theories.

Legitimacy theory predicts that companies disclose NFI to respond to societal pressure and therefore to gain the support of stakeholders (An, Davey, & Eggleton, 2011; De Villiers & Marques, 2016). We proposed that the EU Directive may have changed the expectations of stakeholders regarding NFI disclosure because it recognized the role of NFI as an essential element of annual reports. Consequently, we hypothesized that legitimacy theory may lose some of its predictive ability because, in the new regulatory setting, stakeholders may see NFI as a given and not as a legitimization tool. Conversely, agency theory generally sees NFI disclosure as a way for companies to reduce information asymmetries, to share more information with shareholders and investors, and, ultimately, to lower the cost of capital. We expected the EU Directive not to weaken these principles but rather to further strengthen them by further increasing investor confidence regarding NFI reliability and relevance.

We empirically tested our hypotheses by relying on a hand-collected database that includes 253 randomly selected companies from all EU Member States. We manually coded companies' reports for the years 2016 (the year prior to the implementation of the EU



Directive) and 2017 (the year following the implementation of the EU Directive) to create an index for each report (“NFI_INDEX”) that measures the extent of NFI disclosure based on the requirements of the EU Directive, which lists 14 items companies must disclose in terms of risk, policy, and outcome. The empirical results show that legitimacy theory maintains its relevance both before and after the implementation of the EU Directive, while the relevance of agency theory partially increases.

Our results also suggest that the EU Directive had a significant impact on NFI disclosure. While in 2016 the average NFI index was 23.9, it increased to 40.3 in 2017 (+69%). The increase in the score affected the environmental, social, and governance components of the index.

This study contributes to the stream of literature on the antecedents of NFI, and it is the first to investigate the effects of the implementation of the EU Directive on the predictive ability of the legitimacy and agency theories. It confirms and extends the paper by Chauvey, Giordano-Spring, Cho, and Patten (2015), who investigated the extent to which CSR disclosure by French companies was changing over time, from a normativity (see Bebbington, Kirk, & Larrinaga, 2012) and legitimacy perspective.

The paper is organized as follows: Section 2 reviews the relevant literature and develops the hypotheses; Section 3 discusses the research design and methodology; Section 4 contains the findings; and Section 5 provides a discussion of the results and the conclusion.

2 | BACKGROUND AND DEVELOPMENT OF THE HYPOTHESES

2.1 | The institutional context: EU Directive on NFI

Directive 2014/95/EU aims to increase transparency in the disclosure of NFI to contribute effectively to robust growth and employment and increase investors' and stakeholders' trust (European Commission, 2017). Member States were required to implement the provisions of the Directive in national law by December 6, 2016, while national regulations, taking into account these provisions, were to be applied by entities starting with the financial year commencing on January 1, 2017, or during the calendar year 2017 (EU Parliament, 2014). The Directive applies to large public entities with more than 500 employees, which include listed and unlisted companies such as banks, insurance companies, and other companies so designated by Member States because of their activities, size, or number of employees. Since 2017, these entities have been required to disclose in their management reports relevant and material information on policies, outcomes, and risks, including due diligence they performed and relevant non-financial key performance indicators concerning environmental aspects, social and employee-related matters, respect for human rights, anti-corruption and bribery issues, and diversity on the boards of directors. Companies retained significant flexibility to disclose information in the way they consider most useful, or in a

separate report. Indeed, they may use international, European, or national guidelines (e.g., the UN Global Compact (2019), ISO 26000 (2010), or Global Reporting Initiative (2019)) that suit their characteristics or business environments.

2.2 | NFI disclosure from a legitimacy and agency theory perspective

Legitimacy theory and agency theory are used relatively often to explain voluntary NFI disclosure practices (An et al., 2011; De Villiers & Marques, 2016). Legitimacy theory deals with the relationship between the organization and society at large. According to legitimacy theory, a social contract exists between the organization and the society (or community) in which it operates (Deegan, 2002). Under this contract, organizations should comply with societal expectations and norms while they conduct their operations. However, it is not enough for them to operate within this social contract only. They also need to take all measures necessary to ensure that their activities are perceived to be commensurate with the societal expectations of various stakeholder groups in society. In this regard, many prior studies on corporate disclosures have provided evidence that firms do voluntarily disclose NFI as a strategy to manage their organizational legitimacy (Brammer & Pavelin, 2008; Campbell, 2000; Guthrie, Petty, & Ricceri, 2006; Reverte, 2009).

Among the main variables used in prior research as legitimacy proxies, we considered company size, level of intangibles, and operation in an environmentally sensitive industry. The positive influence of company size and industry sensitivity on NFI has been widely acknowledged in previous research (Clarkson, Li, Richardson, & Vasvari, 2008; Gallo & Jones Christensen, 2011; Parsa & Kouhy, 2008). These results support the idea that large companies operating in more environmentally sensitive industries need to engage in non-financial reporting to secure their legitimacy in society. Therefore, it seems that the legitimacy theory, as captured by those variables related to public scrutiny or social visibility, is a relevant theory for explaining voluntary NFI disclosure practices. Moreover, according to An et al. (2011), firms with a high level of intangibles cannot legitimize their status on the basis of fixed assets, which are traditionally recognized as symbol of corporate success (Guthrie et al., 2006; Melloni, 2015). Therefore, these firms are more likely to disclose more NFI to legitimize themselves.

In contrast to legitimacy theory, agency theory primarily deals with the principal-agent relationship that exists in the separation of ownership and management (Fama & Jensen, 1983; Jensen & Meckling, 1976). According to this theory, agency problems arise when both the principal and the agent seek to maximize their own interests, which are not aligned. Information asymmetry is one of the key factors leading to agency problems. In the present knowledge-based economy, information on environmental, social, and governance issues is thus in high demand from shareholders (or investors) for decision making. Hence, voluntary NFI disclosure could decrease opportunistic behavior (Li, Pike, & Haniffa, 2008), reduce information

asymmetry (White, Lee, & Tower, 2007) and lower the cost of capital (Singh & Van der Zahn, 2008). Among the most common factors used in previous research as proxies of the agency theory, we considered board size, leverage, and ownership dispersion. Notably, the degree to which the ownership of company stock is concentrated in the hands of a few large investors or dispersed among many has been proposed as an influence on NFI disclosure policy (Roberts, 1992; Ullmann, 1985). Opportunistic management behavior and conflict of interest between agents and principals are more likely to occur in corporations with more dispersed ownership. In companies characterized by dispersed ownership, voluntary disclosure can act as a monitoring tool that reduces agency conflicts between managers and shareholders. Accordingly, some studies have found evidence that firms with many owners disclose more NFI than firms with concentrated ownership to reduce information asymmetries between the company and its shareholders (Cormier & Magnan, 2003; Gamerschlag, Moller, & Veerbeten, 2011; Garcia-Meca & Sanchez-Ballesta, 2010). Similarly, companies with a large board size, which is an expression of dispersed ownership, tend to have greater agency problems and thus provide more NFI to reduce information asymmetry (Adams, 2002; Eng & Mak, 2003; Frias-Aceituno, Rodriguez-Ariza, & Garcia-Sanchez, 2013; Healy & Palepu, 2001). Finally, within the context of agency theory, Jensen and Meckling (1976) argued that more highly leveraged firms voluntarily disclose information to reduce their agency and capital costs.

2.3 | Hypothesis development: The legitimacy and agency theories after the implementation of the EU directive

As discussed above, both the legitimacy and agency theories have been widely used in previous studies to explain companies' decision to voluntarily disclose NFI. Since NFI disclosure has become mandatory, it is interesting to test the predictive ability of agency theory and legitimacy theory on NFI disclosure in this new European institutional context. Arguments exist that support both the persistence and discontinuation of the explanatory power of the theories.

The fundamental premises of legitimacy theory may also be valid after implementation of the EU Directive: companies still need to secure legitimacy in the eyes of stakeholders and gain their licenses to operate. That NFI disclosure is now compulsory may further strengthen the role of disclosure. Moreover, the EU Directive introduces guidelines about the minimum content that needs to be included in the disclosure, but companies have the discretion to disclose more or better information than other companies.

From a different perspective, NFI disclosure may not serve as a legitimization tool anymore. Legitimacy theory predicts that companies disclose NFI to respond to societal pressure and therefore to gain the support of stakeholders. Once European policy makers recognized NFI as an essential element of annual reports, this theoretical framework may have lost its predictive ability because NFI disclosure is required by law and companies including such information in their annual reports are not providing voluntary information to stakeholder

and society to improve their legitimacy—they are only complying with the law.

Even though Chauvey et al. (2015) found that legitimacy-based factors continue to be associated with mandatory CSR disclosure, we followed the studies (O'Dwyer, 2002; Owen, Gray, & Bebbington, 1997) suggesting that some form of regulation is necessary to limit the use of CSR disclosure to legitimate corporate activities (Belal, 2002). Therefore, we proposed the following hypothesis:

Hypothesis 1 *After the implementation of the EU Directive, the ability of legitimacy theory to predict companies' decision to disclose NFI might decrease.*

To test this hypothesis, we used three variables related to legitimacy theory, namely company size, level of intangibles, and environmentally sensitive industry. We expected these variables to have an effect before the implementation of the EU Directive but to play a reduced role in explaining differences in NFI practices after the implementation of the EU Directive.

From an agency theory perspective, NFI disclosure is a response of companies to information asymmetry and to the information needs of capital markets. Investors need NFI to make investment decisions, and their information needs are not directly influenced by the perception of what society believes is legitimate or not. According to agency theory, companies that experience agency problems provide NFI that allows capital market participants to more accurately assess firms' financial prospects and risk profiles. This generally leads to positive economic outcomes, such as avoiding adverse selection of investments, lower cost of capital, and higher share prices. We believe these benefits may persist in a mandatory disclosure context like that introduced by the EU Directive. Corporate reporting is one of the most useful tools for mitigating agency problems in both a voluntary and a mandatory disclosure setting.

After the application of the EU Directive, disclosure has become more reliable, trustworthy, and objective because NFI does not fully depend on one party's discretion. This increase in reliability, trustworthiness, and objectivity may have increased investors' confidence in the information flow conveyed by companies, even strengthening the role of agency theory. While some studies have shown that previous regulations have not produced a satisfactory degree of NFI transparency, at both the national (Larrinaga, Carrasco, Coreea, Llena, & Moneva, 2002) and European levels (Costa & Agostini, 2016; Mio & Venturelli, 2013), we believe that the EU Directive may be a real change agent leading to increased transparency and accountability (Leopizzi, Iazzi, Venturelli, & Principale, 2019; Muserra, Papa, & Grimaldi, 2019; Sierra-Garcia, Garcia-Benau, & Bollas-Araya, 2018). Therefore, we expected the EU Directive not to change the premises of agency theory, and we proposed the following hypothesis:

Hypothesis 2 *After the implementation of the EU Directive, agency theory should remain able to predict companies' decision to disclose NFI.*



To test this hypothesis, we used three variables related to agency theory, namely board size, leverage, and ownership dispersion. We expected these variables to have a significant relationship with both voluntary and mandatory NFI disclosure.

3 | RESEARCH DESIGN AND METHODOLOGY

Using the Orbis database, we identified all listed companies in EU countries with financial data available for both 2016 and 2017. This research generated a population of 9,394 companies. In line with EU Directive criteria, we selected from the population only companies with more than 500 employees, thus obtaining 1,762 companies. We randomly selected a sample of 300 entities to reflect the weights of each country and industry. Finally, we excluded 47 entities because they did not publish their reports on their websites, or their reports were not available in English. Therefore, our final sample consists of 253 companies; that is, 506 company-year observations.

Once we identified the sample, we manually collected the companies' reports—annual reports and/or sustainability and CSR reports—for 2016 and 2017 to analyze their NFI content. The content analysis was applied to identify the 14 elements listed at point 7 of the Directive and classified as environmental, social, and governance information. According to point 7 of the EU Directive,

“Where undertakings are required to prepare a non-financial statement, that statement should contain, as regards *environmental matters*, 1) details of the current and foreseeable impacts of the undertaking's operations on the environment, and, as appropriate, on health and safety, 2) the use of renewable and/or non-renewable energy, 3) greenhouse gas emissions, 4) water use and 5) air pollution. As regards *social and employee-related matters*, the information provided in the statement may concern 6) the actions taken to ensure gender equality, 7) implementation of fundamental conventions of the International Labour Organisation, working conditions, social dialogue, 8) respect for the right of workers to be informed and consulted, 9) respect for trade union rights, 10) health and safety at work and 11) the dialogue with local communities, and/or the actions taken to ensure the protection and the development of those communities. With regard to human rights, *anti-corruption and bribery*, the non-financial statement could include information on 12) the prevention of human rights abuses and/or on instruments in place to fight 13) corruption and 14) bribery”² (p. 2).

Specifically, a value of 1 was assigned to each element indicated in the Directive where the information is explicitly disclosed in the report. A weighted sum was computed by multiplying each element by a value ranging from 1 to 3, based on whether the elements disclosed relate to policies, outcomes, or risks, respectively.³ While

disclosure of policies simply requires the company to describe its current activities regarding a certain topic (low information content), outcomes require the measurement of such activities' effects (medium information content), and risks imply future orientation and projection of the company's activities over time, conditional on the external environment (high information content). Therefore, policies, outcomes, and risks should not be weighted equally, because they have different informational value. Subsequently, we computed an NFI disclosure index (NFI_INDEX)—representing the level of NFI disclosure—for each company as the sum of the environmental (Env_index), social (Soc_index), and governance (Gov_index) information content components. Thus, the NFI_INDEX may range from 0 to 84.

To ensure high validity of the coding, the content analysis was done separately by two researchers who independently coded all sample firms. Then, a third researcher, together with the other two, verified and solved the points of disagreement to obtain a uniform database.

First, we performed a test of difference on the mean of the main dependent variable (NFI_INDEX) and on its three components (Env_index, Soc_index, Gov_index) in the pre- versus post-directive periods. Second, we performed an ordinal probit regression on the categorical dependent variable NFI_INDEX to test the research hypotheses (Model 1a):

$$\begin{aligned} \text{NFI_INDEX} = & \beta_0 + \beta_1 \text{Size} + \beta_2 \text{Intangibles} + \beta_3 \text{Ind_sensitivity} \\ & + \beta_4 \text{Boardsize} + \beta_5 \text{Leverage} + \beta_6 \text{Own_dispersion} + \beta_7 \text{ROA} \\ & + \beta_8 \text{Content} + \beta_9 \text{Auditor} + \beta_{10} \text{Fines} + \beta_{11} \text{SafeHarbour} + \beta_{12} \text{Industry} \\ & + \beta_{13} \text{Country} + \beta_{14} \text{Sust_rep} + \beta_{15} \text{Ann_rep} + \varepsilon. \end{aligned}$$

The independent variables are defined in Table 1. Content, Auditor, Fines, and SafeHarbour measure different dimensions of the implementation of the Directive, and we expected them not to be significant before the implementation of the Directive.

Then, we ran three identical ordinal probit regressions to separately test the hypothesized determinants on NFI_INDEX components, that is, Env_index, Soc_index, and Gov_index (Model 1b).

Finally, considering the research focus relies on the mandatory adoption of NFI disclosure in 2017, analyzing the change in NFI disclosure before and after implementation of the Directive was crucial. To identify whether the relationship between the legitimacy and agency factors and disclosure has changed we pooled the 2016 and 2017 data and added interaction terms to Model 1a. Therefore, a robustness analysis was performed on the following ordinal probit regression (Model 2):

$$\begin{aligned} \text{NFI_INDEX} = & \beta_0 + \beta_1 \text{Size} + \beta_2 \text{Intangibles} + \beta_3 \text{Ind_sensitivity} \\ & + \beta_4 \text{Boardsize} + \beta_5 \text{Leverage} + \beta_6 \text{Own_disp} + \beta_7 \text{Year} + \beta_8 \text{Size*Year} \\ & + \beta_9 \text{Intangibles*Year} + \beta_{10} \text{Ind_sensitivity*Year} + \beta_{11} \text{Boardsize*Year} \\ & + \beta_{12} \text{Leverage*Year} + \beta_{13} \text{Own_dispersion*Year} + \beta_{14} \text{ROA} \\ & + \beta_{15} \text{Content} + \beta_{16} \text{Auditor} + \beta_{17} \text{Fines} + \beta_{18} \text{SafeHarbour} + \beta_{19} \text{Industry} \\ & + \beta_{20} \text{Country} + \beta_{21} \text{Sust_rep} + \beta_{22} \text{Ann_rep} + \varepsilon. \end{aligned}$$

TABLE 1 Independent variables definitions

Related disclosure theory	Variable	Variable name	Definition
Legitimacy theory	Company size	Size	Company revenues (Orbis)
	Intangibles	Intangibles	Intangibles assets (Orbis)
	Environmental sensitivity industry	Ind_sensitivity	A dummy variable equals to 1 if the company belong to an environmental sensitive industry, 0 otherwise. ^a
Agency theory	Board size	Boardsize	The total number of directors in the company board (Orbis)
	Leverage	Leverage	Computed as the ratio between current and non-current liabilities over equity
	Ownership dispersion	Own_dispersion	Total number of shareholders (Orbis)
Control variables	Profitability	ROA	Computed as the ratio between EBIT and total assets
		Enforcement ^b	Content
		Auditor	A dummy variable equals to 1 where member states require that the information in the consolidated non-financial statement be verified by independent assurance service provider, 0 otherwise.
		Fines	A dummy variable equals to 1 if member states impose any penalties upon organizations which fail to report adequately, 0 otherwise.
		SafeHarbour	A dummy variable equals to 1 where member states do not allow deviation from mandatory NFI disclosure because it would be prejudicial to commercial position of the company, 0 otherwise
	Other control variables	Industry	Industry as identified in Orbis has been transformed into categorical number following the alphabetical order.
		Country	Country as identified in Orbis has been transformed into categorical number following the alphabetical order.
		Year	A dummy variable equals to 1 where year correspond to 2017, 0 where year is 2016.
		Sust_rep	A dummy variable equals to 1 whether sustainability or CSR report is the separate report dedicated to NFI disclosure, 0 otherwise.
		Ann_Rep	A dummy variable equals to 1 whether annual report is the document dedicated to NFI disclosure, 0 otherwise.

^aFollowing Brammer & Pavelin, 2008 and Reverte (2009), we designate as environmentally sensitive industry: "Food, Beverage, Tobacco"; "Machinery, Equipment, Furniture, Recycling"; "Metals & metal products"; "Primary sector"; "Textiles, wearing apparel, leather"; "Wood, Cork, Paper."

^bAll enforcement variables (Content, Auditor, Fines, SafeHarbour) have been determined according to CSR Europe and GRI, *Member State Implementation of Directive 2014/95/EU*, 2017.

4 | FINDINGS

Table 2 provides descriptive statistics on the variables employed in our analysis and, more specifically, on the NFI_INDEX (and its environmental, social, and governance components) for 2016 and 2017. The results suggest that the NFI_INDEX increased after the EU Directive, as the 2016 score (23.88) is lower than the 2017 score (40.29). Such an increase is driven by disclosure related to social topics (Soc_index mean increased from 11.99 to 19.43), followed by

environmental (Env_index mean increased from 8.86 to 14.94) and governance topics (Gov_index mean increased from 3.03 to 5.91). The other control variables have similar values for 2016 and 2017, which suggests that no major events affected corporate governance or performance between 2016 and 2017.

As our research question focuses on the effect of the European Directive on NFI disclosure, we were first interested in determining whether the Directive actually affected the NFI index (as suggested by descriptive statistics). Therefore, we conducted a univariate

TABLE 2 Descriptive statistics about companies disclosing NFI pre versus post- Directive

2016						2017					
Variable	Obs	Mean	Std. dev.	Min	Max	Variable	Obs	Mean	Std. dev.	Min	Max
NFI_INDEX	253	23.87747	26.17563	0	84	NFI_INDEX	253	40.28854	32.06244	0	84
Env_index	253	8.857708	9.71108	0	30	Env_index	253	14.94071	12.05676	0	30
Soc_index	253	11.99209	13.49985	0	42	Soc_index	253	19.43478	15.74577	0	42
Gov_index	253	3.027668	3.913148	0	12	Gov_index	253	5.913043	4.951385	0	12
Size	223	3,004,248	6,600,441	13,848.44	4.97e+07	Size	224	3,240,848	7,439,774	13,039.43	6.29e+07
Intangibles	219	1,023,324	2,986,236	2	2.24e+07	Intangibles	220	1,023,887	2,780,224	2	2.08e+07
Ind_sensitivity	253	0.4822134	0.500674	0	1	Ind_sensitivity	253	0.4822134	0.500674	0	1
Boardsize	251	10.42231	5.545173	1	32	Boardsize	251	10.42231	5.545173	1	32
Leverage	224	1.710258	2.940941	-12.23443	33.88739	Leverage	225	1.891152	5.71077	-4.265438	80.63958
Own_dispersion	253	35.99209	32.54716	0	145	Own_Disp	253	35.99209	32.54716	0	145
ROA	224	0.0708755	0.0864175	-0.4431935	0.4908187	ROA	225	0.0649423	0.1314114	-1.519137	0.4515081
Content	253	0.2332016	0.4237077	0	1	Content	253	0.2332016	0.4237077	0	1
Auditor	253	0.201581	0.4019761	0	1	Auditor	253	0.201581	0.4019761	0	1
Fines	253	0.8893281	0.3143473	0	1	Fines	253	0.8893281	0.3143473	0	1
SafeHarbour	253	0.1541502	0.3618084	0	1	SafeHarbour	253	0.1541502	0.3618084	0	1
Sust_rep	253	0.2134387	0.410547	0	1	Sust_rep	253	0.3478261	0.4772246	0	1
Ann_rep	253	0.8181818	0.3864591	0	1	Ann_rep	253	0.6916996	0.4627067	0	1

Note: This Table shows the descriptive statistics including observation, mean, standard deviation, minimum, and maximum of the dependent, explanatory, and control variables used throughout the current study. "Obs" represents numbers of observations, "Mean" depicts the average value of the variables used in the study, "Std. Dev." shows standard deviation, and "Min Max" represent range of the variables.

TABLE 3 T-tests on NFI_INDEX and environmental, social, governance means between 2016 and 2017

T-test on NFI_INDEX						
Group	Obs	Mean	Std. err.	Std. dev.	[95% Conf. Interval]	
2016	253	23.87747	1.645648	26.17563	20.6365	27.11845
2017	253	40.28854	2.015748	32.06244	36.31868	44.2584
Combined	506	32.083	1.35012	30.37021	29.43046	34.73555
Diff		-16.41107	2.602191		-21.52354	-11.29859
Diff = mean(2016) – mean(2017)					t = -6.3066	
Ho: Diff = 0					Degrees of freedom = 504	
Ha: Diff < 0		Ha: Diff! = 0		Ha: Diff > 0		
Pr(T < t) = 0.000		Pr(T > tt) = 0.0000		Pr(T > t) = 1.000		
T-test on Env_index.						
Group	Obs	Mean	Std. err.	Std. dev.	[95% Conf. Interval]	
2016	253	8.857708	0.6105304	9.71108	7.655315	10.0601
2017	253	14.94071	0.7580022	12.05676	13.44789	16.43354
Combined	506	11.89921	0.5046563	11.35196	10.90773	12.89069
Diff		-6.083004	0.9733009		-7.995231	-4.170777
Diff = mean(2016) – mean(2017)					t = -6.2499	
Ho: Diff = 0					Degrees of freedom = 504	
Ha: Diff < 0		Ha: Diff! = 0		Ha: Diff > 0		
Pr(T < t) = 0.000		Pr(T > tt) = 0.0000		Pr(T > t) = 1.000		
T-test on Soc_index.						
Group	Obs	Mean	Std. err.	Std. dev.	[95% Conf. Interval]	
2016	253	11.99209	0.8487283	13.49985	10.32059	13.6636
2017	253	19.43478	0.9899281	15.74577	17.4852	21.38437
Combined	506	15.71344	0.672053	15.11746	14.39307	17.0338
Diff		-7.442688	1.303955		-10.00454	-4.880832
Diff = mean(2016) – mean(2017)					t = -5.7078	
Ho: Diff = 0					Degrees of freedom = 504	
Ha: Diff < 0		Ha: Diff! = 0		Ha: Diff > 0		
Pr(T < t) = 0.000		Pr(T > tt) = 0.0000		Pr(T > t) = 1.000		
T-test on Gov_index.						
Group	Obs	Mean	Std. err.	Std. dev.	[95% Conf. Interval]	
2016	253	3.027668	0.2460175	3.913148	2.543156	3.51218
2017	253	5.913043	0.3112909	4.951385	5.29998	6.526107
Combined	506	4.470356	0.2083272	4.686204	4.061061	4.87965
Diff		-2.885375	0.3967703		-3.664903	-2.105848
Diff = mean(2016) – mean(2017)					t = -7.2722	
Ho: Diff = 0					Degrees of freedom = 504	
Ha: Diff < 0		Ha: Diff! = 0		Ha: Diff > 0		
Pr(T < t) = 0.000		Pr(T > tt) = 0.0000		Pr(T > t) = 1.000		

Note: This Table presents the test of difference in mean between the year pre versus post-Directive of the main dependent variable (NFI_INDEX) and of its three components (Env_index, Soc_index, Gov_index). Bolded values represent the mean significance level of the alternative hypotheses. Where p-value is equal to 0.000, the null hypothesis—according to which the difference in mean is zero—must be rejected.

TABLE 4 Theory-related variables association with NFI_INDEX and its components (Env_index, Soc_index, Gov_index) pre versus post-Directive

	MODEL 1A		MODEL 1B					
	NFI_INDEX		Env_index		Soc_index		Gov_index	
	2016	2017	2016	2017	2016	2017	2016	2017
	Coef. (st.err.)	Coef. (st.err.)	Coef. (st.err.)	Coef. (st.err.)	Coef. (st.err.)	Coef. (st.err.)	Coef. (st.err.)	Coef. (st.err.)
Size	3.44e-08 ^{***} (1.53e-08)	2.46e-08 ^{**} (1.38e-08)	2.97e-08 ^{**} (1.58e-08)	5.48e-08 ^{***} (2.34e-08)	3.61e-08 ^{***} (1.58e-08)	2.47e-08 ^{**} (1.43e-08)	3.80e-08 ^{***} (1.67e-08)	7.72e-08 ^{***} (3.19e-08)
Intang.	-5.55e-08 [*] (3.21e-08)	8.44e-09 (3.69e-08)	-2.72e-08 (3.34e-08)	-3.74e-09 (4.70e-08)	-5.52e-08 [*] (3.33e-08)	-7.69e-09 (3.74e-08)	-5.24e-08 (3.40e-08)	-1.14e-08 (5.27e-08)
Ind_sen.	0.6604153 ^{*****} (0.1621709)	0.6193878 ^{*****} (0.1677896)	0.6524645 ^{*****} (0.1659806)	0.7217996 ^{*****} (0.1791033)	0.5871061 ^{*****} (0.1635676)	0.6673658 ^{*****} (0.169885)	0.4120561 ^{***} (0.1789846)	0.4059959 ^{***} (0.1849804)
Boardsize	0.056905 ^{*****} (0.0171217)	0.087009 ^{*****} (0.0179669)	0.056749 ^{*****} (0.0174874)	0.0816371 ^{*****} (0.0193282)	0.0646622 ^{*****} (0.0175464)	0.095947 ^{*****} (0.0184723)	0.0321075 [*] (0.01861299)	0.064254 ^{*****} (0.0199343)
Leverage	-0.0027842 (0.0687228)	-0.0660266 (0.0724805)	0.0334033 (0.0701513)	-0.0669314 (0.0763421)	-0.0430982 (0.0698062)	-0.0880174 (0.0735152)	-0.0415129 (0.0769297)	-0.2039899 ^{***} (0.0834261)
Own_dispersion	0.0114383 ^{*****} (0.0030906)	0.0069729 ^{***} (0.003121)	0.0116748 ^{*****} (0.0031561)	0.0069452 ^{**} (0.0034311)	0.0096294 ^{*****} (0.003159)	0.0068589 ^{**} (0.0031867)	0.0110995 ^{*****} (0.0033561)	0.0039252 (0.0034994)
ROA	1.153055 (1.242551)	0.8794156 (1.280785)	1.623228 (1.277031)	0.6162927 (1.384474)	0.7879606 (1.266476)	0.831126 (1.299077)	0.8138448 (1.384042)	-0.5582106 (1.413636)
Content	-0.0539055 (0.2100018)	0.4099667 [*] (0.2150748)	0.0958811 (0.2150192)	0.5348534 ^{***} (0.2266661)	-0.1336686 (0.2122482)	0.2469482 (0.2180503)	-0.0130705 (0.2353778)	0.4329382 ^{**} (0.2352892)
Auditor	-0.2762848 (0.263814)	0.4576486 [*] (0.268312)	-0.1952326 (0.2694112)	0.9077191 ^{*****} (0.3079499)	-0.2556438 (0.2677683)	0.3362619 (0.2728356)	-0.4105712 (0.3083588)	0.6155609 ^{***} (0.3068273)
Fines	-0.1526807 (0.2558846)	-0.3132841 (0.2639261)	-0.1106932 (0.2598667)	-0.5237984 ^{**} (0.2862192)	-0.1179432 (0.2587495)	-0.2477429 (0.2667828)	-0.1359575 (0.2762753)	-0.5767206 ^{**} (0.298389)
SafeHarb.	0.3225351 (0.3017579)	-0.3608445 (0.3092729)	0.1846216 (0.3069184)	-0.7413307 ^{***} (0.3442956)	0.3512662 (0.3061556)	-0.3312389 (0.3133409)	0.5599458 (0.3419806)	-0.3182336 (0.349792)
Industry	-0.0308701 (0.0272734)	0.0110799 (0.0276379)	-0.0235788 (0.0278801)	0.0200818 (0.0293941)	-0.0316883 (0.0275017)	0.0173442 (0.0282442)	-0.0445583 (0.0306775)	0.0025795 (0.0309231)
Country	0.0064797 (0.0131721)	0.0052334 (0.0134032)	-0.0060686 (0.0135552)	0.0030397 (0.0138)	0.0158065 (0.0133764)	0.0075518 (0.0136291)	0.0062749 (0.014932)	0.0109881 (0.0146106)
Sust_rep	0.1122202 (0.3854326)	0.0783032 (0.4011646)	0.1482041 (0.3929195)	0.0887363 (0.4739446)	0.1996748 (0.3922802)	-0.0049172 (0.4043047)	0.1284864 (0.4152592)	-0.2215509 (0.4882831)
Ann_rep	-0.698631 [*] (0.404602)	-0.9764896 ^{***} (0.4098897)	-0.5535623 (0.4125651)	-0.9789456 ^{***} (0.4830488)	-0.6497636 (0.4127222)	-1.039634 ^{***} (0.4140487)	-0.5653394 (0.4350297)	-1.395666 ^{***} (0.4998314)
N° obs	218	219	218	219	218	219	218	219
p > Chi2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pseudo-R2	0.0818	0.1136	0.1019	0.1615	0.0906	0.1247	0.1125	0.1779

Note: This Table presents the results of the ordinal probit regression run in the year pre- and post-directive. Figure in the parentheses are the standard error, whereas the non-parentheses figure is the coefficient of the variables used in the study. Bold values indicate the variables' significance at 10% (^{*}p-value <.1), 5% (^{**}p-value <.05), and 1% (^{***}p-value <.01).

analysis to test whether the NFI_INDEX and its three components significantly increased in 2017, compared to 2016. The results, displayed in Table 3, provide strong support for the effectiveness of the Directive: differences in the means of NFI scores between 2016 and 2017 are statistically significant for all the relevant variables (i.e., NFI_INDEX, Env_index, Soc_index, Gov_index).

As the EU Directive significantly impacted the NFI index, thus changing companies' previous levels of disclosure, we tested our hypotheses on the determinants of such disclosure. Table 4 displays the relationships between the NFI_INDEX and its legitimacy (size, intangibles, industry sensitivity) and agency (board size, leverage, ownership dispersion) determinants before and after the implementation of the Directive. In particular, Model 1a shows that variables related to legitimacy theory are all significantly associated with NFI_INDEX in 2016. Conversely, in 2017 most significantly reduced their association in terms of coefficients' significance. More specifically, the positive significant association between size and NFI_INDEX diminished (at $p < .1$), and intangibles are not significant anymore. Conversely, industry sensitivity maintains its high significance level of association ($p < .01$) with the dependent variable. The model also shows that corporate governance variables related to agency theory, such as board size and ownership dispersion, are highly positively significant both pre- and post-Directive implementation. In particular, board size maintained its strong significant association in 2017, while it slightly decreased for ownership dispersion ($p < .01$ and $< .05$, respectively). Leverage instead results no associated to NFI_INDEX neither in 2016 nor in 2017.

Among the control variables, in 2017 the enforcement variables related to the content and the assurance of NFI assumed a slight positive significant association. Member States requiring additional information in the consolidated non-financial statement positively affected the level of NFI disclosure. The assurance of non-financial statements by an independent service provider also positively affects the quantity of NFI disclosure. Moreover, we found a negative association between NFI_INDEX and the annual report in both years, which suggests companies disclosing NFI in their annual report tended to disclose less information, both pre- and post-implementation of the Directive.

To further investigate the determinants of NFI disclosure before and after the implementation of the Directive, Table 4 breaks down the NFI_INDEX (environmental, social, and governance). Model 1b provides evidence that both legitimacy and agency theory-related determinants of the quantity of environmental information (Env_index) are strongly significant in mandatory NFI disclosure. In particular, Env_index increased its positive association with revenues ($p < .05$). Furthermore, the environmental disclosure component retained its strong significant relationship with industry sensitivity ($p < .01$) and with board size ($p < .01$), while it is slightly less affected by ownership dispersion ($p < .05$) in 2017. Results concerning the quantity of social information (Soc_index) instead provide evidence that two agency theory-related variables retain their strong significant relationship ($p < .01$) with the dependent variable (board size and ownership dispersion). In contrast, most of the legitimacy theory-

related determinants (size and intangibles) partially lose their significance ($p < .1$ and insignificant, respectively), and only industry sensitivity retains its strong association in the mandatory disclosure context ($p < .01$). The results are therefore in line with the Model 1a findings.

Finally, regarding the component of NFI related to governance information (Gov_index), Table 4 shows that two legitimacy theory-related variables (size and industry sensitivity) are positively significantly related ($p < .05$) to the dependent variable in both years, while intangibles never affect the dependent variable. Moreover, in terms of the agency theory-related variables in the mandatory disclosure context, the positive association with board size significantly increases ($p < .01$), leverage assumes a negative significant association ($p < .05$) and ownership dispersion loses its association to Gov_index.

Table 5 displays the results regarding the most rigorous empirical test we used to test our hypotheses. The model tests the existence of a relationship between our NFI index and (i) legitimacy and agency theory variables, (ii) an indicator variable with a value of 1 for 2017 and 0 for 2016, (iii) the interaction term between (i) and (ii), and (iv) other controls. The main variable of interest is the interaction term (iii), which signals increasing (if positive), decreasing (if negative), or stable (if insignificant) additional relevance of the legitimacy or agency theory variables in 2017, thus after implementation of the EU Directive.

The (i) legitimacy and agency theory variables generally indicate significant relationships with the dependent variable. More specifically, regarding variables related to legitimacy theory, size ($p < .1$) and industry sensitivity ($p < .01$) present a positive relationship with NFI_INDEX. Regarding variables related to agency theory, board size ($p < .05$), and ownership dispersion ($p < .01$) show a strong relationship with the dependent variable. This is consistent with the idea that both theories are overall relevant in predicting companies' decision to disclose NFI.

The (iii) interaction term, measuring the additional relevance of the theories in 2017, shows that all the variables connected with legitimacy theory maintain their level of relevance. This is because the interaction is insignificant for all the legitimacy theory variables (size, intangibles, and industry sensitivity). Instead, the interaction between board size and year is significantly and positively associated with NFI_INDEX ($p < .05$). This indicates that board size plays a greater role in explaining differences in the amount of NFI disclosed in 2017. This empirical result provides some support for our second hypothesis, as agency theory (more specifically, board size) seems to play a greater role in firms' choice to disclose more NFI in the mandatory context.

5 | DISCUSSION AND CONCLUSIONS

EU Directive 2014/95/EU represents a significant change for NFI disclosure in Europe, as it shifted the disclosure of NFI from the voluntary to the mandatory realm. The Directive is signaling to the market that NFI is as important as financial information, and it paves the way for a deeper engagement with such information by investors.

**TABLE 5** Theory-related variables association with NFI quantity and year interactions

NFI_INDEX	Coef.	Std. err.	z	p > z	[95% Conf. Interval]	
Size	2.83e-08 ^{***}	1.50e-08	1.89	0.059	-1.09e-09	5.77e-08
Intangibles	-4.40e-08	3.15e-08	-1.40	0.163	-1.06e-07	1.78e-08
Ind_sensitivity	0.5969824 ^{***}	0.1536309	3.89	0.000	0.2958714	0.8980934
Boardsize	0.0493746 ^{***}	0.0160912	3.07	0.002	0.0178364	0.0809128
Leverage	-2.32706	0.0673891	-0.35	0.730	-0.1553508	0.1088097
Own_dispersion	0.0103174 ^{***}	0.0029613	3.48	0.000	0.0045133	0.0161214
Year	0.1584022	0.3104069	0.51	0.610	-0.4499841	0.7667885
Size [*] Year	-3.23e-09	1.96e-08	-0.16	0.869	-4.17e-08	3.52e-08
Intangibles [*] Year	4.08e-08	4.73e-08	0.86	0.388	-5.19e-08	1.34e-07
Ind_sensitivity [*] Year	0.0781524	0.2051618	0.38	0.703	-0.3239573	0.4802621
Boardsize [*] Year	0.0424851 ^{**}	0.0215493	1.97	0.049	0.0002492	0.084721
Leverage [*] Year	-0.0294205	0.0957637	-0.31	0.759	-0.2171139	0.158273
Own_dispersion [*] Year	-0.0024759	0.0040647	-0.61	0.542	-0.0104425	0.0054906
ROA	1.04661	0.8875249	1.18	0.238	-0.6929065	2.786127
Content	0.1514026	0.1494693	1.01	0.311	-0.1415519	0.4443572
Auditor	0.1208211	0.1854997	0.65	0.515	-0.2427516	0.4843938
Fines	-0.2359434	0.1827159	-1.29	0.197	-0.5940601	0.1221732
SafeHarbour	-0.0697953	0.2139857	-0.33	0.744	-0.4891996	0.349609
Industry	-0.005778	0.0193302	-0.30	0.765	-0.0436645	0.0321084
Country	0.0062678	0.0093558	0.67	0.503	-0.0120693	0.0246049
Sust_rep	0.1432638	0.2768521	0.52	0.605	-0.3993563	0.685884
Ann_rep	-0.8455793 ^{***}	0.2857952	-2.96	0.003	-1.405728	-0.2854309
N°obs	437					
Prob > chi2	0.000					
Pseudo-R2	0.0990					

Note: This Table presents the results of the ordinal probit regression pooling data for 2016 and 2017 and including interaction terms associated to the year. Bold values indicate the variables' significance at 10% (^{*}p-value <.1), 5% (^{**}p-value <.05), and 1% (^{***}p-value <.01).

Our empirical results (Table 3) confirm that the Directive had a significant impact on NFI disclosure. While in 2016 the average NFI index was 23.9, it increased to 40.3 in 2017 (+69%). The increase in the score affected the environmental, social, and governance components of the index. This first empirical result of our analysis is useful to policy makers, as it confirms that the intended outcomes of the European legislator have been met, at least in terms of the level of NFI disclosure. Additionally, we show (Table 4) that two enforcement variables have been particularly effective in increasing NFI disclosure: content and auditors. This means that Member States requiring additional information to be disclosed and requiring the NFI to be assured by an assurance provider provided greater incentives for companies to disclose. Further research is needed to assess whether this additional information has actually been embedded in the decision-making processes of investors and/or of companies themselves (from a real accounting effect perspective).

As European companies significantly changed their approach to NFI disclosure (in 2017 they disclosed more information than in 2016), it is relevant to test whether and to what extent previous theories predicting the decision to disclose are still valid. More specifically,

we focused on legitimacy and agency theory. The research question is timely and relevant because most previous studies were conducted in contexts in which NFI disclosure was voluntary, while now it is mandatory. The fact that stakeholder expectations change over time (also because of legislation) has been well established in previous literature. Among others, Eccles, Newquist, and Schatz (2007) mentioned the Vioxx scandal and the subsequent requirements set by the U.S. FDA. Such regulation significantly shaped stakeholder expectations about information on drugs' collateral effects. This idea is also consistent with Bebbington et al.'s (2012) argument, and more broadly with the literature on normativity, that there is a relationship between legislation and stakeholders' perception of a certain norm. In particular, Bebbington et al. (2012) argued that normativity is subject to change over time whereby diffusion leads to a point "where norms are internalized and acquire a taken-for-granted quality" (p. 79). We built on this idea to test whether, after the implementation of the EU Directive, stakeholders' perceptions changed. The EU Directive raised the bar, and CSR reporting may therefore be seen as a given and not as an instrument to gain legitimacy. Conversely, we hypothesized that the relevancy of agency theory increased because after the

implementation of the EU Directive, investors may find disclosure more reliable, trustworthy, and objective.

The empirical results (Tables 4 and 5) suggest that our first hypothesis is not confirmed, as legitimacy theory has continued to predict the decision of companies to disclose NFI even after the implementation of the Directive. This means that the legitimacy concerns of companies still play a relevant role and that companies still use NFI disclosure to gain legitimacy, even in the new mandatory disclosure setting. Our second hypothesis is partially confirmed because board size—one of the variables typically employed within agency theory to predict NFI disclosure—gained significance in 2017 compared to 2016. In other words, companies with larger boards are disclosing more information in the mandatory setting, consistent with the idea that companies with larger boards (an expression of dispersed ownership) have greater agency problems and thus provide more NFI to reduce information asymmetry (Adams, 2002; Eng & Mak, 2003; Frias-Aceituno et al., 2013; Healy & Palepu, 2001).

This study contributes to the stream of literature on the antecedents of NFI disclosure. To the best of our knowledge, it is one of the first investigating the determinants of NFI disclosure after the implementation of the EU Directive (see Leopizzi et al., 2019; Muserra et al., 2019; Sierra-Garcia et al., 2018), and it is the only one that has tested whether the level of validity of the legitimacy and agency theories changed in the mandatory disclosure context. While most of the previous studies have assumed that NFI disclosure is voluntary (Manes-Rossi, Tiron-Tudor, Nicolò, & Zanellato, 2018; Matuszak & Różańska, 2017), we have not: after the implementation of the EU Directive, NFI has radically changed, and it deserves specific attention.

Our study is also related to Chauvey et al.'s (2015) examination of the extent to which CSR disclosure by French companies has changed over time, from a normativity (see Bebbington et al., 2012) and legitimacy perspective. The authors found that CSR disclosure by French companies was largely driven by legitimacy concerns after the adoption of a French CSR disclosure regulation in 2001. While our results are in line with those of Chauvey et al. (2015), we have extended their paper in several different ways: (a) We have tested the European (not only French) context. France has a long tradition of social disclosure (Grenelle Act), so the results obtained in the French context may not be generalizable to the whole European Union. (b) We have focused on a regulatory change (the EU Directive) that is much broader than the French CSR disclosure regulation mentioned by Chauvey et al. (2015). Thus, the EU Directive has the potential to change stakeholder expectations in terms of the NFI disclosure expected by companies. (c) The paper by Chauvey et al. (2015) analyzes 2 years during which disclosure was mandatory in terms of a national regulation, while our study considers 1 year in a voluntary disclosure context and 1 year in a mandatory one.

Future research may further develop our idea and results by studying whether the shift of NFI disclosure from voluntary to mandatory had any impact on its antecedents or consequences. More specifically, it would be relevant to determine whether investors are using mandatory NFI disclosure to a larger extent compared to voluntary NFI disclosure.

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ENDNOTES

- Companies operate in the following industries, as classified in the Orbis database: Banks; Educational, Health; Food, Beverage, Tobacco; Hotels & Restaurants; Machinery, Equipment, Furniture, Recycling; Metals & Metal Products; Other Services; Post & Telecommunications; Primary Sector; Publishing & Printing; Textiles, Wearing Apparel, Leather; Wholesale & Retail Trade; and Wood, Cork, Paper.
- Numeration and italics added by the authors to highlight the three main components of NFI.
- According to the Directive, "the undertakings subject to this Directive should give a fair and comprehensive view of their policies, outcomes, and risks" (p. 2).
- Inter-coder reliability was assessed by calculating Scott's pi coefficient of agreement, which equals 0.81, that is, almost perfect agreement (see Allen, 2017).

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