Financial analysts' reaction to voluntary integrated reporting: cross-sectional variation in institutional enforcement contexts

Francesca Rossignoli, Riccardo Stacchezzini and Alessandro Lai
Department of Business Administration, University of Verona, Verona, Italy

Abstract

Purpose – European countries are likely to increasingly adopt integrated reporting (IR) voluntarily, after the 2014/95/EU Directive is revised and other initiatives are implemented. Therefore, the present study provides insights on the relevance of IR in voluntary contexts by exploring analysts' reactions to the release of integrated reports in diverse institutional settings.

Design/methodology/approach – Drawing on voluntary disclosure theory, a quantitative empirical research method is used to explore the moderating role of country-level institutional characteristics on the associations between voluntary IR release and analyst forecast accuracy and dispersion.

Findings – IR informativeness is not uniform in the voluntary context and institutional settings play a moderating role. IR release is associated with increased consensus among analyst forecasts. However, in countries with weak institutional enforcement, a reverse association is detected, indicating that analysts rely largely on IR where the institutional setting strongly protects investors. Although a strong institutional setting boosts the IR release usefulness in terms of accuracy, it creates noise in analyst consensus.

Research limitations/implications – Academics can appreciate the usefulness of voluntary IR across the institutional enforcement contexts.

Practical implications – Managers can use these findings to understand opportunities offered by IR voluntary release. The study recommends that policymakers, standard setters and regulators strengthen the institutional enforcement of sustainability disclosure.

Originality/value – This study is a unique contribution to recent calls for research on the effects of nonfinancial disclosure regulation and on IR "impacts". It shows on the international scale that IR usefulness for analysts is moderated by institutional patterns, not country-level institutional characteristics.

Keywords Integrated reporting, Analyst forecast accuracy, Analyst forecast dispersion, Institutional enforcement

Paper type Research paper

1. Introduction

At the international level, regulators and standard setters are increasingly engaged with initiatives in the nonfinancial or sustainability reporting field – for instance, the IFRS Foundation released the "Consultation Paper on Sustainability Reporting" in September 2020. This paper marks the tentative entry of the IFRS Foundation, which is traditionally

involved in financial reporting standard setting, into the sustainability reporting field (Cho, 2020). Various standard setters have established collaborations that were unthinkable until recently (Florio *et al.*, 2021; Lai and Stacchezzini, 2021). An example is the collaboration between the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB), which published "A Practical Guide to Sustainability Reporting Using GRI and SASB Standards". Further, the SASB has recently merged with the International Integrated Reporting Council (IIRC) to create the Value Reporting Foundation. In addition, the "Group of Five" (CDP, Climate Disclosure Standards Board, GRI, IIRC and SASB) aims to collaborate towards developing a globally accepted comprehensive corporate reporting system starting from a "Climate-Related Financial Disclosure Prototype". Moreover, at the regulatory level, the European Union (EU) seems to be particularly active. With its 2014/95/EU Directive (hereafter, Directive) on nonfinancial and diversity information, the EU initiated a process intended to revolutionise the corporate reporting of European companies (Ferrer *et al.*, 2020; Mio *et al.*, 2020). Notably, the EU itself recently published a proposal to revise the Directive (European Commission, 2020) – for which it collected suggestions through a public consultation – in response to academic and professional criticisms about comparability, reliability and relevance (La Torre *et al.*, 2018; Cordazzo *et al.*, 2020; Venturelli *et al.*, 2020). This proposal is intended to significantly expand the number of companies required to publish sustainability information. The proposal also provides that this information must comply with the sustainability reporting standards that will be released by the European Financial Reporting Advisory Group (EFRAG) and must be disclosed in the management commentary. In July 2021, the EFRAG Project Task Force on European sustainability reporting standards and GRI signed a "Statement of Cooperation". As for the USA, the Securities and Exchange Commission recently announced the constitution of the Climate and ESG Task Force in its Division of Enforcement for identifying material gaps in corporate climate-related disclosures (Knachel and Porter, 2021).

However, despite this context of growing attention to, and disclosure of, nonfinancial or sustainability information, companies can still choose whether to integrate their nonfinancial and financial information. Indeed, the Directive and the related national regulations do not mandate that companies follow a specific reporting standard informed by an integrated approach, nor that they incorporate nonfinancial and diversity information into the management commentary. Although the EU's proposal about revisions to the Directive requires companies to incorporate sustainability information into the management commentary, full integration between financial and sustainability information remains a voluntary issue. The recent release of the "Exposure Draft of the IASB Practice Statement on Management Commentary" provides a framework to integrate financial and nonfinancial information, but its application is expected to remain voluntary, given that the EU usually endorses standards, not practice statements. Further, the scope of voluntary adoption of the sustainability disclosure and the possible adoption of an integrated approach is not anticipated to decrease because of the proposed revisions to the Directive. Indeed, along with institutionalising the sustainability disclosures (Farooq and de Villiers, 2019; De Villiers *et al.*, 2020; Lai and Stacchezzini, 2021), the revised Directive may stimulate additional incentives for voluntary disclosure (Heitzman *et al.*, 2010) by companies that do not fall within its scope of application, and companies that voluntarily prepare a sustainability report will be free to choose between nonfinancial reporting standards.

Therefore, the adoption of the integrated approach suggested by the IIRC's framework will likely remain largely voluntary, even in a context of growing mandatory nonfinancial disclosure. Although respondents to the EU public consultation believe that the IIRC's framework is not the most appropriate standard to endorse (European Commission, 2020, pp. 20–21), many European companies have already prepared an integrated report (Bochenek, 2020). Hence, the mandatory inclusion of nonfinancial information in the

management commentary, and the increasing disclosure of nonfinancial information by nonobligated companies as well, may further expand integrated reporting (IR) adoption.

Thus, considering the (likely increasing) voluntary adoption of IR by European countries, as an expected result of the proposed revision of the Directive and of other initiatives from regulators and standard setters, in this study, we aim to provide insights on the relevance of IR in voluntary contexts by exploring financial analysts' reactions to the voluntary release of integrated reports. Indeed, analysts and other financial stakeholders (i.e. equity and debt investors and rating agencies) are the main users of IR disclosures, as defined by the IIRC's framework (IIRC, 2013; Flower, 2015; Rowbottom and Locke, 2016) and explained by report preparers (Higgins *et al.*, 2014; Lai *et al.*, 2017, 2018). In the South African context where IR release is mandatory, the IR release has a positive impact on the capital market in terms of improved forecasts from analysts and the value relevance of the IR disclosure (Barth, 2017; Zhou *et al.*, 2017; Bernardi and Stark, 2018; Wang *et al.*, 2020; Caglio *et al.*, 2020). However, the few studies that focus on contexts where IR is voluntarily released offer mixed results (Kim *et al.*, 2017; Flores *et al.*, 2019; Wahl *et al.*, 2020).

Because these contexts are not homogeneous in terms of country-level institutional characteristics (e.g. the legal system, stock market size and investor rights), we explore the association between IR release and analyst forecasts by considering the moderating role of these characteristics. We proceed according to the argument that the disclosure's usefulness for the capital market is mediated by cross-country differences (Vanstraelen *et al.*, 2003; Dhaliwal *et al.*, 2012). In this regard, although there is little research on how country-level institutional factors moderate the impact of IR on financial stakeholders (Flores *et al.*, 2019), several studies have demonstrated the relevance of country-level institutional factors on the decision to voluntarily release an integrated report (Frias-Aceituno *et al.*, 2014; Lai *et al.*, 2016; Vaz *et al.*, 2016; Garcia-Sanchez *et al.*, 2019; Girella *et al.*, 2019).

We explore the impact of the IR release on financial analysists' behaviour with reference to the two main properties that characterise their forecasts: forecast accuracy, which captures the preciseness of analysts' forecasts by comparing the companies that release IR and those that do not, and forecast dispersion, which measures the degree of disagreement among multiple analysts' forecasts once the IR is released. We do not estimate the causal effects of the IR release on the financial analysts' forecast, but rather, assess whether the accuracy and the dispersion of their predictions vary systematically with IR release in diverse institutional settings. To develop in-depth understanding of the moderating effects of country-level institutional characteristics on analyst behaviour, we draw on Leuz *et al.* (2003) to identify three clusters of IR preparers based on the level of institutional enforcement (La Porta *et al.*, 2000, 2002; DeFond and Hung, 2004). In line with prior studies (Persakis and Iatridis, 2015a, b; Cho *et al.*, 2012), we rely on the three clusters that Leuz *et al.* (2003) identified because they capture nuanced differences across countries, which extend beyond the more traditional common- and code-law distinction (Flores *et al.*, 2019).

We believe that examining the moderating role of country-level institutional characteristics may help provide relevant theoretical and practical insights on the usefulness of IR adoption in the EU, a context that is not homogeneous in terms of country-level institutional characteristics (Arce and Mora, 2002; van der Velden and Wolber, 2001; Leuz *et al.*, 2003). Thus, this study responds to the calls for research on the effects of nonfinancial disclosure regulations (La Torre *et al.*, 2018; Venturelli *et al.*, 2020) and on IR "impacts" (Rinaldi *et al.*, 2018).

The remainder of this paper is organised as follows. Section 2 provides the theoretical framework, reviews pertinent literature and develops the research hypotheses. Section 3 introduces the research strategy, whereas Section 4 presents the findings. Section 5 discusses the findings, and Section 6 concludes by explaining the contributions, the research and practical implications and the limitations of the study.

2. Theoretical framework, prior research and hypotheses

2.1 Voluntary disclosure and analysts' forecasts in diverse institutional settings
According to the voluntary disclosure theory, the disclosure of private information to investors is expected to reduce the information asymmetries indicated by the agency theory (Verrecchia, 1983; Shehata, 2014). Corporate disclosure provided without the underlying duty to disclose (Heitzman *et al.*, 2010) is expected to provide additional, appropriate information to enhance efficiency in resource allocation (Healy and Palepu, 2001). Resource allocation is driven by the forecasts of financial analysts (Nichols and Wieland, 2009; Schipper, 1991), who are "intermediaries who receive and process [. . .] information for investors" (Schipper, 1991, p. 105).

Financial analysts' forecasts indicate their opinions about companies' future performance. Their prediction accuracy signals the usefulness of the information disclosed by a company in understanding its prospects (Lang and Lundholm, 1996; Hope, 2003). Therefore, forecast accuracy serves as a proxy for the company's disclosure informativeness (Lang *et al.*, 2003): the more accurate the analysts' forecast, the more informative the company's disclosure that they have provided. Thus, the informativeness of voluntary disclosure can be detected by investigating the relationships between the choice to release the disclosure and financial analysts' prediction properties: accuracy and dispersion. More informative disclosure policies reduce information asymmetry and increase analyst forecast accuracy (Lang and Lundholm, 1996). However, since financial analysts rely not only on firm-provided disclosures but also on private information from unstructured sources (Lang and Lundholm, 1996), the relationship between disclosure policies and the dispersion of their forecasts – which indicates the degree of disagreement in opinions among analysts – is not predictable. Forecast dispersion may occur because analysts do not use a common set of private information and nor do they use the same model to process firm-provided and private information. Assuming that analysts share the same forecast model, an increase in the informativeness of firm-provided disclosures reduces the information asymmetry and the forecast dispersion (Lang and Lundholm, 1996). Put differently, an increase in the informativeness of firm-provided disclosures associated with an increase in forecast dispersion is attributable either to the fact that analysts rely on different sets of private information or to their use of different forecast models.

Prior studies on voluntary disclosures in an international setting have underlined that the disclosure's informativeness for analysts is influenced by cross-country differences (Vanstraelen *et al.*, 2003; Dhaliwal *et al.*, 2012; Mittelbach-Hörmanseder *et al.*, 2021). Most studies have focussed on the legal system to detect cross-country differences (Frías-Aceituno *et al.*, 2014). Some studies showed that companies located in civil law countries are more stakeholder-oriented, and thus, they are more likely to satisfy stakeholders' information requirements (Ball *et al.*, 2000; Simnett *et al.*, 2009). These studies concluded that voluntary disclosure is more informative in civil law countries than in common law countries (Dhaliwal *et al.*, 2012).

However, these studies neglected to consider that it may be more meaningful to consider the entire institutional setting than the legal system alone in explaining cross-sectional variations in corporate disclosure informativeness (DeFond and Hung, 2004). For instance, DeFond and Hung (2004) showed that country-level investor protection is potentially more meaningful than the legal system in explaining cross-sectional variations in the usefulness of corporate disclosures for the capital market. In particular, financial analysts are more likely to value the informativeness of voluntary disclosures in countries with a lax investor protection system than in those with a strong investor protection context.

We use the voluntary IR release as the empirical setting and detect whether the effects of IR informativeness on analyst predictions vary across the different institutional settings identified in the literature. We draw on Leuz *et al.*'s (2003) grouping of countries to capture the different levels of institutional enforcement. The countries in cluster 1 have a common law tradition and are characterised by large stock markets, low ownership concentration, extensive outsider rights, high disclosure and strong legal enforcement. The countries in

clusters 2 and 3 have smaller stock markets, higher ownership concentration, weaker investor protection, lower disclosure levels and weaker enforcement than the countries in cluster 1. In addition, cluster 2 countries have a code law tradition, whereas cluster 3 countries have either a common or a code law tradition and have weaker legal enforcement than countries in cluster 2.

2.2 Integrated reporting and analysts' forecasts

IR, which is among the latest and more prominent initiatives in the corporate reporting field, is generally intended to benefit a wide range of stakeholders (De Villiers *et al.*, 2020), investors and other financial stakeholders, in particular (IIRC, 2013; Brown and Dillard, 2014; Flower, 2015; Thomson, 2015; Lai *et al.*, 2017, 2018). In the South African context where IR release is mandatory, the IR release has a positive impact on the capital market in terms of improved forecasts from analysts and the value relevance of the IR disclosure (Barth, 2017; Zhou *et al.*, 2017; Bernardi and Stark, 2018; Wang *et al.*, 2020; Caglio *et al.*, 2020). However, the few studies that focussed on contexts where IR is voluntarily released offer mixed results (Kim *et al.*, 2017; Flores *et al.*, 2019; Wahl *et al.*, 2020). Thus, to gather further evidence on the effects of IR on the capital market, we explore whether the institutional characteristics of the countries in which the IR is voluntarily released influence the analysts' predictions. In particular, we investigate the relationships between the IR release and analysts' forecast properties – captured by the forecast accuracy and dispersion – taking into account the moderating effect of cross-country differences in the institutional enforcement. In this regard, Flores *et al.* (2019) demonstrated that the corporate governance regime moderates the impact of IR release on analysts' forecast errors. Indeed, the IR prepared by firms in countries with a shareholder-based governance regime (i.e. North America) has a greater impact on analysts' ability than the IR released by firms in countries with a stakeholder-based governance regime (i.e. Continental Europe). However, the present study goes beyond this dichotomy and clusters countries according to the institutional factors that may moderate the association between the IR release and the analysts' behaviour: capital market development, investor protection, disclosure regulation and the rule of law (Leuz *et al.*, 2003).

2.2.1 IR release and analysts' forecast accuracy. The voluntary disclosure theory relies on the assumption that corporate disclosure policies provide investors with information useful to orient their investment decisions subordinately to trade-off considerations grounded on the disclosure's costs (Healy and Palepu, 2001). Drawing on this stream of the literature, we expect that analysts' forecast error is likely to decrease when the company releases the IR because IR embraces a wide array of value-relevant topics (Mittelbach-Hörmanseder *et al.*, 2021) in an innovative way of display (De Villiers and Sharma, 2020).

In the mandatory context, IR informativeness is conditioned to its alignment with the IIRC's framework (Zhou *et al.*, 2017), whereas in a voluntary context, there is no significant association between IR release and the accuracy of the financial analysts' predictions (Wahl *et al.*, 2020). These results motivate us to consider the moderating role of country-specific institutional characteristics, which prior studies have already considered to explain the pressure that companies are subjected to when deciding whether to release IR or not (e.g. Frias-Aceituno *et al.*, 2014; Girella *et al.*, 2019). We contend that institutional enforcement may influence even the IR informativeness for financial analysts. Therefore, we propose the following hypotheses:

H1a. IR release is negatively associated with analysts' forecast error.

H1b. Country institutional enforcement moderates the association between IR release and analysts' forecast error.

2.2.2 IR release and analysts' forecast dispersion. The relationship between companies' disclosure policies and the dispersion of financial analysts' forecasts, which indicates the

degree of disagreement among the analysts' opinions, is controversial. Forecast dispersion may occur because analysts do not use a common set of private information and nor do they use the same model to process firm-provided and private information.

Lang and Lundholm (1996) considered the decrease in the dispersion of the forecasts following the release of firm-provided information as a signal of the usefulness of such information. The authors inferred that, assuming that analysts share the same forecast model, analysts rely on firm-provided disclosure as a more reliable source of information than the private information they might gather elsewhere. In contrast, in considering the increase in the dispersion of the forecasts following the release of additional firm-provided disclosure, Lang and Lundholm argued that the analysts would have assigned different weights to different information sources, namely firm-provided disclosure and private information, and thus refer to different forecasting models, which leads to the differences in their opinions.

With reference to the IR disclosure, Kim *et al.* (2017) showed that the IR release is associated with decreased forecast dispersion, but do not find a significant statistical difference in the dispersion between IR adopters and nonadopters. However, Zhou *et al.* (2017) did not find a significant association between the IR compliance with the framework and the financial analysts' dispersion. Thus, these results have highlighted the ambiguous nature of the findings about forecast dispersion. In line with Kim *et al.*'s (2017) reasoning, we contend that, in general, the release of IR is associated with lower forecast dispersion. Similarly to Kim *et al.* (2017), we expect to demonstrate this association by considering the moderator effect of the country institutional setting. Therefore, we propose the following hypotheses:

H2a. IR release is negatively associated with analysts' forecast dispersion.

H2b. A country's institutional enforcement moderates the association between IR release and analysts' forecast dispersion.

3. Research strategy

In this study, we aim to detect and measure the magnitude of the relationships between a corporate reporting choice – the choice to issue an integrated report – and market reactions. To provide evidence of these relationships, we used a quantitative method that allowed us to exclude empirically that the observable relationships between the corporate reporting choice and the financial analysts' properties are casual. This method requires the use of a cross section of the population as a sample to detect relationships that – if they are found to be systematic – are generalisable to the entire population. The validity of the results and the generalisability of the inferences drawable depend on the research strategy, which is pivotal in ensuring the strength of the study's contributions. The pillars of the research strategy are (1) the sample selection approach, which ensures that the sample is representative of the population and (2) the model specification, which is essential to capture properly the explanatory power of the phenomena under investigation.

3.1 Sample selection and data collection

The sample selection process was aimed at selecting companies that choose to release and not release the IR. First, we selected an initial sample, which included the companies listed in the IIRC's IR Examples Database whose IR was publicly accessible from the IIRC official website as of 1 January 2017. We set this Database as the starting point of our sample selection, following prior studies on voluntarily released IR (Kim *et al.*, 2017; Melloni *et al.*, 2017; Kilic and Kuzey, 2018; Flores *et al.*, 2019; Girella *et al.*, 2019). We excluded companies located in

South Africa, where the IR is mandatory for listed companies. The initial base sample included 121 international companies.

Second, we matched the base sample to similar companies that do not adopt IR according to the IIRC's framework [1]. Our selection of the control sample was based on the industry sector classification (based on the NAICS code), the geographical location (same country) and the size (based on the volume of assets). The initial control sample included 128 companies. We collected a large variety of data on each company to estimate the regression models. In particular, we retrieved firm-specific data from the Orbis Database, market data from Eikon, ESG scores from Bloomberg and country-level data from the World Bank Database. Further, we hand-collected the date and year of each IR release from the corporate website of companies that had released the IR. Because the IIRC's framework was issued in 2013, we incorporated the effects of this guidance by collecting data for a period ranging from two years after the framework was issued (2015) to 2017. Thus, the time span of analysis is three years (2015–2017).

After filtering for the analyst data and the required control variables, the final sample consisted of 133 companies (67 in the base sample and 66 in the control sample), corresponding to 2,108 analyst forecasts over three years. Table 1 presents the sample selection and distribution. Panel A shows the distribution over time, whereas panel B presents the geographical distribution of the companies across the clusters defined by Leuz *et al.* (2003).

3.2 Regression model

We use ordinary least squares regression to verify the association between the analysts' forecast properties (accuracy and dispersion) and the voluntary adoption of IR. We specify the model, moving from the one applied by Dhaliwal *et al.* (2012), to investigate the informativeness of voluntary disclosure for investors. To capture the cross-country differences in the institutional enforcement, we augment the model with dummy variables that represent the three clusters defined by Leuz *et al.* (2003) and assign the appropriate dummy variable to each company. Further, we detect the moderation effect of institutional enforcement on the IR's informativeness through the interactions of the variable of interest (*IR*) and add each of the three dummy variables that indicate the cluster to which the companies belong.

Panel A: Sample distribution along the period of analysis

Year	Base sample Number of observations	Control sample Number of observations	Total
2015	104	51	155
2016	540	121	661
2017	612	680	1,292
Total	*1,256*	*852*	*2,108*

Panel B: Sample distribution across clusters

Cluster	Base sample Number of observations	Control sample Number of observations	Total
1	479	275	754
2	538	342	880
3	185	187	372
No cluster	54	48	102
Total	*1,256*	*852*	*2,108*

Table 1.
Sample selection and
distribution

$$Forecast\_Property_{it} = \beta_0 + \beta_1 IR_{it} + \beta_j IR\_clus_{it} + \sum \beta_j firm\_level\_financial\_controls_{jit}$$
$$+ + \sum \beta_j firm\_level\_sustainability\_controls_{jit}$$
$$+ + \sum \beta_j country\_level\_controls_{jit} + \varepsilon_{it}$$

We use robust standard errors to account for possible heteroscedasticity. The standard errors are clustered at the firm level to allow errors of the same firm not to be correlated over time.

3.3 Definition of variables

Informativeness of the IR for the capital market is proxied using two properties of financial analysts' forecasts (Dhaliwal *et al.*, 2012; Zhou *et al.*, 2017): the accuracy and the dispersion of forecasts. Forecast accuracy is inversely captured by the analysts' forecast error (*ForecastError*). Forecast error is computed as the average of the absolute errors of all forecasts for target earnings, scaled by the share price at the fiscal year-end:

$$ForecastError(Y)_{it} = \frac{1}{N} \sum_{j=1}^{N} (FC_{i,t,j} - EPS_{i,t}) \, / \, P_{i,t}$$

where the subscripts i, t and j represent company i, year t and analyst j, respectively. The predicted earnings and forecasts are for the current year. *FC* is the analysts' earnings forecast for time t, and *EPS* is the actual earnings per share for time t. *P* is the price per share at the end of period t. The forecast horizon is limited to one year owing to the lack of forecasts for a longer time span. We use only predictions made after the IR issue date to allow analysts to incorporate the information contained in the IR into their forecasts. We winsorise the analyst forecast error (*ForecastError*) at 95% to remove the skewness in the data.

The dispersion of analysts' forecasts (*ForecastDispersion*) is defined as the standard deviation of analysts' EPS median forecasts scaled by the share price at the fiscal year-end (Lang and Lundholm, 1993; Hope, 2003; Lehavy *et al.*, 2011).

$$ForecastDispersion(Y)_{it} = \frac{\frac{1}{J} \sqrt{\sum_j (EPS_{i,t} - \widehat{EPS_t})^2}}{P_{i,t}}$$

Subscripts i, t and j represent company i, year t and analyst j, respectively. The target earnings and forecasts are for the current year. *EPS* is the actual earnings per share for time t. *P* is the price per share at the end of period t. *J* is the number of analysts following each company.

The independent variable of interest is *IR*, defined as a dummy variable equal to 1 if the company has released the IR, and 0 otherwise. Departing from Zhou *et al.*'s (2017) model, we include the interactions that indicate the companies releasing IR that belong to each of the three clusters defined by Leuz *et al.* (2003). The three clusters are defined according to the set of institutional characteristics that La Porta *et al.* (1997, 1998) identified to capture the differences across the countries: stock market capitalisation, listed firms, IPOs, ownership concentration, anti-director rights, disclosure index, efficiency of judicial system, rule of law and corruption index (Leuz *et al.*, 2003). The dependent variable *IR* has been interacted with each of the three dummy variables that indicate the clusters to which the companies belong.

IR_1 indicates companies releasing IR that are located in countries with large stock markets, dispersed ownership, strong investor rights and strong legal enforcement. *IR_1* is calculated as the product of *IR* and *Cluster1*. *Cluster1* is a dummy variable equal to 1 if the company is located in the USA, the United Kingdom, Hong Kong, Australia or Canada, and 0 otherwise.

IR_2 indicates companies releasing IR that are located in countries with less-developed stock markets and weak investor rights, but with strong legal enforcement. *IR_2* is calculated as the product of *IR* and *Cluster2*. *Cluster2* is a dummy variable equal to 1 if the company is located in Germany, Japan, France, Denmark, the Republic of Ireland, the Netherlands or Switzerland, and 0 otherwise.

IR_3 indicates companies releasing IR that are located in countries with weak legal enforcement. *IR_3* is calculated as the product of *IR* and *Cluster3*. *Cluster 3* includes countries with weak legal enforcement. *Cluster3* is a dummy variable equal to 1 if the company is located in Italy, Greece or the Republic of South Korea, and 0 otherwise.

First, following the literature, we include control variables to capture the phenomena expected to explain variability in the dependent variable. First, we include firm-level controls to capture firm-specific financial features, following Dhaliwal *et al.* (2011, 2012) and Zhou *et al.* (2017). Analysts' forecast accuracy and forecast dispersion are associated with the number of analysts following the company (Jiao *et al.*, 2012); thus, we include the natural logarithm of the number of analysts following each company each year (*N_Analysts*). The performance volatility of firms decreases the informativeness of firm reports, thus reducing analysts' forecast accuracy and increasing forecast dispersion (Jiao *et al.*, 2012). We capture the performance variability in terms of earnings, by including the natural logarithm of the standard deviation of earnings (*Earnings_variability*), and in terms of earnings per share, by including the natural logarithm of the standard deviation of earnings per share (*EPS_variability*). We control for financial risk by including the debt-to-asset ratio (*Leverage*) (Caglio *et al.*, 2020).

Second, we include firm-level controls to capture sustainability disclosure. According to the voluntary disclosure theory, superior sustainability performers are expected to provide high-quality sustainable disclosure to signal their superiority to the market (Hummel and Schlick, 2016). Since sustainability disclosures and analyst forecast accuracy are related (Bernardi and Stark, 2018), we control for firms' sustainability disclosure to capture the cross-sectional variation in financial analysts' properties explained by such disclosure. We include in the model the ESG scores, *ESG_E*, *ESG_G* and *ESG_S*, which indicate the proxy for environment, governance and social performance disclosure, respectively. Further, following Zhou *et al.* (2017), we control for the issuance of standalone corporate social responsibility (CSR) reports (or sustainability reports) to capture the explanatory power of nonfinancial information retrievable from corporate disclosure. The control variable *CSR* is equal to 1 if the company has issued a standalone CSR/sustainability report, and 0 otherwise.

Third, we control for country-level indicators. Theory and empirical evidence show that reporting outcomes are mainly affected by institutional characteristics (Djankov *et al.*, 2003; Christensen *et al.*, 2013; Brown and Dillard, 2014); thus, we add the World Bank's Worldwide Governance Indicators at the country level (Kaufmann *et al.*, 2010). The voice and accountability index (*vae*) indicates the extent to which a country's citizens are able to participate in selecting their government, as well as the freedom of expression, the freedom of association and the presence of a free media in the country. The political stability index (*pve*) measures the perceptions of the likelihood that the government will be destabilised or overthrown by unconstitutional or violent means. The government effectiveness index (*gee*) captures the quality of public services, the quality of the civil service and its degree of independence from political pressures, the quality of policy formulation and implementation and the credibility of the government's commitment to such policies. The regulatory quality index (*rqe*) indicates the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. The rule of law index (*rle*) measures the extent to which agents have confidence in, and abide by, the rules of society, and in particular, the quality of contract enforcement, the police and the courts, as well as the likelihood of crime and violence. We include the enforcement measure developed by

Kaufmann *et al.* (2010) as a proxy for institutional quality because it is meant to capture a country's ability to implement regulations and government policies. The control of corruption index (*cce*) indicates the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. The data are based on surveys of firms and individuals, as well as the assessments of commercial risk-rating agencies, nongovernmental organisations and numerous multilateral aid agencies. We use estimates for each indicator that are the result of a maximum likelihood function and are therefore normally distributed. Table 2 provides the definitions of the variables we used.

4. Findings
4.1 Descriptive statistics
Table 3 shows descriptive statistics. Panel A shows the statistics for the pooled sample. Panel B presents the difference in the means of the variables between the two subsamples (base

Variable	Measurement
Dependent	
ForecastError	Forecast error, measured as the difference between earnings per share forecast and earnings per share actual scaled by share price at the end of the fiscal year
ForecastDispersion	Forecast dispersion, measured as standard deviation of analysts' EPS median forecasts scaled by the share price at the fiscal year-end
Independent	
IR	Dummy variable equal to 1 if the company publishes the IR; and 0 otherwise
cluster1	Dummy variable equal to 1 if the company is located in one of the countries belonging to cluster 1 according to Leuz *et al.* (2003) (namely: United States of America, United Kingdom, Honk Kong, Australia, Canada); and 0 otherwise
cluster2	Dummy variable equal to 1 if the company is located in one of the countries belonging to cluster 2 according to Leuz *et al.* (2003) (namely: Germany, Japan, France, Denmark, Republic of Ireland, Netherlands, Switzerland); and 0 otherwise
cluster3	Dummy variable equal to 1 if the company is located in one of the countries belonging to cluster 3 according to Leuz *et al.* (2003) (namely: Italy, Greece; South Korea); and 0 otherwise
IR_1	Interaction between IR and cluster1
IR_2	Interaction between IR and cluster2
IR_3	Interaction between IR and cluster3
Control	
N_Analysts	Natural logarithm of the number of analysts following each company each year
EPS_variability	Natural logarithm of the earnings per share standard deviation
Leverage	Leverage is the ratio of total debt to the sum of total debt and the book value of common shareholders' equity
Earnings_variability	Natural logarithm of the earnings' standard deviation
CSR	Dummy variable equal to 1 if the company issues a standalone CSR report in additional to the annual report; 0 otherwise
ESG_E	ESG indicator section environment
ESG_G	ESG indicator section governance
ESG_S	ESG indicator section social
vae	Voice and accountability, estimate
pve	Political stability, estimate
gee	Government effectiveness, estimate
rqe	Regulatory quality, estimate
rle	Rule of law, estimate
cce	Control of corruption, estimate

Table 2.
Variables definition

Panel A – Overall sample statistics

	Count	Mean	p10	p25	p50	p75	p90	sd
ForecastError	1,252	0.018	0.000	0.000	0.0108	0.0191	0.054	0.028
ForecastDispersion	2,108	0.177	0.035	0.0635	0.115	0.169	0.446	0.225
N_Analysts	2,108	2.628	1.946	2.198	2.708	2.944	3.434	0.520
EPS_variability	2,108	1.177	0.0198	0.059	0.179	0.553	5.887	2.325
Leverage	2,108	0.633	0.404	0.526	0.609	0.749	0.9246	0.1791
Earnings_variability	2,108	20.423	17.508	18.644	19.767	21.751	25.752	2.605
ESG_E	2,108	39.943	17.355	27.132	40.310	50.388	64.463	16.816
ESG_G	2,108	61.771	55.357	57.143	62.5	66.071	71.429	6.305
ESG_S	2,108	49.179	33.333	38.5965	50.877	58.333	64.912	12.926
CSR	2,108	0.052	0	0	0	0	0	0.222
vae	2,108	1.182	0.7398	1.050	1.296	1.389	1.540	0.340
pve	2,108	0.481	0.212	0.263	0.361	0.681	0.917	0.368
gee	2,108	1.439	1.074	1.352	1.554	1.719	1.834	0.452
rqe	2,108	1.506	1.070	1.157	1.715	1.783	1.912	0.477
rle	2,108	1.473	1.161	1.438	1.622	1.691	1.830	0.492
cce	2,108	1.427	0.457	1.260	1.841	1.867	1.899	0.689
cluster1	2,108	0.389	0	0	0	1	1	0.488
cluster2	2,108	0.387	0	0	0	1	1	0.487
cluster3	2,108	0.046	0	0	0	0	0	0.210
N	2,108							

Panel B – T-test differences between the means

	Difference between the means Control sample – Base sample	p-value
ForecastError	0.01**	(0.01)
ForecastDispersion	0.05***	(0.00)
N_Analysts	0.09***	(0.00)
EPS_variability	1.11***	(0.00)
Leverage	−0.07***	(0.00)
Earnings_variability	0.33**	(0.00)
ESG_E	−9.98***	(0.00)
ESG_G	−4.16***	(0.00)
ESG_S	−7.57***	(0.00)
CSR	−0.09***	(0.00)
vae	−0.15***	(0.00)
pve	−0.04**	(0.01)
gee	−0.05**	(0.01)
rqe	−0.08***	(0.00)
rle	−0.05*	(0.01)
cce	−0.23***	(0.00)
cluster1	−0.09***	(0.00)
cluster2	0.01	(0.68)
cluster3	−0.08***	(0.00)
N	2,108	

Note(s): P-value in parentheses; ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Table 3.
Descriptive statistics

sample and control sample). Forecast error (*ForecastError*) is significantly lower in the base sample than in the control sample. This result prompts us to contend that financial analysts who follow companies that release the IR predict the earnings per share with more accuracy than those who follow companies that do not release IR. The dispersion of analysts' forecasts (*ForecastDispersion*) is significantly lower in the base sample than in the control sample, indicating that IR provides information that enhances consensus among financial analysts.

Table 4 presents simple correlations among the variables. Correlations among the independent variables are relatively low, indicating that multicollinearity is unlikely to be an issue in the multivariate regression analyses. Forecast error (*ForecastError*) is negatively and significantly correlated with the dummy for the companies that release the IR (*IR*), with the dummy for the companies that belong to cluster 1 (*cluster1*) and with the proxies that capture the countries' governance strength (*vae, pve, gee, rue, rle* and *cce*). These results indicate that forecasts are more accurate for companies that publish the IR and are located in countries with strong institutional enforcement. Further, although the forecast error is negatively and significantly correlated to the ESG indicators (*ESG_E, ESG_G* and *ESG_S*), there is a positive and significant association between the forecast error and the variable representing the release of a standalone CSR report (*CSR*). These results indicate that despite the correlation between forecast error and environmental, governance and social corporate disclosure – indicated by the ESG indicators – analysts' forecasts are not associated with the standalone CSR reporting. This finding raises questions about the informativeness of standalone CSR reporting as well as of other nonfinancial reports, such as IR. As expected, the performance volatility (*Earnings_variability* and *EPS_variability*) is positively and significantly associated with the forecast error, indicating that it generates uncertainty in the analysts' forecast.

The dispersion of the analysts' forecasts (*ForecastDispersion*) is negatively and significantly correlated with the dummy for the companies that release the IR (*IR*), suggesting that the IR release is associated with consensus among the analyst forecasts. Further, the results for the relationship between the dispersion and the country-level governance indicators are mixed, and there is no significant correlation between the dispersion and the dummy variable for companies that release CSR reports (*CSR*) separately. These results suggest that consensus among financial analysts in forecasting corporate performance is likely to be linked to factors other than CSR reporting.

4.2 Multivariate results
4.2.1 Forecast error. Table 5 shows the results of the regression models used to investigate the association between the error of analysts' earnings forecasts and the IR release.

As expected, the coefficient of *IR* in model (1) is negative and statistically significant (*IR_1*: −0.006; *p*-value: <0.00), suggesting that companies that release the IR are associated with fewer forecast errors than the companies that do not issue the IR. Thus, this result supports H1a.

Models (2)–(4) report the results of the model specifications where each interaction is added individually. Model (2) shows that companies located in cluster 1 and that choose to release the IR are significantly and negatively associated with forecast error (*IR_1*: −0.012; *p*-value: < 0.00). For companies located in countries belonging to cluster 2 (model 3) and cluster 3 (model 2), the releasing of IR is not significantly associated with the forecast error. These results indicate that in contexts where IR is voluntary, the usefulness of IR in providing financial analysts with information that allows them to reduce the forecast error is systematically different across countries with different institutional characteristics.

Consistently with the differences detected by Leuz *et al.* (2003) across the three clusters, we find that there is a clear distinction between the first cluster and the other two clusters. In particular, the IR informativeness is significantly greater in countries belonging to the first cluster, whereas there is no evidence of benefits for the market in countries belonging to cluster 2 and cluster 3. These results confirm H1b.

In addition, the company's release of a standalone CSR report (*CSR*) is positively and significantly associated with forecast error. This result indicates that the standalone CSR report does not benefit the accuracy of the financial analysts forecast, whereas the IR does.

Table 4. Correlation matrix

	ForecastError	ForecastDispersion	IR	cluster1	cluster2	cluster3	vae	pve	gee	rqe	rfe	cce	N_Analysts	EPS_variability	Leverage	Earnings_variability	Horizon	ESG_E	ESG_G	ESG_S	CSR
ForecastError	1.000																				
ForecastDispersion	0.1834 (0.0000)	1.000																			
IR	−0.0757 (0.0074)	−0.1042 (0.0000)	1.000																		
cluster1	−0.3473 (0.0000)	0.0157 (0.4709)	0.0600 (0.0059)	1.000																	
cluster2	−0.0646 (0.0222)	−0.2069 (0.0000)	0.0268 (0.2186)	−0.6317 (0.0000)	1.000																
cluster3	0.4088 (0.0000)	0.1427 (0.0000)	−0.0929 (0.0000)	−0.3454 (0.0000)	−0.3919 (0.0000)	1.000															
vae	−0.2926 (0.0000)	−0.2068 (0.0000)	0.2160 (0.0000)	0.1692 (0.0000)	0.4616 (0.0000)	−0.5389 (0.0000)	1.000														
pve	0.1217 (0.0000)	−0.1475 (0.0000)	0.0575 (0.0083)	−0.1422 (0.0000)	0.4905 (0.0000)	−0.2764 (0.0000)	0.6779 (0.0000)	1.000													
gee	−0.2233 (0.0000)	−0.2028 (0.0000)	0.0576 (0.0081)	0.1549 (0.0000)	0.5083 (0.0000)	−0.5273 (0.0000)	0.8023 (0.0000)	0.7333 (0.0000)	1.000												
rqe	−0.2734 (0.0000)	−0.1677 (0.0000)	0.0818 (0.0002)	0.3263 (0.0000)	0.3211 (0.0000)	−0.5070 (0.0000)	0.8489 (0.0000)	0.6701 (0.0000)	0.9354 (0.0000)	1.000											
rfe	−0.2412 (0.0000)	−0.1771 (0.0000)	0.0548 (0.0118)	0.3274 (0.0000)	0.3335 (0.0000)	−0.5057 (0.0000)	0.8017 (0.0000)	0.6443 (0.0000)	0.9558 (0.0000)	0.9369 (0.0000)	1.000										
cce	−0.3317 (0.0000)	−0.1806 (0.0000)	0.1620 (0.0000)	0.3390 (0.0000)	0.4169 (0.0000)	−0.7103 (0.0000)	0.8854 (0.0000)	0.6302 (0.0000)	0.9195 (0.0000)	0.9246 (0.0000)	0.9227 (0.0000)	1.000									
N_Analysts	0.2370 (0.0000)	0.0638 (0.0034)	−0.0824 (0.0002)	−0.3205 (0.0000)	−0.0040 (0.8546)	0.5020 (0.0000)	−0.1233 (0.0000)	−0.0230 (0.2909)	0.0020 (0.9252)	−0.0348 (0.1100)	−0.0147 (0.5005)	−0.1937 (0.0000)	1.000								
EPS_variability	0.4666 (0.0000)	0.1811 (0.0000)	−0.2347 (0.0000)	−0.3166 (0.0000)	−0.2650 (0.0000)	0.7793 (0.0000)	−0.5346 (0.0000)	−0.1424 (0.0000)	−0.2769 (0.0000)	−0.3333 (0.0000)	−0.2306 (0.0000)	−0.5096 (0.0000)	0.4909 (0.0000)	1.000							
Leverage	−0.0044 (0.7884)	−0.0274 (0.0092)	0.1929 (0.0000)	0.0567 (0.0092)	−0.0534 (0.0141)	−0.0561 (0.0100)	−0.0168 (0.4418)	−0.1435 (0.0000)	−0.1300 (0.0000)	−0.1173 (0.0000)	−0.1247 (0.0000)	−0.0974 (0.0000)	−0.0991 (0.0000)	−0.2205 (0.0000)	1.000						
Earnings_variability	0.3807 (0.0000)	0.1925 (0.0000)	−0.0613 (0.0049)	−0.2189 (0.0000)	−0.3034 (0.0000)	0.6746 (0.0000)	−0.4766 (0.0000)	−0.1053 (0.0000)	−0.2652 (0.0000)	−0.3069 (0.0000)	−0.2163 (0.0000)	−0.4439 (0.0000)	0.4785 (0.0000)	0.8309 (0.0000)	−0.1543 (0.0000)	1.000					
Horizon	−0.0344 (0.0631)	0.0631 (0.0038)	−0.6253 (0.0000)	0.8124 (0.0000)	0.0431 (0.0476)	0.0028 (0.8838)	−0.0790 (0.0003)	−0.0547 (0.0120)	−0.0054 (0.8658)	0.0050 (0.8186)	−0.0054 (0.8043)	−0.0230 (0.2919)	−0.1030 (0.0000)	0.0325 (0.1353)	−0.1054 (0.0000)	−0.1304 (0.0000)	1.000				
ESG_E	0.2245 (0.0038)	0.0163 (0.4557)	0.2914 (0.0000)	−0.1601 (0.0000)	0.2229 (0.0000)	−0.1270 (0.0000)	0.1280 (0.0000)	0.1082 (0.0003)	0.0020 (0.9269)	−0.0074 (0.7357)	−0.0641 (0.0032)	0.0741 (0.0007)	−0.0182 (0.4047)	−0.2323 (0.0000)	−0.1449 (0.0000)	−0.0091 (0.6746)	−0.1788 (0.0000)	1.000			
ESG_G	−0.1713 (0.0000)	−0.0214 (0.3269)	0.3240 (0.0000)	0.1769 (0.0000)	0.2046 (0.0000)	−0.2253 (0.0000)	0.2395 (0.0000)	0.0950 (0.0128)	0.1826 (0.0000)	0.2077 (0.0000)	0.2249 (0.0000)	0.2439 (0.0000)	0.0126 (0.5628)	−0.2727 (0.0000)	0.0308 (0.1577)	−0.0888 (0.0000)	−0.3070 (0.0000)	0.3229 (0.0000)	1.000		
ESG_S	−0.2153 (0.0000)	0.0880 (0.0001)	0.2876 (0.0000)	−0.0398 (0.0674)	0.0997 (0.0276)	−0.1625 (0.0000)	0.1699 (0.0000)	0.0128 (0.5570)	−0.0883 (0.0000)	−0.0420 (0.0538)	−0.1201 (0.0000)	0.0607 (0.0053)	−0.1541 (0.0000)	−0.3817 (0.0000)	−0.0075 (0.7310)	−0.1746 (0.0000)	−0.1963 (0.0000)	0.6185 (0.0000)	0.4200 (0.0000)	1.000	
CSR	0.3953 (0.0000)	0.0054 (0.8050)	0.1933 (0.0000)	−0.1573 (0.0000)	−0.1986 (0.0000)	0.3838 (0.0000)	−0.3648 (0.0000)	−0.2388 (0.0000)	−0.2871 (0.0000)	−0.2443 (0.0000)	−0.2443 (0.0000)	−0.3594 (0.0000)	0.2482 (0.0000)	0.4422 (0.0000)	0.0454 (0.0373)	0.3925 (0.0000)	−0.2014 (0.0000)	−0.1330 (0.0000)	−0.1529 (0.0000)	−0.1762 (0.0000)	1.000

	(1) ForecastError	(2) ForecastError	(3) ForecastError	(4) ForecastError
vae	0.001 (0.93)	−0.018** (0.03)	0.002 (0.81)	−0.004 (0.69)
pve	0.039*** (0.00)	0.038*** (0.00)	0.039*** (0.00)	0.041*** (0.00)
gee	−0.034*** (0.00)	−0.059*** (0.00)	−0.030*** (0.00)	−0.038*** (0.00)
rqe	−0.013*** (0.00)	−0.002 (0.71)	−0.015*** (0.01)	−0.011** (0.01)
rle	0.002 (0.77)	0.014* (0.09)	0.005 (0.54)	0.008 (0.33)
cce	0.007 (0.24)	0.017*** (0.00)	0.003 (0.66)	0.005 (0.46)
N_Analysts	0.010*** (0.00)	0.009*** (0.00)	0.009*** (0.00)	0.009*** (0.00)
EPS_variability	0.001 (0.26)	0.001 (0.21)	0.001 (0.48)	0.001 (0.64)
Leverage	−0.006 (0.15)	−0.002 (0.68)	−0.008** (0.04)	−0.007* (0.06)
Earnings_variability	0.002*** (0.00)	0.002*** (0.00)	0.002*** (0.00)	0.002*** (0.00)
ESG_E	−0.000*** (0.00)	−0.000*** (0.00)	−0.000*** (0.00)	−0.000*** (0.00)
ESG_G	0.000 (0.85)	0.000 (1.00)	0.000 (0.99)	−0.000 (0.98)
ESG_S	−0.000*** (0.00)	−0.000* (0.06)	−0.000*** (0.00)	−0.000*** (0.00)
CSR	0.010** (0.03)	0.005 (0.31)	0.010** (0.05)	0.009* (0.08)
IR	−0.006** (0.03)			
IR_1		−0.012*** (0.00)		
IR_2			−0.003 (0.22)	
IR_3				0.001 (0.82)
r^2	0.398	0.412	0.397	0.396
N	1252.000	1252.000	1252.000	1252.000
Note(s): *p < 0.10, **p < 0.05, ***p < 0.01				

Table 5.
Regression model –
analysts' forecast error
(*ForecastError*)

4.2.2 Forecast dispersion. Table 6 shows the results from the estimation for the model specification measuring the dispersion of analysts' forecasts (*ForecastDispersion*).

The coefficients on *IR* are negative and statistically significant in models 1 and 4. According to Lang and Lundholm (1996), this result suggests that analysts differ primarily in their private information and, as the disclosures become more precise, their forecasts become less dispersed. Thus, we suggest that IR enriches the financial analysts' set of information, which is associated with a greater consensus among their forecasts. Therefore, this result supports H2a.

Further, the systematic differences in the association between the forecast dispersion and the IR disclosure are confirmed across the three clusters, indicating that the relationship between the IR release and the forecast dispersion is moderated by belonging to different institutional settings.

Consistently with the differences detected by Leuz *et al.* (2003) across the three clusters, we find a clear distinction between the first cluster and the other two clusters. Model (2) shows that for companies located in cluster 1, those choosing to voluntarily disclose IR are associated with a greater dispersion than companies that do not release IR (*IR_1*: 0.017; *p*-value: < 0.00). This result suggests that the voluntary release of IR reduces the consensus among financial analysts in economies with large stock markets, dispersed ownership, strong investor rights and strong legal enforcement. According to Lang and Lundholm (1996), a potential explanation is that analysts have different forecasting models and hence draw different conclusions from the same observed disclosures, which leads to more dispersion among their forecasts.

Differently, model (3) shows that in companies located in cluster 2, the disclosure of IR is not significantly associated with the forecast dispersion. Model (4) shows that in companies located in cluster 3, the disclosure of IR is negatively and significantly associated with the forecast dispersion (*IR_3*: −0.156; *p*-value: < 0.00). This result indicates that the voluntary release of IR increases the consensus among financial analysts in economies with weak legal enforcement. Overall, the results confirm H2b.

	(1) ForecastDispersion	(2) ForecastDispersion	(3) ForecastDispersion	(4) ForecastDispersion
vae	-0.205*** (0.00)	-0.226*** (0.00)	-0.199*** (0.00)	-0.138*** (0.00)
pve	0.033 (0.16)	0.044* (0.07)	0.034 (0.15)	0.042* (0.07)
gee	-0.327*** (0.00)	-0.311*** (0.00)	-0.249*** (0.00)	-0.303*** (0.00)
rqe	0.121*** (0.00)	0.119*** (0.00)	0.087** (0.02)	0.161*** (0.00)
rle	-0.116** (0.02)	-0.081 (0.11)	-0.116** (0.03)	-0.143*** (0.01)
cce	0.273*** (0.00)	0.232*** (0.00)	0.243*** (0.00)	0.187*** (0.00)
N_Analysts	0.028** (0.02)	0.034*** (0.00)	0.033*** (0.01)	0.030** (0.01)
EPS_variability	0.031*** (0.00)	0.031*** (0.00)	0.031*** (0.00)	0.030*** (0.00)
Leverage	0.094*** (0.00)	0.066** (0.02)	0.078*** (0.01)	0.085*** (0.00)
Earnings_variability	0.004 (0.24)	0.002 (0.62)	0.003 (0.40)	0.004 (0.23)
ESG_E	-0.001 (0.16)	-0.001* (0.06)	-0.000 (0.22)	-0.001** (0.02)
ESG_G	0.000 (0.76)	-0.001 (0.38)	-0.000 (0.87)	-0.000 (0.60)
ESG_S	0.003*** (0.00)	0.003*** (0.00)	0.003*** (0.00)	0.003*** (0.00)
CSR	-0.108*** (0.00)	-0.145*** (0.00)	-0.142*** (0.00)	-0.042 (0.16)
IR	-0.045*** (0.00)			
IR_1		0.017*** (0.00)		
IR_2			-0.046 (0.32)	
IR_3				-0.156*** (0.00)
r^2	0.136	0.131	0.135	0.144
N	2108.000	2108.000	2108.000	2108.000

Note(s): *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

On controlling for the issuance of the standalone CSR report, we observe that the CSR report is significantly and negatively associated with the forecast dispersion in models 1, 2 and 3, indicating that in general, the CSR report is *per se* associated with more consensus among analysts; the only exception is model 4. Specifically, such association is not significant in model 4 (*CSR*: 0.042; *p*-value: 0.16) when interacting the IR release with the companies belonging to cluster 3. Since in cluster 3, the IR turns out to be significantly associated with the forecast consensus, whereas this association is not significant for the issuance of the CSR report, we can infer that the IR release in countries with weak institutional enforcement is potentially able to substitute the disclosure included in the CSR report in driving the analysts' forecasts towards consensus.

4.3 Robustness analysis

We also conduct several robustness tests. The regressions are estimated using only observations of those companies that are located in one of the three clusters. All the companies that are selected in the base sample or in the control sample according to the sample selection criteria, but that are not located in at least one of the three clusters defined by Leuz *et al.* (2003), are excluded.

Table 7 reports the results of the robustness analysis performed on the model specification that captures the forecast accuracy. All the results are robust. In particular, the negative association between the choice to disclose the IR voluntarily and the forecast error is confirmed, as well as the systematic differences among the clusters.

Table 8 reports the results of the robustness analysis performed on the model specification capturing the association between the dispersion of analysts' forecasts and IR voluntary disclosure. The main results are robust. Specifically, in cluster 1, companies voluntarily releasing IR are positively associated with the dispersion among analysts' forecasts (*IR_1*: 0.051; *p*-value: < 0.00). According to Lang and Lundholm (1996), the positive association

	(1) ForecastError	(2) ForecastError	(3) ForecastError	(4) ForecastError
vae	0.025*** (0.00)	−0.003 (0.65)	0.006 (0.52)	0.018** (0.01)
pve	0.011*** (0.00)	0.015*** (0.00)	0.016*** (0.00)	0.014*** (0.00)
gee	−0.003 (0.55)	−0.027*** (0.00)	−0.021*** (0.00)	−0.008 (0.11)
rqe	−0.001 (0.83)	0.009*** (0.01)	0.009** (0.03)	0.004 (0.32)
rle	0.010 (0.11)	0.018*** (0.00)	0.019*** (0.00)	0.016** (0.02)
cce	−0.027*** (0.00)	−0.016*** (0.00)	−0.027*** (0.00)	−0.031*** (0.00)
N_Analysts	0.005*** (0.00)	0.004*** (0.00)	0.005*** (0.00)	0.005*** (0.00)
EPS_variability	0.005*** (0.00)	0.004*** (0.00)	0.004*** (0.00)	0.005*** (0.00)
Leverage	−0.007** (0.01)	−0.004 (0.12)	−0.008*** (0.00)	−0.009*** (0.00)
Earnings_variability	0.001* (0.07)	0.001** (0.02)	0.001*** (0.01)	0.001** (0.01)
ESG_E	−0.000*** (0.01)	−0.000*** (0.00)	−0.000*** (0.00)	−0.000*** (0.01)
ESG_G	−0.000 (0.16)	−0.000 (0.20)	−0.000* (0.09)	−0.000* (0.10)
ESG_S	−0.000* (0.09)	−0.000 (0.18)	−0.000*** (0.00)	−0.000*** (0.00)
CSR	−0.011** (0.03)	−0.014*** (0.01)	−0.017*** (0.00)	−0.016*** (0.01)
IR	−0.008*** (0.00)			
IR_1		−0.009*** (0.00)		
IR_2			0.004** (0.02)	
IR_3				−0.001 (0.91)
r^2	0.546	0.552	0.541	0.539
N	1204.000	1204.000	1204.000	1204.000

Note(s): *p < 0.10, **p < 0.05, ***p < 0.01

Table 7.
Robustness analysis: sample limited to countries located in the clusters – analysts' forecast error (*ForecastError*)

	(1) *ForecastDispersion*	(2) *ForecastDispersion*	(3) *ForecastDispersion*	(4) *ForecastDispersion*
vae	−0.123* (0.06)	−0.063 (0.36)	−0.027 (0.70)	−0.102 (0.12)
pve	−0.026 (0.33)	−0.027 (0.30)	−0.041 (0.12)	0.013 (0.67)
gee	−0.225*** (0.00)	−0.122** (0.05)	−0.098 (0.10)	−0.265*** (0.00)
rqe	0.164*** (0.00)	0.141*** (0.00)	0.106*** (0.01)	0.180*** (0.00)
rle	−0.064 (0.26)	−0.052 (0.35)	−0.073 (0.19)	−0.148** (0.03)
cce	0.149*** (0.00)	0.060 (0.21)	0.101** (0.02)	0.132*** (0.00)
N_Analysts	0.022* (0.07)	0.026** (0.03)	0.022* (0.06)	0.026** (0.03)
EPS_variability	0.034*** (0.00)	0.033*** (0.00)	0.034*** (0.00)	0.029*** (0.00)
Leverage	0.066** (0.03)	0.029 (0.33)	0.056* (0.05)	0.066** (0.02)
Earnings_variability	0.003 (0.36)	0.002 (0.56)	0.005 (0.20)	0.002 (0.50)
ESG_E	−0.001 (0.16)	−0.001 (0.12)	−0.000 (0.50)	−0.001** (0.03)
ESG_G	−0.000 (0.96)	−0.001 (0.29)	0.000 (0.86)	−0.000 (0.61)
ESG_S	0.003*** (0.00)	0.003*** (0.00)	0.003*** (0.00)	0.003*** (0.00)
CSR	−0.173*** (0.00)	−0.192*** (0.00)	−0.190*** (0.00)	−0.031 (0.64)
IR	−0.023* (0.06)			
IR_1		0.051*** (0.00)		
IR_2			−0.062*** (0.00)	
IR_3				−0.177*** (0.01)
r^2	0.125	0.128	0.132	0.127
N	2006.000	2006.000	2006.000	2006.000

Note(s): *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

Table 8.
Robustness analysis:
sample limited to
countries located in the
clusters – dispersion of
analysts' forecast
(*ForecastDispersion*)

between disclosure and the dispersion of analysts' forecasts is attributable to the analysts' use of different forecasting models, which leads them to draw different conclusions from the same observed disclosures; further, as the disclosures become more precise, their forecasts become more dispersed.

Further, the magnitude of the systematic differences between the three clusters is reinforced. In particular, the negative and significant association between the IR release and the forecast dispersion emerges also in cluster 2 (*IR_2*: −0.062; *p*-value: < 0.00). These results support the argument that the voluntary release of the IR affects the forecast dispersion in an opposite way in cluster 1 with respect to clusters 2 and 3.

5. Discussion

Only a few studies have provided empirical evidence of the usefulness of IR for investors and other financial stakeholders in contexts other than the mandatory framework in South Africa; moreover, a recent study has ignored this topic (Wahl *et al.*, 2020). Further, only some of these studies have considered the variety of country characteristics. Girella *et al.* (2019) identified the role of some countries' institutional factors as determinants of the voluntary choice of firms to release their IR. They found that firms are more likely to implement IR if they are located in countries that have a higher level of corruption perception and a better risk rating and are perceived to be more collectivist and feminist, whereas they found that the legal system was not significant. Flores *et al.* (2019) investigated the usefulness of IR by comparing two different geographical areas and found that IR improves the accuracy of financial analysts' predictions to a larger extent in North America than in Europe. However, the magnitude of the usefulness that IR can offer to the capital market in diverse institutional settings is still under-researched.

Thus, this study contributes to filling this research gap by examining the usefulness of the IR release for financial stakeholders in a voluntary context and highlights the moderator effect of the country-level institutional factors. By accounting for the differences across the institutional settings of countries, we are able to disentangle contexts where the IR is informative for financial analysts and where it is not. We find that IR informativeness is not uniform within the voluntary context and nor is its impact on the financial analysts' forecast properties: accuracy and dispersion.

With reference to analysts' forecast accuracy, the IR release is associated with accurate predictions for countries with strong institutional enforcement, unlike for countries with weak institutional enforcement. According to the voluntary disclosure theory (Healy and Palepu, 2001) and the related research on analysts' forecasts in different country-specific institutional settings (Lang and Lundholm, 1996; Dhaliwal *et al.*, 2012; Mittelbach-Hörmanseder *et al.*, 2021), a potential explanation is that the strong institutional setting puts pressure on companies to prepare high-quality corporate disclosures, including IR, which are therefore more informative and, thus, more useful for analysts in predicting future performance.

Conversely, the IR prepared by companies located in countries with weak institutional enforcement is not informative for financial analysts to predict future performance. Therefore, we can infer that the institutional enforcement moderates the relationship between the voluntary IR release and the accuracy of the financial analysts' predictions. This explanation suggests that the voluntary approach towards IR is not optimal everywhere in conveying the IR potential. Therefore, regulatory measures are necessary to either transit towards a mandatory approach or to embrace policy initiatives to strengthen the institutional context.

With reference to analysts' forecast dispersion, we show that the voluntary release of IR is associated with a greater consensus among financial analysts. This result, which is in line with the literature (Lang and Lundholm, 1996), indicates that the information conveyed by IR

constitutes a more reliable source of information than the private information that financial analysts may gather elsewhere. The association between the IR release and the convergence in the financial analysts' opinions reveals that they rely on the additional information disclosed by the IR.

Overall, the moderating effect of the institutional setting is even more pronounced when considering the dispersion of forecasts rather than their accuracy. Indeed, a clear distinction is observable between cluster 1 and cluster 3 that show opposite results, whereas for cluster 2, that is "in-between cluster 1 and 3" (Leuz *et al.*, 2003, p. 519) no significant association is found. Specifically, while in countries with weak institutional enforcement the IR release is associated with a greater consensus among analysts' forecasts, in countries with strong institutional enforcement the release of IR is associated with a greater dispersion among forecasts.

These results show that the IR release can mitigate information asymmetry by providing additional corporate information to make market participants' forecasts converge, but only when the institutional enforcement is weak. Otherwise, in countries where institutional factors already mitigate information asymmetries, the IR release is associated with divergence in the opinions of financial analysts. This finding indicates that they might emphasise differently the information disclosed in the IR and, ultimately, they may offer dissimilar interpretations. Alternative arguments have been given for enforcement increasing the dispersion of analysts' forecasts. For example, Cuijpers and Buijink (2005) contend that stronger enforcement, all else being equal, may reduce opportunities for income smoothing in financial reporting, leading to more disagreement among analysts.

Given that the literature shows that the issuance of standalone CSR reports plays a role in reducing analyst forecast error (Dhaliwal *et al.*, 2012), we controlled for the release of a standalone CSR report. We find that, whereas the standalone CSR report is associated negatively with the forecast accuracy, the IR release is significantly associated with the forecast accuracy, indicating the IR incrementally increases informativeness compared with the standalone CSR report. The same control uncovers a different consideration with reference to the forecast dispersion. Although, in general, the release of a standalone CSR report is positively associated with forecast consensus, this relationship is not significant in ascertaining the informativeness of the IR release under weak institutional enforcement. Despite a recent survey published by The Alliance for Corporate Transparency (2020) underlining the wide adoption of standalone reports to comply with the Directive 2014/95/EU, this result suggests that in contexts where IR helps financial analysts in achieving forecast convergence, standalone CSR reports lack usefulness.

6. Conclusion
This study provides empirical evidence on the impact of IR release on analysts' behaviour in diverse institutional settings. Thus, it offers useful contributions to understand the possible effects of the regulation enforcement related to the EU proposal to revise the 2014 Directive on nonfinancial information, first presented on 21 April 2021. In Section 1 of this paper, we acknowledged that the revised Directive will affect at least two circumstances: (1) the mandatory nature of nonfinancial reporting – reporting will increase, given that it will extend to a larger number of companies. This number may reach 49,000 in Europe, compared with the current 11,600 (European Commission, 2011), of which 2,000 fell within the minimum criteria set by the legislation, whereas the others have been subjected to this obligation because of the national transposition measures (Assonime, 2021); (2) the introduction of new reporting standards – these will be proposed by EFRAG and will no longer be based on a negative concept (nonfinancial information), but on a positive one (sustainability information). The new standards aim to bring about strong homogenisation, unlike in the

current situation in which the plurality of reporting methods often makes it difficult to compare the sustainability (or nonfinancial) reports prepared by companies (La Torre *et al.*, 2018).

In this scenario, the expected expansion of mandatory reporting will not reduce the space for the voluntary drafting of nonfinancial or sustainability reports. Exactly the opposite will occur, if we consider the managers' obligation to disclose material information along with the incentives for voluntary disclosure (Heitzman *et al.*, 2010). There are two reasons for this exactly opposite scenario. First, the stronger institutionalisation of sustainability reporting (Farooq and de Villiers, 2019) will make these reports more important even for those who are not obliged to report. Examples include companies in supply chains that must comply with some requirements of the final chain enterprises and companies who do not wish to be outdone by competitors in revealing their efforts towards sustainability. In addition, the social system will exert pressure on all companies to communicate how they are sustainable.

Second, even the companies that will be obliged to report according to the new European standards, and in particular, listed companies, will likely have to pay attention to (or to even comply with) the extra information needs caused by the current evolution of the reporting standards (Lai and Stacchezzini, 2021) because of two factors. The first is the next issue of a reporting standard by the International Sustainability Standards Board established by the IFRS Foundation. The second is the prominent weight that the merger of SASB with the IIRC – and the consequent creation of the new Value Reporting Foundation – will assign to this reporting, and also in order to communicate more effectively how a business produces long-term value. In fact, it is well known that the IR fulfils this function, according to the original intentions of the IIRC, currently taken up and amplified by the Value Reporting Foundation.

It follows that the opportunity for voluntary reporting will expand even beyond the mandatory reporting, which will impose a heavy burden in terms of the new documents to be provided. In this regard, IR can be a useful tool to solve the problems deriving from the expansion of disclosure requirements, thus helping to prevent "information silos" (Stacchezzini *et al.*, 2016) and providing a clear, concise representation of how the organisation creates value. Therefore, the IR perspective has received the attention of financial stakeholders, who are the primary recipients of IR (IIRC, 2013; Higgins *et al.*, 2014; Flower, 2015; Rowbottom and Locke, 2016; Lai *et al.*, 2017, 2018).

The empirical evidence revealed through this study contributes to the literature on IR "impacts" (Rinaldi *et al.*, 2018) and can be of significant help in understanding the likely role of voluntary IR across different institutional settings, for companies that pay attention to value in regulated markets. In fact, the study demonstrates that financial analysts rely on IR to predict earnings per share, in particular, where the institutional enforcement is strong. In these contexts, the accuracy of analysts' forecasts for IR adopters is better than it is for non-IR adopters. This result contradicts prior studies that have posed some doubts on the usefulness of IR even for financial stakeholders (Humphrey *et al.*, 2017; Slack and Tsalavoutas, 2018).

This conclusion assumes greater significance in the future European scenario where – because of the revised Directive to be issued soon – an improvement in the institutional enforcement is expected. Therefore, this improvement is likely to have positive effects not only on the determinants of the disclosure of sustainability (Ferrer *et al.*, 2020; Mittelbach-Hörmanseder *et al.*, 2021), but also on its effect for the capital market by enhancing the predictive capabilities of financial analysts in forecasting IR adopters' performance. Moreover, in this study, by pooling companies based on clusters that include countries with similar legal and institutional characteristics (Leuz *et al.*, 2003), we disentangled the magnitude of informativeness of the IR release across countries, thus offering a nuanced specification of the IR impact on investors' behaviour in various institutional settings. We also provided evidence that the moderating role of the institutional setting differs for accuracy rather than for dispersion. A strong institutional setting boosts the IR release

usefulness in terms of accuracy, but it creates noise in the consensus among financial analysts. Additional nonfinancial information in contexts where there is awareness about the informativeness of such pieces of information may result in dispersion in the opinions of financial analysts, which is possibly due to their use of different forecasting models.

In line with the literature (Lang and Lundholm, 1996), the results relating to dispersion are not concerning, because in the context we investigated, they implicitly demonstrate that voluntary IR does not mean boilerplate reporting, but allows financial analysts to capture company features, to the point of making analysts grasp aspects that would not be appreciated with traditional information.

Unlike the studies that did not find that the voluntary IR release has a significant effect on the accuracy of earnings forecasts by analysts (Wahl et al., 2020), we understand that the informativeness of the IR release for the capital market emerges on accounting for the differences in institutional settings. Further, most studies on the IR usefulness for the capital market focus on forecast accuracy (Obeng et al., 2021), whereas we provide evidence of its informativeness in terms of both the accuracy and the dispersion of financial analysts' predictions.

This study may be useful to scholars for it contributes to the literature on voluntary disclosure and analyst forecasts by showing that the informativeness of voluntary nonfinancial disclosure claimed by the voluntary disclosure theory is extensible even to the report that complements nonfinancial disclosure with financial disclosure (i.e. the IR). Similarly to standalone CSR reports (Dhaliwal et al., 2012), the usefulness of IR for analysts' forecast accuracy varies according to the institutional setting, with it being greater under stronger institutional enforcement.

In addition, this study has implications for the CEOs, CFOs and (reporting) managers of companies. These findings would make them understand more effectively the opportunity offered by a voluntary IR release, even if they must provide a mandatory disclosure related to a change in the regulation. Specifically, where the institutional enforcement is strong, managers may know that the IR is considered by financial analysts. Therefore, the IR report is a suitable way to convey their nonfinancial performance and prospects to the capital market. Likewise, professionals and consultants may find it interesting that the mandatory release of a sustainability report – according to the new expected EU rules and standards – can be boosted by a voluntary IR. Thus they would be able to offer information relevant to financial analysts as well since this could be the future of reporting (Lai and Stacchezzini, 2021).

Further, this study has implications for policymakers, standard setters and regulators as well, who have the responsibility to drive the harmonisation of nonfinancial disclosure. While we cannot offer any comment about the impact of mandatory IR release, the evidence we offer should encourage or – at least – not discourage voluntary IR releases when the institutional enforcement improves and gains strength. Regulators are called to embrace policy initiatives aimed to strengthen the institutional environment in weak institutional settings.

Regardless, this study has some limitations. We built our base sample on reports published in the IR Examples Database. Thus, we did not consider companies that prepare IRs that are not included in this Database. However, even given the possibility of self-selection bias owing to the absence of other searchable databases, other studies that included in their samples a voluntarily released IR have adopted this approach (Kim et al., 2017; Melloni et al., 2017; Kilic and Kuzey, 2018; Flores et al., 2019; Girella et al., 2019).

Second, we acknowledge the endogenous relationship between the voluntary adoption of IR and the benefits for capital markets. That is, companies that choose to release an integrated report are likely to expect the benefits to exceed their cost of disclosing private information. Nonetheless, the use of standard errors clustered by firm adequately addresses correlations across time and/or firms' issues (Petersen, 2009). Further, we ran several

robustness tests and, although these tests individually cannot rule out endogeneity, in combination, these support our view that our results are not biased by self-selection, omitted variables or reverse causality. Last, we were not able to control for report quality. However, other studies that have investigated the effects of both IR release and IR quality on analyst forecast accuracy have found results similar to those of our study (Kim *et al.*, 2017; Zhou *et al.*, 2017).

These limitations could be mitigated by enlarging the base sample to IRs not published on the IR Examples Database and by controlling for report quality. Should voluntary IR release increase, future research could also consider a wider analysis period to investigate whether the IR release is able to better capture the analysts' attention. In addition, the EU's Directive revision proposal opens up space for future investigations on how digital technology and data analytics may affect corporate reporting processes and enhance accessibility and transparency for stakeholders (Beattie, 2000; Lombardi and Secundo, 2020; Rowbottom *et al.*, 2021; Troshani and Rowbottom, 2021).

Note

1. Although we cannot exclude that these companies provide nonfinancial information in their annual report, omitting the indication that the disclosure is compliant with IIRC's framework indicates that the disclosure does not meet the fundamental features connotating an integrated report prepared in accordance with this framework.

References

Alliance for Corporate Transparency (2020), "2020 research report", available at: https://www.allianceforcorporatetransparency.org/assets/Research_Report_EUKI_2020.pdf (accessed 2 July 2021).

Arce, M. and Mora, A. (2002), "Empirical evidence of the effect of European accounting differences on the stock market valuation of earnings and book value", *European Accounting Review*, Vol. 11 No. 3, pp. 573-599.

Assonime (2021), "Direttiva sulle informazioni non finanziarie: presentata la proposta di modifica", *News Europa*, available at: http://www.assonime.it/attivita-editoriale/news/Pagine/Newseuropa28042021.aspx (accessed 14 June 2021).

Ball, R., Kothari, S.P. and Robin, A. (2000), "The effect of international institutional factors on properties of accounting earnings", *Journal of Accounting and Economics*, Vol. 29 No. 1, pp. 1-51.

Barth, M.E., Cahan, S.F., Chen, L. and Venter, E.R. (2017), "The economic consequences associated with integrated report quality: capital market and real effects", *Accounting, Organizations and Society*, Vol. 62, pp. 43-64.

Beattie, V. (2000), "The future of corporate reporting: a review article", *Irish Accounting Review*, Vol. 7 No. 1, pp. 1-36.

Bernardi, C. and Stark, A.W. (2018), "Environmental, social and governance disclosure, integrated reporting, and the accuracy of analyst forecasts", *The British Accounting Review*, Vol. 50 No. 1, pp. 16-31.

Bochenek, M. (2020), "Analysis of the integrated reporting use in EU countries", *Problems and Perspectives in Management*, Vol. 18 No. 3, pp. 106-117.

Brown, J. and Dillard, J. (2014), "Integrated reporting: on the need for broadening out and opening up", *Accounting, Auditing and Accountability Journal*, Vol. 27 No. 7, pp. 1120-1156.

Caglio, A., Melloni, G. and Perego, P. (2020), "Informational content and assurance of textual disclosures: evidence on integrated reporting", *European Accounting Review*, Vol. 29 No. 1, pp. 55-83.

Cho, C.H. (2020), "CSR accounting 'new wave' researchers: 'step up to the plate' . . . or 'stay out of the game'", *Journal of Accounting and Management Information Systems*, Vol. 19 No. 4, pp. 626-650.

Cho, C.H., Michelon, G. and Patten, D.M. (2012), "Enhancement and obfuscation through the use of graphs in sustainability reports", *Sustainability Accounting, Management and Policy Journal*, Vol. 3 No. 1, pp. 74-88.

Christensen, H.B., Hail, L. and Leuz, C. (2013), "Mandatory IFRS reporting and changes in enforcement", *Journal of Accounting and Economics*, Vol. 56 Nos 2-3, pp. 147-177.

Cordazzo, M., Bini, L. and Marzo, G. (2020), "Does the EU directive on non-financial information influence the value relevance of ESG disclosure? Italian evidence", *Business Strategy and the Environment*, Vol. 29 No. 8, pp. 3470-3483.

Cuijpers, R. and Buijink, W. (2005), "Voluntary adoption of non-local GAAP in the European Union: a study of determinants and consequences", *European Accounting Review*, Vol. 14 No. 3, pp. 487-524.

De Villiers, C., Hsiao, P.C.K. and Maroun, W. (Eds), (2020), *The Routledge Handbook of Integrated Reporting*, Routledge, New York, NY.

De Villiers, C. and Sharma, U. (2020), "A critical reflection on the future of financial, intellectual capital, sustainability and integrated reporting", *Critical Perspectives on Accounting*, Vol. 70, pp. 1-13.

DeFond, M.L. and Hung, M. (2004), "Investor protection and corporate governance: evidence from worldwide CEO turnover", *Journal of Accounting Research*, Vol. 42 No. 2, pp. 269-312.

Dhaliwal, D.S., Li, O.Z., Tsang, A. and Yang, Y.G. (2011), "Voluntary nonfinancial disclosure and the cost of equity capital: the initiation of corporate social responsibility reporting", *The Accounting Review*, Vol. 86 No. 1, pp. 59-100.

Dhaliwal, D.S., Radhakrishnan, S., Tsang, A. and Yang, Y.G. (2012), "Nonfinancial disclosure and analyst forecast accuracy: international evidence on corporate social responsibility disclosure", *The Accounting Review*, Vol. 87 No. 3, pp. 723-759.

Djankov, S., Glaeser, E., La Porta, R., Lopez-de-Silanes, F. and Shleifer, A. (2003), "The new comparative economics", *Journal of Comparative Economics*, Vol. 31 No. 4, pp. 595-619.

European Commission (2011), *Proposal for a Directive of the European Parliament and of the Council Amending Directive 2013/34/EU*, Directive 2004/109/EC, Directive 2006/43/EC and Regulation (EU) No 537/2014, as regards corporate sustainability reporting, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021PC0189&from=EN (accessed 14 June 2021).

European Commission (2020), *Consultation Document – Public Consultation on the Review of the Non-financial Reporting Directive*, June, available at: https://ec.europa.eu/info/sites/default/files/business_economy_euro/company_reporting_and_auditing/documents/2020-non-financial-reporting-directive-consultation-document_en.pdf (accessed 14 June 2021).

Farooq, M.B. and de Villiers, C. (2019), "Understanding how managers institutionalise sustainability reporting: evidence from Australia and New Zealand", *Accounting, Accountability and Auditing Journal*, Vol. 32 No. 5, pp. 1240-1269.

Ferrer, E., López-Arceiz, F.J. and del Rio, C. (2020), "Sustainability disclosure and financial analysts' accuracy: the European case", *Business Strategy and the Environment*, Vol. 29 No. 8, pp. 2939-2952.

Flores, E., Fasan, M., Mendes-da-Silva, W. and Sampaio, J.O. (2019), "Integrated reporting and capital markets in an international setting: the role of financial analysts", *Business Strategy and the Environment*, Vol. 28 No. 7, pp. 1465-1480.

Florio, C., Gotti, G. and Stacchezzini, R. (2021), "New challenges in reporting on corporate governance", *Journal of Management and Governance*, Vol. 25 No. 1, pp. 1-5.

Flower, J. (2015), "The international integrated reporting council: a story of failure", *Critical Perspectives on Accounting*, Vol. 27, pp. 1-17.

Frías-Aceituno, J.V., Rodríguez-Ariza, L. and Garcia-Sánchez, I.M. (2014), "Explanatory factors of integrated sustainability and financial reporting", *Business Strategy and the Environment*, Vol. 23 No. 1, pp. 56-72.

García-Sánchez, I.M., Martínez-Ferrero, J. and Garcia-Benau, M.A. (2019), "Integrated reporting: the mediating role of the board of directors and investor protection on managerial discretion in

munificent environments", *Corporate Social Responsibility and Environmental Management*, Vol. 26 No. 1, pp. 29-45.

Girella, L., Rossi, P. and Zambon, S. (2019), "Exploring the firm and country determinants of the voluntary adoption of integrated reporting", *Business Strategy and the Environment*, Vol. 28 No. 7, pp. 1323-1340.

Healy, P.M. and Palepu, K.G. (2001), "Information asymmetry, corporate disclosure, and the capital markets: a review of the empirical disclosure literature", *Journal of Accounting and Economics*, Vol. 31 Nos 1-3, pp. 405-440.

Heitzman, S., Wasley, C. and Zimmerman, J. (2010), "The joint effects of materiality thresholds and voluntary disclosure incentives on firms' disclosure decisions", *Journal of Accounting and Economics*, Vol. 49 Nos 1-2, pp. 109-132.

Higgins, C., Stubbs, W. and Love, T. (2014), "Walking the talk(s): organisational narratives of integrated reporting", *Accounting, Auditing and Accountability Journal*, Vol. 17 No. 7, pp. 1090-1119.

Hope, O.K. (2003), "Disclosure practices, enforcement of accounting standards, and analysts' forecast accuracy: an international study", *Journal of Accounting Research*, Vol. 41 No. 2, pp. 235-272.

Hummel, K. and Schlick, C. (2016), "The relationship between sustainability performance and sustainability disclosure – reconciling voluntary disclosure theory and legitimacy theory", *Journal of Accounting and Public Policy*, Vol. 35 No. 5, pp. 455-476.

Humphrey, C., O'Dwyer, B. and Unerman, J. (2017), "Re-theorizing the configuration of organizational fields: the IIRC and the pursuit of 'enlightened' corporate reporting", *Accounting and Business Research*, Vol. 47 No. 1, pp. 30-63.

International Integrated Reporting Council (IIRC) (2013), *International Integrated Reporting Framework*, available at: http://integratedreporting.org/wp-content/uploads/2015/03/13-12-08-THE-INTERNATIONAL-IR-FRAMEWORK-2-1.pdf (accessed 4 September 2019).

Jiao, T., Koning, M., Mertens, G. and Roosenboom, P. (2012), "Mandatory IFRS adoption and its impact on analysts' forecasts", *International Review of Financial Analysis*, Vol. 21, pp. 56-63.

Kaufmann, D., Kraay, A. and Mastruzzi, M. (2010), *The Worldwide Governance Indicators Project*, The World Bank, New York, available at: www.govindicators.org (accessed 25 June 2018).

Kim, S., Maas, K. and Perego, P. (2017), "The effect of publication, format and content of integrated reports on analysts' earnings forecasts", in Boubaker, S., Cummings, D. and Nguyen, D. (Eds), *The Handbook of Finance and Sustainability*, Edward Elgar, available at: https://ssrn.com/abstract=2902549 (accessed 25 May 2018).

Knachel, E. and Porter, B. (2021), *Do ESG Matters Affect Accounting and Financial Reporting Today?*. available at: https://www.iasplus.com/en/publications/us/heads-up/2021/issue-6 (accessed 14 June 2021).

Kılıç, M. and Kuzey, C. (2018), "Determinants of forward-looking disclosures in integrated reporting", *Managerial Auditing Journal*, Vol. 33 No. 1, pp. 115-144.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R. (1997), "Legal determinants of external finance", *The Journal of Finance*, Vol. 52 No. 3, pp. 1131-1150.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R.W. (1998), "Law and finance", *Journal of Political Economy*, Vol. 106 No. 6, pp. 1113-1155.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R. (2000), "Investor protection and corporate governance", *Journal of Financial Economics*, Vol. 58 Nos 1-2, pp. 3-27.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R. (2002), "Investor protection and corporate valuation", *The Journal of Finance*, Vol. 57 No. 3, pp. 1147-1170.

La Torre, M., Sabelfeld, S., Blomkvist, M., Tarquinio, L. and Dumay, J. (2018), "Harmonising non-financial reporting regulation in Europe: practical forces and projections for future research", *Meditari Accountancy Research*, Vol. 26 No. 4, pp. 598-621.

Lai, A., Melloni, G. and Stacchezzini, R. (2016), "Corporate sustainable development: is 'integrated reporting' a legitimation strategy?", *Business Strategy and the Environment*, Vol. 25 No. 3, pp. 165-177.

Lai, A., Melloni, G. and Stacchezzini, R. (2017), "What does materiality mean to integrated reporting preparers? An empirical exploration", *Meditari Accountancy Research*, Vol. 25 No. 4, pp. 533-552.

Lai, A., Melloni, G. and Stacchezzini, R. (2018), "Integrated reporting and narrative accountability: the role of preparers", *Accounting, Auditing and Accountability Journal*, Vol. 31 No. 5, pp. 1381-1405.

Lai, A. and Stacchezzini, R. (2021), "Organisational and professional challenges amid the evolution of sustainability reporting: a theoretical framework and an agenda for future research", *Meditari Accountancy Research*, Vol. 29 No. 3, pp. 405-429.

Lang, M. and Lundholm, R. (1993), "Cross-sectional determinants of analyst ratings of corporate disclosures", *Journal of Accounting Research*, Vol. 31 No. 2, pp. 246-271.

Lang, M.H., Lins, K.V. and Miller, D.P. (2003), "ADRs, analysts, and accuracy: does cross listing in the United States improve a firm's information environment and increase market value?", *Journal of Accounting Research*, Vol. 41 No. 2, pp. 317-345.

Lang, M.H. and Lundholm, R.J. (1996), "Corporate disclosure policy and analyst behavior", *The Accounting Review*, Vol. 71 No. 4, pp. 467-492.

Lehavy, R., Li, F. and Merkley, K. (2011), "The effect of annual report readability on analyst following and the properties of their earnings forecasts", *The Accounting Review*, Vol. 86 No. 3, pp. 1087-1115.

Leuz, C., Nanda, D. and Wysocki, P.D. (2003), "Earnings management and investor protection: an international comparison", *Journal of Financial Economics*, Vol. 69 No. 3, pp. 505-527.

Lombardi, R. and Secundo, G. (2020), "The digital transformation of corporate reporting – a systematic literature review and avenues for future research", *Meditari Accountancy Research*, Vol. 29 No. 5, pp. 1179-1208.

Melloni, G., Caglio, A. and Perego, P. (2017), "Saying more with less? Disclosure conciseness, completeness and balance in integrated reports", *Journal of Accounting and Public Policy*, Vol. 36 No. 3, pp. 220-238.

Mio, C., Fasan, M., Marcon, C. and Panfilo, S. (2020), "The predictive ability of legitimacy and agency theory after the implementation of the EU directive on non-financial information", *Corporate Social Responsibility and Environmental Management*, Vol. 27 No. 6, pp. 2465-2476.

Mittelbach-Hörmanseder, S., Hummel, K. and Rammerstorfer, M. (2021), "The information content of corporate social responsibility disclosure in Europe: an institutional perspective", *European Accounting Review*, Vol. 30 No. 2, pp. 309-348.

Nichols, D.C. and Wieland, M.M. (2009), "Do firms' nonfinancial disclosures enhance the value of analyst services?", available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_ id=1463005 (accessed 25 May 2018).

Obeng, V.A., Ahmed, K. and Cahan, S.F. (2021), "Integrated reporting and agency costs: international evidence from voluntary adopters", *European Accounting Review*, Vol. 30 No. 4, pp. 645-674.

Persakis, A. and Iatridis, G.E. (2015a), "Cost of capital, audit and earnings quality under financial crisis: a global empirical investigation", *Journal of International Financial Markets, Institutions and Money*, Vol. 38, pp. 3-24.

Persakis, A. and Iatridis, G.E. (2015b), "Earnings quality under financial crisis: a global empirical investigation", *Journal of Multinational Financial Management*, Vol. 30, pp. 1-35.

Petersen, M.A. (2009), "Estimating standard errors in finance panel data sets: comparing approaches", *The Review of Financial Studies*, Vol. 22 No. 1, pp. 435-480.

Rinaldi, L., Unerman, J. and de Villiers, C. (2018), "Evaluating the integrated reporting journey: insights, gaps and agendas for future research", *Accounting, Auditing and Accountability Journal*, Vol. 31 No. 5, pp. 1294-1318.

Rowbottom, N. and Locke, J. (2016), "The emergence of IR", *Accounting and Business Research*, Vol. 46, pp. 83-115.

Rowbottom, N., Locke, J. and Troshani, I. (2021), "When the tail wags the dog? Digitalisation and corporate reporting", *Accounting, Organizations and Society*, Vol. 92, 101226.

Schipper, K. (1991), "Analysts' forecasts", *Accounting Horizons*, Vol. 5 No. 4, pp. 105-121.

Shehata, N.F. (2014), "Theories and determinants of voluntary disclosure", *Accounting and Finance Research*, Vol. 3 No. 1, pp. 18-26.

Simnett, R., Vanstraelen, A. and Chua, W.F. (2009), "Assurance on sustainability reports: an international comparison", *The Accounting Review*, Vol. 84 No. 3, pp. 937-967.

Slack, R. and Tsalavoutas, I. (2018), "Integrated reporting decision usefulness: mainstream equity market views", *Accounting Forum*, Vol. 42 No. 2, pp. 184-198.

Stacchezzini, R., Melloni, G. and Lai, A. (2016), "Sustainability management and reporting: the role of integrated reporting for communicating corporate sustainability management", *Journal of Cleaner Production*, Vol. 136, No. Part A, pp. 102-110.

Thomson, I. (2015), "'But does sustainability need capitalism or an integrated report' a commentary on 'The International Integrated Reporting Council: a story of failure' by Flower, J.", *Critical Perspectives on Accounting*, Vol. 27, pp. 18-22.

Troshani, I. and Rowbottom, N. (2021), "Digital corporate reporting: research developments and implications", *Australian Accounting Review*. doi: 10.1111/auar.12334.

Van der Velden, R.K. and Wolbers, M. (2001), *The Integration of Young People into the Labour Market within the European Union: The Role of Institutional Settings*, ROA, Maastrich.

Vanstraelen, A., Zarzeski, M.T. and Robb, S.W. (2003), "Corporate nonfinancial disclosure practices and financial analyst forecast ability across three European countries", *Journal of International Financial Management and Accounting*, Vol. 14 No. 3, pp. 249-278.

Vaz, N., Fernandez-Feijoo, B. and Ruiz, S. (2016), "Integrated reporting: an international overview", *Business Ethics: A European Review*, Vol. 25 No. 4, pp. 577-591.

Venturelli, A., Pizzi, S., Caputo, F. and Principale, S. (2020), "The revision of nonfinancial reporting directive: a critical lens on the comparability principle", *Business Strategy and the Environment*, Vol. 29 No. 8, pp. 3584-3597.

Verrecchia, R.E. (1983), "Discretionary disclosure", *Journal of Accounting and Economics*, Vol. 5, pp. 365-380.

Wahl, A., Charifzadeh, M. and Diefenbach, F. (2020), "Voluntary adopters of integrated reporting–evidence on forecast accuracy and firm value", *Business Strategy and the Environment*, Vol. 29 No. 6, pp. 2542-2556.

Wang, R., Zhou, S. and Wang, T. (2020), "Corporate governance, integrated reporting and the use of credibility-enhancing mechanisms on integrated reports", *European Accounting Review*, Vol. 29 No. 4, pp. 631-663.

Zhou, S., Simnett, R. and Green, W. (2017), "Does integrated reporting matter to the capital market?", *Abacus*, Vol. 53 No. 1, pp. 94-132.

Corresponding author
Alessandro Lai can be contacted at: alessandro.lai@univr.it