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Does the EU Directive on non-financial information influence the value relevance of ESG disclosure? Italian evidence

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Abstract: The implementation of the EU Directive on non-financial information determines the transition from a voluntary to a mandatory disclosure setting. This paper is a first attempt to investigate if this transition influences the value relevance of non-financial information, which relates to the environmental, social and governance disclosure (ESG) requirements of the Directive. Italy provides an interesting setting as non-financial information was generally voluntary before the Directive, which was implemented with the Italian Legislative Decree 254/2016. To this extent, we examine the non-financial, environmental and social disclosure practices of 231 Italian listed firms in the pre- (2016) and post- (2017) Legislative Decree application. Our results do not show any relevant increase of such disclosures after the Decree application, as Italian listed firms limit such disclosure to a minimum requirement. Further, this finding is confirmed also for those firms voluntarily providing a non-financial report (sustainability or integrated report) before the Decree application. Our regression analysis shows that accounting numbers are associated with share prices, while non-financial, environmental and social information are not value-relevant with reference to the pre- and post-Legislative Decree application. This means that the non-financial, environmental and social information beyond the financial accounting information do not explain any incremental value-relevant information to investors in the new non-financial mandatory disclosure setting required by the new regulation. Our results enrich previous evidence concerning the value relevance of non-financial and ESG disclosure mainly focused on Anglo-Saxon contexts.

Keywords: EU Directive; Non-financial information; ESG; Value relevance; Italy.

1. Introduction

The implementation of the EU Directive 95/2014 represents an important amendment, as it sets the transition from a voluntary to a mandatory disclosure setting of non-financial information. The Directive aims to encourage companies within Member States to communicate "quality, relevant, useful, consistent and more comparable non-financial (environmental, social and governance-related) information" (European Commission, 2017). More specifically, the Directive requires large firms to disclose information on the way they organize and manage social and environmental challenges. Firms have to publish reports on the policies they implement with reference to environmental, social an employee-related matters, respect for human rights, anti-corruption and bribery matters. This may help stakeholders to evaluate the non-financial performance of companies and fosters firms to develop a responsible

approach to their business (European Union, 2014). Considering the overlap of the two concepts for the European Commission, we will use the terms non-financial disclosure referring to environmental, social and governance (ESG) disclosure.

In the last years, non-financial information has been an issue of growing interest. In particular, non-financial disclosure has been the focus of some academics investigating if such information voluntarily disclosed by firms may be value relevant. Some studies show that voluntary environmental information (Hassel *et al.*, 2005; Johnston *et al.*, 2008; Sinkin *et al.*, 2008; Hussainey and Salama, 2010; Chapple *et al.*, 2011; Clarkson *et al.*, 2013) and sustainability reporting (Schadewitz and Niskala, 2010; Berthelot *et al.*, 2012; de Klerk and de Villiers, 2012; de Villiers and Marques, 2016; Reverte, 2016) is value relevant. On the contrary, other studies do not confirm the value relevance of non-financial information (Cormier and Magnan, 2007; Moneva and Cuellar, 2009; Carnevale *et al.*, 2012). These mixed results are justified because of the differences on institutional settings, on the measurement of non-financial disclosures or on the attitude of firms towards non-financial information, as some firms are not confident that this type of disclosures favorably affect their performance in financial markets.

We believe that the introduction of mandatory requirements for non-financial disclosure in Europe gives the opportunity to analyze the transition from a voluntary to a mandatory disclosure setting with three main research purposes. Firstly, if the empirical results of previous literature on the value relevance of voluntary non-financial information persist for firms who voluntarily disclosed non-financial information before the Directive. Further, if such firms find convenient to maintain their disclosure attitude after the Directive. Finally, what is the association between mandated non-financial information and share prices for firms that did not voluntarily provided non-financial information to the market before the Directive, but now they are forced to be compliant with its requirements.

We address these purposes by focusing on the implementation of the Directive in Italy. In 2017, the Directive was enforced into the Legislative Decree 254/2016 that closely recalls the contents included in the Directive without substantial changes (Legislative Decree, 2016). We analyse the value relevance of non-financial information of Italian listed firms, with a particular attention on environmental and social information, before (2016) and after the application of the Decree (2017). We believe that Italy provides an interesting setting as non-financial information in Italy was generally voluntary before the application of the Decree. Moreover, the institutional context in Italy is different from the traditional Anglo-Saxon setting. Indeed, previous studies mainly investigate the value relevance of non-financial information beyond

Anglo-Saxon settings (Lorraine *et al.*, 2004; Clarkson *et al.*, 2008; Berthelot *et al.*, 2012; de Klerk *et al.*, 2015), while Italy is a Civil-law country, with a less developed financial market.

Our results show that firms disclosing non-financial reports in both the pre- and post-Legislative Decree application do not improve their non-financial as well as environmental and social disclosure, as they do not provide any relevant increase of such information. Firms disclosing information under a mandatory regime limit their disclosure to a minimum amount. This attitude is relative also to firms who voluntarily disclosed non-financial information before the Decree. These results support the lack of value relevance of non-financial, environmental and social information in the post-Legislative Decree application. The non-financial, environmental and social information does not explain any association with share prices.

Our study has some contributions to literature. First, it expands previous literature focusing on the value relevance of voluntary non-financial information in a context of transition from a voluntary to a mandatory disclosure setting. Second, it enriches the studies on the value relevance of non-financial information in the Continental European countries (Moneva, 2009; Reverte, 2016; Verbeeten *et al.*, 2016), which rely on a civil-law jurisdiction, funding of banks rather than shareholders, low disclosure requirements, as well as in Italy (Cardamone *et al.*, 2012). Third, based on the fact that non-financial information was voluntary before the Decree, our findings may be also of interest to regulators of financial markets, shareholders in their investment decisions and managers in their disclosure decisions for considering the impact of mandated non-financial information.

The paper is organized as follows. Section 2 reviews the literature on the value relevance of voluntary non-financial information and develops the hypotheses. Section 3 provides the research method for the empirical analysis. Section 4 presents the results and Section 5 the conclusions.

2. Literature review and hypotheses development

According to the agency theory (Jensen and Meckling, 1976) non-financial information is value relevant because it allows investors to reassess a firm's expected cash flow and/or risk profile (Healy and Palepu, 2001). Accordingly, more accurate estimation of cash flows and risk can generate more value to investors, and thus, increase share prices (Wang and Li, 2016). A significant relationship between non-financial disclosure and share prices is predicted for positive as well as negative information. Positive information is expected to favorably affect firm performance, while negative information can prevent investors from overestimate the

effects of negative events (de Villiers and van Staden, 2011). By providing investors with the information they need to reassess future cash flow and risk, additional non-financial disclosure enables firms to reduce information asymmetry and avoid adverse selection, generally leading to positive economic outcomes (de Villiers and Marques, 2016).

Several studies use signalling theory (Akerlof, 1970) to explain the value relevance of non-financial information. In this perspective, non-financial disclosure allows firms to signal to investors their better environmental, social and/or governance performance compared to competing firms (Mitchell, 2006; Kanagaretnam *et al.*, 2007). Hussainey and Salama (2010) state that higher corporate environmental reputation strengthen a firm's reputation in the eyes of its stakeholders, thus it helps resolve investor uncertainty and influences the share price response (Ramchander *et al.*, 2012).

On the other hand, Verbeeten *et al.* (2016) use a socio-political framework to support the idea that voluntary sustainability disclosure could be irrelevant to investors, as it is salient only to stakeholders different from shareholders. However, their findings show a positive association between voluntary disclosure on social issues and share prices. Reverte (2016) maintains that even though voluntary corporate social responsibility disclosures "may be driven by stakeholders and/or societal pressures, such disclosures are likely to reduce information asymmetries and, thus, be rewarded by investors with higher stock market valuations" (p. 419).

Overall, many empirical evidence documents that both voluntary environmental disclosure (Hassel *et al.*, 2005; Johnston *et al.*, 2008; Sinkin *et al.*, 2008; Hussainey and Salama, 2010; Chapple *et al.*, 2011; Clarkson *et al.*, 2013) and sustainability reporting (Schadewitz and Niskala, 2010; Berthelot *et al.*, 2012; de Klerk and de Villiers, 2012; de Villiers and Marques, 2016; Reverte, 2016) are value relevant and contributes to improve market functioning. However, Lourenço *et al.* (2014) show that some differences exist according to institutional settings. They found that studies made in a predominantly North American context or a European context similar to the North American (such as the UK) document the value relevance of voluntary non-financial disclosure (Johnston *et al.*, 2008; Sinkin *et al.*, 2008; Hussainey and Salama, 2010; Chapple *et al.*, 2011; Berthelot *et al.*, 2012; Lourenço *et al.*, 2012). On the contrary, studies conducted in the Continental European context show mixed results, with only a few studies finding that non-financial information is value relevant (Schadewitz and Niskala, 2010; Reverte, 2016), whereas other studies do not corroborate such findings (Cormier and Magnan, 2007; Moneva and Cuellar, 2009; Carnevale *et al.*, 2012).

In the European context, the EU Directive 95/2014 has started the transition from a voluntary to a mandatory disclosure setting of non-financial information. It forces the Member states of

the EU to issue regulation obliging some categories of firms to disclose non-financial information. To our knowledge, the effects of such a transition on the value relevance of non-financial disclosure have not been investigated yet.

The introduction of mandatory requirements for non-financial disclosure is usually the result of a complex process, as self-regulation and government regulation often interact (Jackson *et al.*, 2020). As in the case of the Directive, it has not been oriented to the definition of specific disclosure standards (Fox *et al.*, 2002; Steurer, 2013), but it has hardened existing forms of disclosure (Moon *et al.*, 2010; Gond and Nyberg, 2016) through the requirement of a minimum amount of information. Further, the Directive leaves firms with a high degree of discretion concerning the disclosure standards as well as the modalities of disclosure presentation. In Italy, the EU Directive was enforced into the Legislative Decree 254/2016, which closely recalls the contents included in the Directive without substantial modifications.

Overall, the application of non-financial mandatory requirements on non-financial matters is expected to increase the amount of information available on the market in the post-Legislative Decree application (Hassel *et al.*, 2005). Focusing on specific environmental regulation, Dowell *et al.* (2000) found that U.S. firms adopting a single stringent global standard has much higher markets values compared to firms that apply less stringent standards. In the same vein, Maloney and McCormick (1982) show that environmental quality regulations of an industry make some or all of the firms in that industry more valuable. More recently, Hassel et al. (2005) document that the value relevance of environmental performance rating for Swedish companies is more pronounced after environmental accounting regulations was changed.

On the one hand, firms that did not voluntarily provided non-financial information to the market in the pre-Legislative Decree application will be forced to be compliant with the law. On the other hand, firms who voluntarily disclosed non-financial information may find convenient to maintain their disclosure attitude in the post-Legislative Decree application. In line with signaling theory, for showing a good performance to investors firms may be motivated to disclose even more than before the Legislative Decree application due to the higher average level of disclosure determined by the new regulation (Verrecchia, 2001). In this case, the higher level of disclosure may be value relevant.

Firms that voluntarily disclosed for gaining legitimation in the pre-Legislative Decree application may shift to pragmatic legitimacy (Suchman, 1995), therefore relying on the minimal mandatory requirements to respect their social contract. This could reduce the costs of disclosure and contribute increasing the level of value relevant non-financial information available on the market.

A main argument in support of the value relevance of mandatory non-financial disclosure is that mandatory disclosure increases the comparability of reports among firms as well as over time (Hess, 2007; Hess and Dunfee, 2007). Indeed, voluntary reports are of limited use for the lack of standardisation (Hess and Dunfee, 2007), which impedes comparability. To this extent, both the EU Directive and the Italian Legislative Decree apply the principle of comparability, as they require firms providing comparable information across years.

Based on the above considerations, we state our first hypothesis as follows:

H1:   The level of non-financial disclosure is associated with the firm's stock price in the post-Legislative Decree application.

Non-financial disclosure is multidimensional, as it includes broad subject-areas covering several and differing issues. The EU Directive and the Italian Legislative Decree require firms to disclose information on environmental, social and employee matters, respect for human rights, anti-corruption and bribery matters. All these different types of information may have a different meaning in terms of value relevance (Flammer, 2015; Verbeeten *et al.*, 2016). For instance, environmental disclosure may discuss assets as well as liabilities, while social disclosure is more likely to be considered as intangible assets that provide information on human capital (Bird *et al.*, 2007; Surroca *et al.*, 2010). Verbeeten *et al.* (2016), investigating CSR disclosure in Germany, find that social disclosure is positively associated with firm value, but they failed to document any significant effect relative to environmental disclosure. Bird *et al.* (2007) show that higher environmental ratings are negatively associated with share price returns, while higher diversity and employee ratings are positively associated with share price returns. Kinderman (2008) suggests that "greenwashing" is less likely to affects social disclosures.

Therefore, the disclosure on different non-financial subject-areas is expected to affect the stock value of a firm differently. Accordingly, we state our second hypothesis as follows:

H2a: The level of environmental disclosure is associated with the firm's stock price in the post-Legislative Decree application.

H2b: The level of social disclosure is associated with the firm's stock price in the post-Legislative Decree application.

3. Data and methodology

3.1. Sample

Our sample is composed by Italian firms listed on *Borsa Italiana* at 31 December 2016 (363) and 31 December 2017 (381). According to the Legislative Decree 254/2016, firms prepare the consolidated non-financial statement (CNFS) when (i) they are public-interest entities (Article 2, paragraph 2), (ii) they are required to prepare the consolidated financial statements (Article 1, point c) point d)), (iii) they are large groups (article 1, point b)), and (iv) if they are included in the CNFS of a firm under the requirements of the Legislative Decree or in the CNFS of an European firm preparing its CNFS according to the Directive 2014/95/EU (Article 1, point e)). Firms without these prerequisites are excluded (81). Financial, insurance, asset management firms (77) and football clubs (3) are excluded because of the characteristics associated with their financial reports, as well as firms listed on *AIM Italia* preparing their financial statements under Italian GAAP (88). Firms in process of delisting in 2017 are also excluded (15). The final sample comprises 114 and 117 firms, respectively in 2016 and 2017.

The CNFSs are collected from the firms' websites with a year-end in 2016 and 2017. Stock prices and accounting data are extracted from Datastream.

3.2. Collection and measurement of non-financial disclosure

The content analysis consists of two phases: the identification of categories for developing an analytical framework for non-financial disclosure analysis based on CNFSs; and the measurement of the level of non-financial disclosure.

The Legislative Decree requires a CNFS containing information on the group's development, performance, position and impact of its activity, relating to, as a minimum, environmental, social and employee matters, respect for human rights, anti-corruption and bribery matters (Article 4, paragraph 1). Further, in providing this information, firms may use national standards, Union-based standards such as the EMAS, or international standards such as the UN Global Compact, the Guiding Principles on Business and Human Rights implementing the UN Protect, Respect and Remedy Framework, the OECD Guidelines for Multinational Enterprises, the ISO 26000, the International Labour Organisation's Tripartite Declaration of principles concerning multinational enterprises and social policy, the Global Reporting Initiative (Article 1, paragraph 1, point f); Recital (9), Directive 2014/95/EU). Firms may adopt also other recognized international standards, such as the Integrated Reporting

Framework 1.0 of the International Integrated Reporting Council (IIRC) (Article 1, paragraph 1, point f)).

There are several reporting options for preparing the CNFS. It could be a) a section of the Management report or a stand-alone report b) in the form of a statement containing information under the requirements of the Legislative Decree, c) a sustainability report or d) an integrated report. If firms choose option b), the CNFS is a supplementary report to the Management report or the Annual report. If firms select options c) or d), they have to declare the report is equal to the CNFS relative to the Legislative Decree.

We develop an analytical framework that allows the classification of non-financial information into 3 levels of categories (Table 1). The first level contains 7 categories where firms disclose information according to the Legislative Decree on business model, economic and market performance, anti-corruption and bribery matters, environment, employee matters, protection of human rights, and social matters. The second level includes the categories relative to first-level where firms provide information by applying the G4 Sustainability Reporting Guidelines. Indeed, the analysis of CNFSs indicates that all sampled firms use G4 for preparing their CNFS, which has allowed a consistent data collection. This means that the reporting format chosen for the CNFS does not influence the use of G4 as international standards. We have identified the type of second-level categories by grouping the G4 into uniform subject-areas. They result in 46 second-level-categories. The third level comprises the G4 relative to each second-level category. The total amount of third-level categories is 264.

To avoid reliability problems, 3 researchers have identified the list of third-level categories on 3 CFNSs. After discussing each individual coding, a final list of third-level categories is prepared by the authors.

We measure the level of non-financial information by considering the presence/absence of a disclosure item. This approach in a dichotomous method differentiates between those firms that disclose an item and those that makes none. In the previous literature, this approach has been seen misleading as "it treats firms making one sentence of disclosure as being equal to one makes fifty" (Hackston and Milne, 1996, p. 89). We apply this approach, as the purpose of our study is to investigate the non-financial disclosure practices after the implementation in Italy of the Directive 2014/95/EU. Our interest is not the focus on the detailed information about the subject of each category at the 3 different levels.

The non-financial disclosure index (NFDI) is calculated by counting the number (percentage) of third-level categories disclosed by an individual firm to the total number of third-level categories as follows:

$$NFDI_{it} = \sum_{j\,=\,1}^{N} \frac{d_j}{N}$$

where:

d_j = 1 if firm i discloses the third-level category j at the end of year t, 0 otherwise,

N = 264, the total amount of third-level categories.

The $NFDI_{it}$ is equal to 0, if firm i does not disclose any non-financial information in the CNFS at the end of year t, while it is equal to 1 if a firm i discloses all the third-level categories j.

For the purpose of the analysis, we calculate the environmental and social disclosure indexes for measuring the level of information with reference to the first-level categories including this type of non-financial information. The environmental disclosure index (EDI) is calculated by counting the number (percentage) of third-level categories disclosed by an individual firm relative to the first-level category *4. Environmental information to the total number of third-level categories*; while the social disclosure index (SDI) is computed by considering the two first-level categories *5. Employee information* and *7. Social information*. The indexes are as follows:

$$EDI_{it} = \sum_{h\,=\,1}^{L} \frac{d_h}{L}$$

$$SDI_{it} = \sum_{k\,=\,1}^{G} \frac{d_k}{G}$$

where:

h = number of third-level categories disclosed in the CNFS of firm i relative to the first-level category *4. Environmental information* at the end of year t,

k = number of third-level categories disclosed in the CNFS of firm i relative to the first-level categories *5. Employee information* and *7. Social information* at the end of year t,

L = 70, the number of third-level categories relative to the first-level category *4. Environmental information* at the end of year t,

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G = 69, the number of third-level categories relative to the first-level categories *5. Employee information* and *7. Social information* at the end of year t.

The two samples t-test and the Mann-Whitney test are applied to the means and medians of NFDI, EDI, and SDI to test the significance of differences on non-financial disclosures a) in the pre- and post-Legislative Decree application, b) when firms prepare a non-financial report in both pre- and post-Legislative Decree application, and c) firms preparing a non-financial report in both pre- and post-Legislative Decree application versus those preparing CNFS in the post-Legislative Decree application. Both statistical parametric and non-parametric tests are based on a null hypothesis assuming that changes in differences are equal in means (medians) versus the alternative hypothesis assuming that changes are not equal in means (medians).

[Insert Table 1 about here]

3.3. Valuation model

In line with the market-based accounting research (Hassel *et al.*, 2005; Berthelot *et al.*, 2012; Cardamone *et al.*, 2012; de Klerk and de Villiers, 2012; de Klerk *et al.*, 2015; de Villiers and Marques, 2016; Qui *et al.*, 2016; Reverte, 2016; Verbeeten *et al.*, 2016), we perform a multivariate analysis by using the Ohlson model (1995). In this study, we use a share price specification of the Ohlson model that relates stock price to book value of equity and earnings to evaluate the value relevance of accounting information. This deflated specification of Ohlson model mitigates the "scale effect" due to the potential inferences based on size differences (Easton and Sommers, 2003; Barth and Clinch, 2009).

To test hypothesis 1, we specify the following model:

$$P_{it} = \alpha_0 + \alpha_1 D + \alpha_2 BVPS_{it} + \alpha_3 D \times BVPS_{it} + \alpha_4 EPS_{it} + \alpha_5 D \times EPS_{it} + \alpha_6 NFDI_{it}$$
$$+ \alpha_7 NFDI_{it} \times BVPS_{it} + \alpha_8 NFDI_{it} \times EPS_{it} + \alpha_9 D \times NFDI_{it} + \varepsilon_{it} \qquad (1)$$

where:

P_{it} = stock price of firm i, 3 months after the end of year t,

D = dummy equal to D_t or D_{nfr},

D_t = 1 if post-Legislative Decree application, 0 if pre-Legislative Decree application,

D_{nfr} = 1 if firms prepare a non-financial report (sustainability report or integrated report) in both

pre- and post-Legislative Decree application, 0 if not,

$BVPS_{it}$ = book value of equity per share of firm i at the end of year t, scaling with number of shares outstanding at the end of year t,

EPS_{it} = earnings from continuing operations per share of firm i at the end of year t, scaling with number of shares outstanding at the end of year t.

$NFDI_{it}$ = non-financial disclosure index of firm i in the CNFS at the end of year t.

To test hypotheses 2a and 2b, we change in Model 1 the NFDI with EDI and SDI as follows:

$$P_{it} = \gamma_0 + \gamma_1 D + \gamma_2 BVPS_{it} + \gamma_3 D \times BVPS_{it} + \gamma_4 EPS_{it} + \gamma_5 D \times EPS_{it} + \gamma_6 EDI_{it}$$
$$+ \gamma_7 EDI_{it} \times BVPS_{it} + \gamma_8 EDI_{it} \times EPS_{it} + \gamma_9 D \times EDI_{it} + \varepsilon_{it} \qquad (2a)$$

$$P_{it} = \delta_0 + \delta_1 D + \delta_2 BVPS_{it} + \delta_3 D \times BVPS_{it} + \delta_4 EPS_{it} + \delta_5 D \times EPS_{it} + \delta_6 SDI_{it}$$
$$+ \delta_7 SDI_{it} \times BVPS_{it} + \delta_8 SDI_{it} \times EPS_{it} + \delta_9 D \times SDI_{it} + \varepsilon_{it} \qquad (2b)$$

where:

EDI_{it} = environmental disclosure index of firm i in the CNFS at the end of year t,

SDI_{it} = social disclosure index of firm i in the CNFS at the end of year t.

In Models 1, 2a, 2b, the interactions terms of the dummy variables D_t, D_{nfr}, the disclosure indexes NFDI, EDI, SDI with the accounting data allows to investigate the effect that each of these variables produce on the value relevance that investors assign to BVPS and EPS by increasing or decreasing their significance. We also include in the Models the interaction terms between D_t, D_{nfr}, and NFDI, EDI, SDI to document if there is a significant association between the effect related to each dummy variable and the measurement of disclosure.

We perform some robustness checks in order to test if results are robust to alternative specifications. We estimate Models 1, 2a, 2b using the stock prices of firms for 12 months, ending on 31 December of the year, along with the stock prices for 4, 5, 6 months after the end of year t. Further, we include in Models 1, 2a, 2b some control variables for firm size (natural logarithm of total assets and of revenue), leverage, profitability (return of assets and return of equity), as well as negative earnings. In all cases, the main conclusions of the study do not change with these additional specifications (Cardamone *et al.*, 2012; de Klerk and de Villiers, 2012; de Klerk *et al.*, 2015; Reverte, 2016). To check for multicollinearity problems, variation inflation factors (VIF) are calculated for each model. The VIF values for all independent

variables are lower than 10.00, so multicollinearity is not a concern. Finally, the White test does not confirm the presence of heteroscedasticity.

4. Empirical results

4.1. Descriptive statistics

In Table 2 we report the NFDI, EDI and SDI in the pre- and post-Legislative Decree application (Panel A), and relative to the preparation or non-preparation of a non-financial report in these two periods (Panel B and Panel C).

In terms of non-financial disclosure, the NFDI shows an increase of non-financial disclosure from 20% to 40% on average, and a reduction of its dispersion from 29% to 17% (Table 2, Panel A). The main drivers of this increase are the information on the business model (NFDI_1), environmental information (NFDI_4), employee information (NFDI_5) and social information (NFDI_7). These changes are reflected in the EDI and SDI scores, which increase respectively on average from 5% to 9% and from 4% to 10%, with a reduction in their dispersion. These increases could be associated to the transition from a voluntary to a mandatory non-financial disclosure system, which implies both a legitimation and a standardization of such information in the post-Legislative Decree application.

When we consider those firms providing a non-financial report (sustainability report or integrated report) in both the pre- and post-Legislative Decree application, we can notice that there is a slight reduction in the transition to a mandatory non-financial disclosure system (Table 2, Panel B). The NFDI decreases on average from 56% to 50%, EDI from 14% to 12%, and SDI from 12% to 11%, while their dispersion does not show any significant change. Despite the decreases, these levels of disclosure are higher when compared to those of firms preparing a CNFS only in the post-Legislative Decree application (Table 2, Panel C). The NFDI, EDI, SDI of the latter firms are 34%, 8%, 9% on average, which are much lower than those included in Panel B.

The application of the two samples t-test and the Mann-Whitney test to the means and medians of NFDI, EDI, and SDI confirm the previous changes (Table 3). The findings are as follows: a) the differences on non-financial disclosures in the pre- and post-Legislative Decree application are significant at 1% (Table 3, Panel A); b) they are not significant when firms prepare a non-financial report in both pre- and post-Legislative Decree application (Table 3, Panel B); c) they are significant at 1% when we test firms preparing a non-financial report in

both pre- and post-Legislative Decree application versus those preparing CNFS in the post-Legislative Decree application (Table 3, Panel C).

The descriptive statistics of P, BVPS and EPS under the different previous circumstances do not show any relevant change for these variables (Table 2, Panel A, Panel B and Panel C).

Overall, these results seem to show that firms disclosing a non-financial report in both the pre- and post-Legislative Decree application do not taken the opportunity to improve their non-financial disclosure strategy to send a stronger signal to the market. Rather, they seem move toward a pragmatic legitimacy (Suchman, 1995), by aligning their disclosure to the minimum information requirements included in the Decree. On the other hand, firms disclosing information only under a mandatory regime seem to adopt a conservative approach limiting their disclosure to a minimum amount.

[Insert Table 2 and Table 3 about here]

4.2. Regression results

Based on our hypotheses, we specify the Models 1, 2a, 2b in the pre- and post-Legislative Decree application (Table 4, Panel A) and with reference to the disclosure of non-financial information in these two periods (Table 4, Panel B). The adjusted R^2 are higher than 60% in each model.

The results following the share price specification of Ohlson model (1995) show that BVPS and EPS are positively and significantly associated at 1% with share price in each model and under different circumstances (Table 4, Panel A and Panel B). These results are also confirmed when we consider the interaction terms of the dummy variables D_t, D_{nfr} with BVPS and EPS in each model, but with some exceptions. Indeed, the interaction terms D_t x EPS and D_{nfr} x BVPS have a significant and negative coefficient at 1%, showing a decrease of value relevance in EPS for companies in the pre-Legislative Decree application and in BVPS for firms not preparing voluntarily CNFS in the pre-Legislative Decree application. This means that the distinction between the two periods as well as between firms increases (decreases) the value relevance just in the post- Legislative Decree application where firms preparing a non-financial report in both pre- and post-Legislative Decree application benefits from their unchanged attitude towards this reporting.

When we consider the NFDI, EDI and SDI, their coefficient are not significant in each model and under different circumstances (Table 4, Panel A and Panel B). This lack of significance is

also confirmed in each model when the provision of non-financial information (NFDI), environmental (EDI) and social (SDI) information is associated to the level of disclosure provided in the pre- and post-Legislative Decree application (Table 4, Panel A) and with reference to the disclosure of non-financial information in both the two periods (Table 4, Panel B). The interaction terms D_t x NFDI (EDI) (SDI) and D_{nfr} x NFDI (EDI) (SDI) are not significant, showing that the transition to a mandatory non-financial disclosure system does not produce any impact in terms of increase or decrease of value relevance.

If the NFDI, EDI and SDI interact with BVPS and EPS, we notice a significant decrease or increase of value relevance measured by the interaction terms NFDI (EDI) (SDI) x BVPS (EPS) in the post-Legislative Decree application (Table 4, Panel A). On the contrary, we obtain an opposite and negative result for EPS when we consider the interaction terms NFDI (EDI) (SDI) x EPS relative to firms preparing a non-financial report in in both pre- and post-Legislative Decree application, as the coefficient is negative and significant (Table 4, Panel B). These findings mean that accounting numbers are the principals in driving the value relevance in each model, as the NFDI, EDI, SDI and D_t x NFDI (EDI) (SDI), D_{nfr} x NFDI (EDI) (SDI) are not significant. Even though firms are required to implement a non-financial disclosure system, the results show the prevalence of the financial disclosure system, as its effects on share prices are significant.

Overall, the results provide evidence that higher levels – even though not so improving in their amounts – of non-financial, environmental and social information in the post-Legislative Decree application are not associated with share prices. The results provide evidence that non-financial, environmental and social information beyond the financial accounting information do not provide incremental value-relevant information to investors.

[Insert Table 4 about here]

5. Conclusions

The Legislative Decree 254/2016, implementing in Italy the EU Directive 95/2014, has made mandatory for large Italian companies to disclose non-financial information, so determining the transition from a system of non-financial disclosure, based on voluntary practices, to a mandatory regime.

On the basis of the relevant literature, the transition to a mandatory regime may increase the level of available information on the market. Indeed, the Legislative Decree fosters companies

without providing voluntary non-financial information to disclose such information to be compliant with the law. On the other hand, it encourages companies that voluntary disclosed information to maintain, or improve, their behavior after the Decree application. Moreover, the Decree is expected to increase comparability information over time, as it requires companies to be consistent in their disclosure and to provide comparable information across years. The paper investigates if the new requirements of providing non-financial disclosure influence share prices.

To assess the value relevance of non-financial information disclosed before and after the Legislative Decree application, we develop a specific disclosure framework to assess the amount of non-financial disclosure. In keeping previous evidence documenting that different types of information affect prices in different manners (Flammer, 2015; Verbeeten *et al.*, 2016), we calculate three specific disclosure indices focusing on non-financial disclosure as a whole, environmental disclosure and social disclosure. Since in the new regulation the term non-financial is synonym of ESG disclosure (European Commission, 2017), this allows us to make comparison with previous literature investigating if ESG information voluntarily disclosed by firms is value relevant.

Overall, we document a moderate increase of non-financial information after the Legislative Decree application, where matters on the environment, employee and society show the highest increase. Firms with a non-financial report (sustainability report or integrated report) even before the Decree do not make significant changes in their disclosure; while firms disclosing information only after the Decree show a lower level of information. This can be explained by the fact that the Decree only requires companies to disclose a minimum amount of information. Thus, firms that do not voluntarily disclose non-financial information limited their communication to the minimum necessary level to comply with the law.

Applying the Ohlson model (1995), we then analyse the value relevance of non-financial information of Italian listed firms, before (2016) and after (2017) the application of the Decree. The results of our regression analysis show that accounting numbers are associated with share prices both before and after the transition, while non-financial information is not associated with share prices. This lack of significance is also confirmed when we test information concerning environmental and social disclosure. Overall, these results reject the hypothesis that the transition from a voluntary to a mandatory regulatory system produces effects on the market prices. These results contradict previous evidence documenting a positive effect of environmental regulation initiatives on market prices (Maloney and McCormick, 1982; Dowell *et al.*, 2000). This difference could be explained by the fact that these studies examine regulation

approaches with a high degree of specification, while the Decree only requires a minimum amount of information and leave companies with a high level of discretion.

Our results do not confirm previous evidence concerning the value relevance of non-financial information in the European context. Studies on France, Finland, Sweden and UK with a mandated or recommended non-financial reporting system before the EU Directive, (Hassel, 2005; Cormier and Magnan, 2007; Schadewitz and Niskala, 2010; de Klerk *et al.*, 2015) find a significant association between the non-financial disclosure and share prices. Further, studies on Spain and Germany with a voluntary provision of non-financial information similar to Italy before the EU Directive support the value relevance of non-financial information (Reverte, 2016; Verbeeten *et al.*, 2016).

Our paper offers some relevant contributions to the extant literature. First, it is the first attempt to investigate the impact of the EU Directive on the value relevance of non-financial information. Therefore, our study complements the previous studies based on voluntary disclosure through the analysis of the association between mandatory disclosure and share prices. Second, it provides an analysis of the effect of mandatory disclosure in a setting where capital markets are second place to the banking system. The peculiarities of the setting investigated may suggest deepening if similar results are obtained in countries where the banking system and capital markets play roles similar or different to Italy. Third, the paper highlights what is the role of mandatory disclosure systems in the new context of non-financial information, and if its non-value relevant effects maybe be confirmed in European countries different from Italy.

Our study has two main limitations that open to future directions of research. First, it analyses the first application of the Legislative Decree, and this may suffer from the potential unreadiness of Italian capital markets to the novelty of the mandatory disclosure. Accordingly, our analysis may be repeated in the following years in order to test if the consequences of the non-financial mandatory disclosure setting on Italian financial markets will persist. Second, the paper does not investigate whether firms-determinants may undermine the non-financial information released to capital markets. To this extent, an analysis of the association between the dissemination of such information and some firms-characteristics may allow to test if such association affects the challenges associated with mandatory corporate responses to the Legislative Decree.

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Table 1 – The analytical framework

First-level categories (7)	Second-level categories (46)
1. Business model (6)	1.1. Organizational profile (16)
	1.2. Strategy (2)
	1.3. Ethics and integrity (3)
	1.4. Governance (22)
	1.5. Stakeholder engagement (5)
	1.6. Reporting practice (12)
2. Economic information (5)	2.1. Economic performance (7)
	2.2. Market presence (5)
	2.3. Indirect economic impacts (5)
	2.4. Procurement practices (4)
	2.5. Anti-competitive behaviour (4)
3. Anti-corruption and bribery matters information (1)	3.1. Anticorruption (6)
4. Environmental information (12)	4.1. Material (5)
	4.2. Energy (8)
	4.3. Water (6)
	4.4. Biodiversity (7)
	4.5. Emissions (10)
	4.6. Effluents and waste (8)
	4.7. Environmental compliance (4)
	4.8. Supplier environmental assessment (5)
	4.9. Product and services (5)
	4.10. Transports (4)
	4.11. Overall (4)
	4.12. Environmental grievance mechanisms (4)
5. Employee information (6)	5.1. Employment (6)
	5.2. Labour/management relations (4)
	5.3. Occupational health and safety (7)
	5.4. Training and education (6)
	5.5. Diversity and equal opportunity (5)
	5.6. Labour practices grievance mechanisms (4)
6. Protection of human rights information (8)	6.1. Non-discrimination (4)
	6.2. Freedom of association and collective bargaining (4)
	6.3. Child labour (4)
	6.4. Forced or compulsory labour (4)
	6.5. Security practices (4)
	6.6. Rights of indigenous peoples (4)
	6.7. Human rights assessment (6)
	6.8. Human rights grievance mechanisms (4)
7. Social information (8)	7.1. Local communities (5)
	7.2. Supplier social assessment (5)
	7.3. Public policy (4)
	7.4. Customer health and safety (5)
	7.5. Marketing and labelling (6)
	7.6. Customer privacy (4)
	7.7. Socioeconomic compliance (4)
	7.8. Grievance mechanisms for impacts on society (4)

Note: The table reports the first- and second-level categories of the analytical framework. We do not include the third level categories as they are too numerous. In brackets the number of categories in the relative level.

Table 2 – Descriptive statistics

Panel A: Descriptive statistics in pre- and post-Legislative Decree application												
	Pre-Legislative Decree ($D_t = 0$)						*Post-Legislative Decree ($D_t = 1$)*					
Variable	N	Mean	Median	SD	Min	Max	N	Mean	Median	SD	Min	Max
NFDI_1	114	6%	0%	8%	0%	22%	117	11%	13%	6%	0%	22%
NFDI_2	114	2%	0%	3%	0%	9%	117	3%	3%	3%	0%	9%
NFDI_3	114	1%	0%	1%	0%	2%	117	2%	2%	1%	0%	2%
NFDI_4	114	5%	0%	7%	0%	25%	117	9%	9%	5%	0%	22%
NFDI_5	114	3%	0%	4%	0%	12%	117	7%	7%	2%	0%	11%
NFDI_6	114	1%	0%	3%	0%	13%	117	3%	2%	3%	0%	11%
NFDI_7	114	2%	0%	4%	0%	14%	117	5%	5%	3%	0%	14%
NFDI	114	20%	0%	29%	0%	91%	117	40%	41%	17%	5%	90%
EDI	114	5%	0%	7%	0%	25%	117	9%	9%	5%	0%	22%
SDI	114	4%	0%	7%	0%	25%	117	10%	9%	4%	0%	22%
P	114	10.060	4.330	13.800	0.030	76.300	117	11.110	4.350	14.520	0.030	79.050
BVPS	114	4.601	2.544	5.691	-3.341	32.852	117	4.741	2.556	5.782	-3.511	32.824
EPS	114	0.394	0.246	0.672	-2.095	2.608	117	0.532	0.272	0.830	-1.181	5.886
Panel B: Descriptive statistics in pre- and post-Legislative Decree application and $D_{nfr} = 1$												
	Pre-Legislative Decree ($D_t = 0$)						*Post-Legislative Decree ($D_t = 1$)*					
Variable	N	Mean	Median	SD	Min	Max	N	Mean	Median	SD	Min	Max
NFDI_1	40	16%	13%	4%	11%	22%	40	14%	13%	4%	3%	22%
NFDI_2	40	5%	6%	3%	2%	9%	40	5%	5%	3%	0%	9%
NFDI_3	40	2%	2%	1%	0%	2%	40	2%	2%	0%	0%	2%
NFDI_4	40	14%	13%	5%	1%	25%	40	12%	11%	5%	2%	22%
NFDI_5	40	8%	8%	2%	0%	12%	40	8%	8%	2%	4%	11%
NFDI_6	40	4%	2%	4%	0%	13%	40	4%	2%	4%	0%	11%
NFDI_7	40	7%	6%	3%	0%	14%	40	6%	6%	3%	2%	14%
NFDI	40	56%	55%	17%	23%	91%	40	50%	46%	16%	21%	90%
EDI	40	14%	13%	5%	1%	25%	40	12%	11%	5%	2%	22%
SDI	40	12%	11%	6%	3%	25%	40	11%	10%	5%	4%	22%
P	40	9.510	4.860	13.210	0.220	76.300	40	10.190	4.860	13.870	0.230	79.050
BVPS	40	4.179	2.585	4.053	0.105	19.673	40	4.436	2.593	4.359	0.079	20.343
EPS	40	0.465	0.298	0.523	-0.321	2.383	40	0.505	0.375	0.580	-0.253	2.186
Panel C: Descriptive statistics in pre- and post-Legislative Decree application and $D_{nfr} = 0$												
	Pre-Legislative Decree ($D_t = 0$)						*Post-Legislative Decree ($D_t = 1$)*					
Variable	N	Mean	Median	SD	Min	Max	N	Mean	Median	SD	Min	Max
NFDI_1	74	0%	0%	0%	0%	0%	77	9%	13%	6%	0%	22%
NFDI_2	74	0%	0%	0%	0%	0%	77	3%	2%	2%	0%	9%
NFDI_3	74	0%	0%	0%	0%	0%	77	1%	2%	1%	0%	2%
NFDI_4	74	0%	0%	0%	0%	0%	77	8%	8%	4%	0%	20%
NFDI_5	74	0%	0%	0%	0%	0%	77	6%	6%	2%	0%	11%
NFDI_6	74	0%	0%	0%	0%	0%	77	3%	2%	2%	0%	10%
NFDI_7	74	0%	0%	0%	0%	0%	77	4%	5%	3%	0%	13%
NFDI	74	0%	0%	0%	0%	0%	77	34%	38%	16%	5%	78%
EDI	74	0%	0%	0%	0%	0%	77	8%	8%	4%	0%	20%
SDI	74	0%	0%	0%	0%	0%	77	9%	9%	4%	0%	20%
P	74	10.360	4.120	14.190	0.030	73.350	77	11.580	4.180	14.920	0.030	71.280
BVPS	74	4.829	2.387	6.419	-3.341	32.852	77	4.899	2.465	6.419	-3.511	32.824
EPS	74	0.355	0.171	0.741	-2.095	2.608	77	0.547	0.239	0.937	-1.181	5.886

Notes: Panels A, B, and C present the descriptive statistics of $NFDI_m$ = non-financial disclosure index for each first-level category m = 1, …, 7; NFDI = non-financial disclosure index in the CNFS; EDI = environmental disclosure index in the CNFS; SDI = social disclosure index in the CNFS; P = stock price, 3 months after the end of year t; BVPS = book value of equity per share at the end of year t, scaling with number of shares outstanding at the end of year t; EPS = earnings from continuing operations per share at the end of year t, scaling with number of shares outstanding at the end of year t. $D_t = 1$ if post-Legislative Decree application, 0 if pre-Legislative Decree application; $D_{nfr} = 1$ if firms prepare a non-financial report in both pre- and post-Legislative Decree application, 0 if not.

Table 3 – Differences on non-financial disclosure

Panel A: Pre- vs. post-Legislative Decree application					
Variable	Mean ($D_t = 0$) N = 114	Mean ($D_t = 1$) N = 117	t statistic	Median ($D_t = 0$) N = 114	Median ($D_t = 1$) N = 117	W statistic
NFDI	20%	40%	-6.38***	0%	41%	10,041.5***
EDI	5%	9%	-5.51***	0%	9%	10,081.5***
SDI	4%	10%	-6.96***	0%	9%	9,556.5***
Panel B: Pre- vs. post-Legislative Decree application and $D_{nfr} = 1$					
Variable	Mean ($D_t = 0$) N = 40	Mean ($D_t = 1$) N = 40	t statistic	Median ($D_t = 0$) N = 40	Median ($D_t = 1$) N = 40	W statistic
NFDI	56%	50%	1.56	55%	46%	1,785.5
EDI	14%	12%	1.62	13%	11%	1,781.0
SDI	12%	11%	0.88	11%	10%	1,687.5
Panel C: $D_{nfr} = 1$ vs. $D_{nfr} = 0$ in post-Legislative Decree application					
Variable	Mean ($D_{nfr} = 1$) N = 40	Mean ($D_{nfr} = 0$) N = 77	t statistic	Median ($D_{nfr} = 1$) N = 40	Median ($D_{nfr} = 0$) N = 77	W statistic
NFDI	50%	34%	5.27***	46%	38%	3,133.5***
EDI	12%	8%	4.73***	11%	8%	3,152.5***
SDI	11%	9%	2.94**	10%	9%	2,818.0**

Notes: Panels A, B, and C present the results of differences on non-financial disclosure by applying the two-sample t-test on means (t statistic) and the Mann–Whitney test on medians (W statistic). *, ** and *** indicate statistical significance at 10%, 5% and 1%, respectively. The variable definitions are the same as in Table 2.

Table 4 – Regression results

Panel A: Value relevance in the pre- and post-Legislative Decree application			
	Model 1	Model 2a	Model 2b
D_t	1.900 (0.720)	2.400 (0.990)	1.440 (0.580)
BVPS	0.931*** (0.189)	0.916*** (4.840)	0.925*** (4.880)
D_t x BVPS	1.346*** (4.090)	1.073*** (3.490)	1.427*** (4.270)
EPS	10.810*** (6.680)	10.830*** (6.740)	11.180*** (6.880)
D_t x EPS	-11.190*** (-5.160)	-9.950*** (-4.770)	-11.380*** (-5.030)
NFDI	0.002 (0.170)		
NFDI x BVPS	-0.014*** (-5.400)		
NFDI x EPS	0.1027*** (5.050)		
D_t x NFDI	-0.016 (-0.800)		
EDI		-0.007 (-0.140)	
EDI x BVPS		-0.057*** (-5.230)	
EDI x EPS		0.449*** (5.100)	
D_t x EDI		-0.080 (-1.010)	
SDI			0.036 (0.610)
SDI x BVPS			-0.060*** (-5.370)
SDI x EPS			0.385*** (4.310)
D_t x SDI			-0.068 (-0.830)
AdjR2	0.639	0.638	0.634
F-value	46.340***	46.050***	45.390***
N	230	230	230
Panel B: Value relevance if firms prepare a non-financial report in both pre- and post-Legislative Decree application			
	Model 1	Model 2a	Model 2b
D_{nfr}	-2.270 (-0.670)	-1.860 (-0.630)	-3.650 (-1.370)
BVPS	0.992*** (5.630)	1.015*** (5.860)	0.964*** (5.520)
D_{nfr} x BVPS	-2.222*** (-5.100)	-2.143*** (-4.710)	-2.218*** (-5.230)
EPS	9.780*** (7.160)	9.100*** (6.960)	10.260*** (7.430)
D_{nfr} x EPS	25.400*** (7.050)	24.160*** (6.430)	24.730*** (7.420)
NFDI	0.003 (0.240)		
NFDI x BVPS	0.0004 (0.160)		
NFDI x EPS	-0.053** (-2.270)		
D_{nfr} x NFDI	0.006 (0.250)		
EDI		0.023 (0.370)	
EDI x BVPS		0.0008 (0.070)	
EDI x EPS		-0.186* (-1.690)	
D_{nfr} x EDI		0.004 (0.050)	
SDI			0.014 (0.250)
SDI x BVPS			0.003 (0.360)
SDI x EPS			-0.244** (-2.660)
D_{nfr} x SDI			0.073 (0.870)
AdjR2	0.667	0.662	0.671
F-value	52.300***	51.090***	53.210***
N	230	230	230

Notes: Panels A and B present the effect produced by each variable on the value relevance of non-financial information. t statistics for the regression coefficients are reported in parenthesis. *, ** and *** indicate statistical significance at 10%, 5% and 1%, respectively. The variable definitions are the same as in Table 2. We control each model for heteroscedasticity and multicollinearity. The White test does not confirm the presence of heteroscedasticity, and the calculation of variation inflation factors (VIF) is lower than 10.00 for each independent variable.