Fakultät für Wirtschaftswissenschaften
Facoltà di Economia
Faculty of Economics and Management

BEMPS –
Bozen Economics & Management Paper Series

NO 42/ 2017

Opportunism in disclosing pro-forma indicators: rationale and contextual drivers

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Abstract: The paper examines the impact of the institutional context and the regulation on the disclosure of non-GAAP indicators (NGIs), with a focus on the adoption of NGIs for opportunistic purposes. We firstly discuss the concept of opportunism and the approaches to discover opportunistic behaviours in the adjustment process. Then, we define a new procedure in three steps to highlight opportunistic behaviours. Based on a sample of 120 international listed companies, from 23 countries included in the S&P Global Oil Index, we employ logistic panel regression models to test our hypotheses about the role of the institutional context in affecting opportunism. First results suggest that while strong institutional contexts (developed market, high-quality legal system, protection for minority shareholders, common law system) reduce the disclosure of NGIs, they increase opportunistic behaviours. Moreover, the introduction of a regulation on NGIs increases the general disclosure of adjusted measures, but it does not moderate the opportunistic use of NGIs. Our research contributes to the non-GAAP literature providing a practical approach for measuring opportunism in NGIs disclosure. At the same time, the results provide useful insights to regulators and standard setters about the role and the effectiveness of regulations on NGIs in different institutional contexts.

Keywords: non-GAAP financial measures, institutional factors, voluntary disclosure, opportunistic disclosure, informative disclosure, stock market regulation

Jel Codes: M40; M41; M48

1. INTRODUCTION

Corporate communication includes disclosure of both mandatory and voluntary information related to the overall performance of the company considering both financial and non-financial

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performance (i.e. social and environmental) and historical and forward looking data (Allegrini, 2003; Quagli, 2005). It is directed to a plethora of different users such as the shareholders, the employees, the customers and suppliers, the public authorities and other stakeholders (Di Stefano, 1990) with the aim to obtain consensus and to enhance the reputation of the company (Corvi, 2000) by showing behaviours and results coherent with the market expectation (Coda, 1991). Corporate communication, and in particular the voluntary financial information, plays a fundamental role in affecting the financial markets and the investors' decisions (Avallone, 2008; Chiappetta and Tofannelli, 1993; Quagli, 2001).

In the field of voluntary financial communication, Non-GAAP Indicators (NGIs) have generated a very prosperous context of research in last 15 years, since they are unconventional financial performance indicators typically adjusted for special items. Due to their high potential for altering the perception of the financial performance and to misleading less sophisticated investors NGIs have raised some concerns. Prior studies show that less experienced investors are more influenced by NGIs than by conventional GAAP measures (Fredrickson and Miller 2004; Allee et al. 2007; Bhattacharya et al. 2007; Elliot 2006; Entwistle et al. 2010; Zhang and Zheng, 2011; Black et al. 2012; Christensen et al. 2014). Moreover, non-GAAP disclosure has positive impacts on the volumes traded on the stock exchange markets (Gu and Chen 2004; Bhattacharya et al. 2007; Dilla et al. 2013).

International literature identifies two alternative grounds for such practice. The "informative reporting" approach hypothesizes that companies aim to disclose results more in line with those stably achievable by the core economic activity, consequently excluding the effects of non-recurring items (Bradshaw and Sloan 2002; Bhattacharya et al. 2003; Lougee and Marquardt 2004). On the other hand, the "opportunistic reporting" approach theorizes that the NGIs disclosure is aimed to seek an economic advantage by communicating "manipulated" results. This second approach prevails in literature (Chen 2010; Marques 2010; Jennings and Marques 2011; Doyle et al. 2013). Most of the international market regulators expressed a very critical and sceptical opinion about the use of non-GAAP disclosure, thus supporting the opportunistic motive. Stock market regulatory bodies and standard setters made numerous interventions in order to constrain this practice, with the final aim to protect investors (SEC 2003). On this point, numerous studies mainly based on US companies (Heflin and Hsu 2008; Black and Christensen 2009; Marques 2006, 2010; Epping and Wilder 2011; Zhang and Zheng 2011; Brown et al. 2012; Webber et al. 2013) show that at least initially the regulation mitigates the use of NGIs as for frequency, emphasis and magnitude of the adjustments. Regulation helps in reducing the misleading use of NGIs by introducing high transparency, accountability and completeness of information.

Most of the literature on NGIs focuses on incentives to disclose such measures with an opportunistic aim. Among others, stock based compensation plans for managers based on economic results (Bhattacharya et al., 2007; Isidro and Marques, 2013a; 2013b), weak corporate governance systems (Frankel et al., 2011; Jennings e Marques, 2011), the need to meet or beat specific earning benchmarks. On this point, only few studies analyse the institutional context as a driver for opportunistic non-GAAP disclosure. This is a relevant gap in the literature on NGIs, considering the well know role played by the institutional context in affecting accounting behaviours (level and quality of disclosure, value relevance of financial information, earnings quality, earnings management practices) (Doupnik 2008; Gaio 2010; Ball et al. 2003; Leuz et al. 2003; Houqe et al., 2012; Webb et al. 2008). Isidro and Marques (2015) recently took into consideration the role of institutional factors in the strategic use of NGIs. However, it is possible to consider EU countries' institutional factors as being quite homogeneous, at least if compared with countries of the rest of the world. Moreover, they do not take into consideration at the same time the role of the regulation in different institutional contexts.

Starting from these considerations, the purpose of this research is to verify whether and how the institutional context and particularly the regulation on the topic affect the propensity to disclose non-GAAP indicators in an opportunistic way. Specifically, we firstly estimate the impact of institutional contexts to the generic propensity of companies di disclose NGIs. Then, we focus on the role of such institutional context in constraint (or emphasize) an opportunistic disclosure of NGIs. According to prior studies (e.g. Jennings and Marques 2011) and consistently with the rationale of the main regulation on non-GAAP disclosure (e.g. SEC, 2003), we consider as opportunistic the NGIs when the adjustments increase the financial result and are based on a "recurring" motive. Moreover, we take into consideration the coherence in the adjustment process the companies implement from period to period, as suggested by Black and Christensen (2009). Our research is based on a sample of 120 international listed companies, from 23 countries around the world and included in the S&P Global Oil Index. We hand-collected data about the sets of non-GAAP indicators that companies disclose in their quarterly management reports for the period 2008-2012. We employ logistic panel regression models in order to assess the role of institutional context with regard to the level of market development, the typology and the quality of the legal system, the level of investor protection, le level of enforcement (Kaufmann et al., 2010; Djankow et al., 2008) and the existence of a specific regulation on non-GAAP disclosure, together with company-specific performance conditions as control variables.

First results show a very different role played by the institutional context if we consider the general disclosure of adjusted financial values or if we focus only the opportunistic use of NGIs. In the first case a strong institutional context (quality of the legal system, public and private enforcement, market development) reduces the adoption of NGIs, probably because managers want to avoid the risk to be perceived as opportunists by such a strong institutional environment. On the contrary, if we focus on NGIs with opportunistic aim, a strong institutional context (quality of the legal system, market development, common law) increases the use of opportunistic adjustments. Moreover, contrarily to previous studies (Kolev et al. 2008) in this context our results show that the introduction of a regulation on NGIs does not moderate the opportunistic use of NGIs.

Our research contributes to the literature on non-GAAP disclosure analysing the impact of institutional context on the opportunistic use of NGIs worldwide. At the same time, the results are policy relevant for stock market regulators, since the regulation on NGIs is not able to constrain the opportunistic use of NGIs, despite the discussion about this topic is at the core of the market regulators' agenda (IOSCO, 2014; ESMA, 2015).

The paper is organized as follows. In the second section we present the theoretical background based on the literature about NGIs and the potential role of institutional factors as well as the regulation in affecting accounting practices and NGIs disclosure. The third section describes the research hypothesis, the dependent and independent variables, the statistical models. Sample selection and data collection are described in the fourth section. In section five we discuss the results. The final section draws conclusions and implications and defines some potential routes for further research emerging from this study.

2. BACKGROUND AND LITERATURE REVIEW

2.1. NGIs and opportunistic theory

Since the early years of the twenty-first century, listed companies have usually presented "non-GAAP" performance indicators (also known as "pro-forma" or "alternative"). Since a conventional performance indicator is a financial measure made according to the audited financial statement and their local generally accepted accounting principles, a NGFM is a financial performance measure not directly derivable from the audited financial statements and comes from unconventional methods of calculation. Since the adjustments are nonstandardized, subject to higher discretion and ad-hoc built for each economic entity, NGIs give managers the opportunity to show business performance opportunistically.

Two opposite theories have been developed about the reasons leading to the adoption of NGIs. The so called "informative theory" (Choi et al. 2007) suggests that they can increase the value relevance and informativeness of reported earnings (Young 2014) by: a) enhancing the transparency of the reported value; b) supporting cross-sectional and longitudinal comparisons; c) increasing the usefulness of data for predictions and company valuations; d) providing more useful data for analysts and investors. On the contrary, the "opportunistic/strategic" theory (Walker and Louvari 2003) considers NGIs as tools used by managers to manipulate GAAP earnings in order to meet the benchmarks set by analysts and to mislead less expert investors. Substantial evidence supports both theories. The opportunistic theory is also supported by many studies showing that NGIs are usually higher than the corresponding GAAP measures and they are used to meet or exceed analysts' benchmarks (Isidro and Marques, 2013a, 2015; Marques 2006; Walker and Louvari 2003).

There are various drivers and business conditions playing a fundamental role in motivating an opportunistic use of non-GAAP performance indicators. In order to capture incentives/constraint to opportunistic NGIs disclosure, literature is usual to proxy the opportunistic aim of such measures according to specific adjustment practice.

First, most of literature identifies opportunism when companies define NGIs in order to meet or beat strategic earnings benchmarks such as consensus analysts' forecasts. As noted by Black and Christensen (2009, 301), even if this practice cannot be exhaustive as evidence that all companies whose NGIs exceed analysts' expectations do it for opportunistic reasons, companies that do it "tend to be grouped in portfolios where opportunistic motives are most likely to be present". According to this view, for instance, many studies (Heflin and Hsu 2008; Jennings and Marques 2011; Black and Christensen 2009) proxy the opportunism with companies reporting actual earnings meeting or exceeding the most recent consensus analyst forecast for the same quarter.

Second, other studies show that many companies use of NGIs to improve financial performance or to avoid loss for the period. As stated by Entwistle et al. (2006b, 44) companies disclosing NGIs to mislead investors "are more likely to disclose pro forma earnings that exceed GAAP earnings". Accordingly, it is widely shared that income-increasing non-GAAP disclosure are implemented as signal of opportunism (Epping and Wilder 2011; Walker and Louvari 2003). Doyle et al. (2013) focus their study on companies where NGIs is greater than GAAP earnings figure as signal of opportunistic NGIs disclosure. Black and Christensen (2009) considers companies as opportunistic when GAAP earnings is a loss while non-GAAP earnings is zero or positive.

Third, a massive body of literature consider as opportunistic those NGIs where the adjustments are mainly based on a "recurring" motive. According to Jennings and Marques (2011) it is most likely to find opportunism in non-GAAP figures when managers exclude recurring items. As stated by Black and Christensen (2009, 301) "the most likely place to find aggressive reporting is when managers exclude items that are generally believed to be recurring in nature". The analysis of the specific type of adjustments is widely used in prior empirical research for classifying NGIs as opportunistic or informative. Due to the informative purpose of NGIs, companies typically exclude that kind of expenses that are transitory or extraordinary (non-recurring), so that to show the core earnings of business activity. The practice to exclude expenses that are not defined *ex ante* as non-recurrent, such as depreciations, research and development, stock-based compensation, is associated with opportunistic aim (Black and Christensen 2009). Several studies (Isidro and Marques 2013a; Jennings and Marques 2011; Doyle et al. 2003; Frankel et al. 2011) based their empirical research considering the presence of non-recurring adjustments as proxy for opportunism in NGIs disclosure. Barth et al. (2012) measure opportunism through NGIs adjusted for stock-based compensation expenses, while others scholars considers research and development expense or other recurring items.

Fourth, literature is usual to associate opportunism with the emphasis in the disclosure of NGIs, especially in their earnings press releases. Disclosing a NGFM in the title of the press releases, for instance, suggests a strategic intention of companies to mislead investors. Accordingly, several studies introduce the emphasis condition as a proxy for opportunistic NGIs disclosure. As stated by Marques (2010, 120) "managers strategically position the non-GAAP metric first in the earnings press release when they have strong incentives to provide a positive a positive performance signal". Prominence and placement are measured often through a scale (Campbell and Lopez 2010; Marques 2010; Bowen et al. 2005).

Moreover, some transparency issues are associated with opportunistic aim of NGIs such as the lacking of an exhaustive reconciliation or a poor disclosure quality (Hitz 2010). Furthermore, the timing in disclosing NGIs is associated with opportunistic motives. On this point, Black and Christensen (2009) find that companies that disclose NGIs on a sporadic basis are more incline to follow strategic aim compared with those companies that adjust financial measures on a regular basis. Incoherence in the adjustment process would be an interesting proxy for measuring opportunism in NGIs disclosure.

Despite the aforementioned proxies for opportunistic NGIs, how to measure opportunism often is a result of multiple conditions. Fiechter (2013) suggests that companies disclosing "a non-GAAP measure exceeding the GAAP measure in the title of the press release without providing any reconciliation" would be driven by opportunistic reasons.

2.2. INSTITUTIONAL CONTEXT AND NGIs DISCLOSURE

International accounting literature is unanimous in considering that accounting practices and financial reporting outcomes are affected by the institutional and economic environment (Saudagaran and Meek 1997; Nobes 1998). Institutional context variables - such as the legal system (common law and civil law), the level of law enforcement, the protection for minority shareholders mechanisms, and the level of economic development – have been implemented in studies focused on specific accounting practices. Earnings management literature has widely highlighted institutional factors as conditions for a different earnings quality in different countries. Leuz et al. (2003) find earning management practices decrease in a context with high investor protection. According to Bhattacharya et al. (2003b), the earning opacity score, as a unique measures of earnings aggressiveness, loss avoidance and earnings smoothing, is negatively linked to the development of the stock market. Gaio and Raposo (2011) show that the quality of accounting information affects the market value of a company, particularly in countries with limited legal protection for investors. Riahi-Belkaoui and AlNajjar (2006), with a study on 34 countries, provide evidence of the relationship between earning opacity and rule of law, economic growth and level of corruption. Another massive stream of research investigates the effect of the institutional context on corporate disclosure practices. Many studies reveal that accounting disclosure is more relevant in countries with weak legal systems, because in that kind of environment the investors demand a higher level of information to reduce the risk of being deprived of part of their wealth (Durnev and Kim 2005). Accordingly, Webb et al. (2008) in their study on 643 companies in 30 countries, find that the relation between globalization and voluntary disclosure was conditioned by the legal environment. Elsayed and Hoque (2010) conduct a survey on emerging market firms showing an association between voluntary disclosure and some perceived international environmental factors. The institutional context affects several other financial reporting outcomes, such as the value relevance of accounting data (Cofee 2007; Hitz et al. 2012; Mahoney 2009), the accounting conservatism (Ball et al. 2000; Jayaraman 2012) and the level of accounting harmonization toward the IFRS adoption.

Declining the institutional context issue inside the NGIs debate, on one hand we have to observe little evidence on the role of country-specific institutional factors in affecting the NGIs disclosure. Fiechter (2013) raised the issue of whether and how institutional factors affect the adoption of NGIs for opportunistic purposes. Isidro and Marques (2015) take this issue into consideration with a study on a sample of European companies showing that the use of NGIs to reach the analysts' benchmarks is higher "in countries with efficient laws and law enforcement, strong investor protection, developed financial markets, and good communication and dissemination of information." (p. 3). This is the only prior study to investigate the role of institutional context on NGIs disclosure. However, it is based on a relatively homogeneous area of investigation, since it is possible to consider EU countries' institutional and economic factors as being quite similar, compared to the rest of the world.

In spite of this, on another hand, massive evidence exists on the role that a specific regulation on NGIs plays in the disclosure decision. Regulation on NGIs is a relevant institutional condition having the power to influence companies' non-GAAP disclosure behaviour. However, regulation is analysed as driver for NGIs behaviour only in relation to the SEC Regulation G in the US. On an international level, concern about the role of non-GAAP disclosure in misleading investors led both the stock market regulatory bodies and the standards setters to pay close attention to this issue. Some jurisdictions, such as the United States (US), Canada, Australia, New Zealand and some EU member states, have regulated the NGIs disclosure in order to achieve transparency and comparability and to avoid misleading investors. As far as we are aware, no other jurisdictions have regulations or guidelines on NGIs topic. A number of subsequent studies (Nichols et al., 2005; Marques, 2006; Entwistle et al., 2006a, 2006b; Helfin and Hsu, 2008; Kolev et al., 2008; Zhang and Zheng, 2011; Black et al., 2012) have been addressed to understanding the effects of the introduction of Regulation G on the use of NGIs, largely supporting an opportunistic rationale in NGIs practice. These studies are developed on US firms in the time period pre and post Regulation G (covering a period of time on average between 2000 and 2004 fiscal year). They demonstrated that, after the intervention of SEC, the use of NGIs suffered a significant mitigation as for frequency, emphasis, magnitude of the adjustments and transparency.

3. RESEARCH DESIGN AND METHODOLOGY

3.1. Development of hypotheses

The purpose of this research is to verify whether and how the institutional context and particularly the regulation on the topic affect the propensity to disclose non-GAAP indicators in an opportunistic way. Specifically, we firstly estimate the impact of institutional contexts and regulation to the generic propensity of companies to disclose NGIs. Then, we focus on the role of such institutional context and regulation in constraining (or emphasizing) an opportunistic disclosure of NGIs.

So far only the recent study by Isidro and Marques (2015) explores the impact of the institutional context on the use of NGIs. Anyway, a) it does not take into consideration the role of the regulation on NGIs and the interplay between the institutional context and such regulation; b) it considers only the impact of the institutions on opportunistic behaviours and not on the general adoption of NGIs and c) it is based on a sample of European companies showing a quite homogeneous institutional context, while we include in our analysis 120 companies from 23 countries in 5 continents with highly different legal systems, public and private enforcement, development of the financial market, etc.

With respect to the institutional context, the research of Isidro and Marques (2015) shows that the adoption of NGIs beating benchmarks increases in developed market, with strong legal systems and investor protection. They conjecture that in these contexts the companies face higher pressure because of the developed market and greater difficulty in manipulating GAAP earnings due to law enforcement. As a consequence, companies use NGIs to affect investors' decisions. While Isidro and Marques (2015) analyse only the impact of the institutional context on the opportunistic use of NGIs, they neglect the impact on the informative use of NGIs. Even without previous studies in this field, we can hypothesize that a strong institutional context with high market development should increase the propensity to provide informative NGIs because in this kind of context investors are more sophisticated and appreciate more value relevant financial information about the performance of companies.

Accordingly, we hypothesize a positive relationship between a strong institutional context and the propensity to disclose NGIs, and to disclose them with opportunistic aim. [*Hp.1.1: institutional context with high market development and strong legal environment leads to a high presence of NGIs] – [Hp.1.2: institutional context with high market development and strong legal environment leads to high opportunism in NGIs disclosure]*.

With respect to the presence of a regulation on NGIs issued by market authority, altogether, empirical research demonstrates that the introduction of a regulation reduces NGIs disclosure as for frequency, emphasis, magnitude of the adjustments and transparency (Marques 2006; Nichols et al. 2005). At the same time regulation counteracts the potential power of NGIs in misleading investors (Kolev et al. 2008; Entwistle et al. 2006b; Heflin and Hsu 2008). For instance, Entwistle et al. (2006a) observe that prior to Regulation G over 10% of US S&P500 firms disclosing NGIs did it in a potentially misleading manner, whereas after the SEC intervention this practices were seen in less than 1% of the observed cases. Accordingly, we hypothesize a negative relationship between the presence of a regulation on NGIs and the propensity to disclose NGIs, and to disclose them with opportunistic aim. [*Hp2.1: the presence of a specific regulation on the disclosure of NGIs leads to a low presence of NGIs] – [Hp2.2: the presence of a specific regulation on the disclosure of NGIs leads to low opportunism in NGIs]*.

3.2. Definition of the dependent variables

Our study focuses on the propensity of companies to disclose NGIs in general and NGIs with an opportunistic aim. Accordingly, we rely on two different dependent variables. The first one represents the propensity to include NGIs in the management report. The propensity was measured through the presence of at least one NGFM in the management report. *PRESENCE* is a dummy variable equal to 1 if at least one NGFM is included in the report and 0 otherwise. The second dependent variable represents the propensity to include NGIs with opportunistic aim in the management report.

To explain the concept of opportunism accepted in this study, we have to start from the main reasons leading to adjustments with an informative aim. The final targets of adjustments should be to represent a "normal" level of profitability. The accounting behaviour becomes opportunistic when profit is adjusted for a specific "recurrent" motive in one year, but not in one or more following or previous years. In this case it is evident that the adjustment has been directed to impact the result only when needed to show the desired performance level. The recurrent motive is not considered as a stable source of noise to erase in order to represent a more reliable measure of performance, but as a pretext in order to influence the result in an opportunistic way. Therefore, we build an *ad-hoc* measure that proxies the concept of opportunistic NGIs. According to prior studies (e.g. Jennings and Marques, 2011) and consistently with the rationale of the main regulation on non-GAAP disclosure (e.g. SEC, 2003), we consider as opportunistic the NGIs when some conditions exist: a) it is necessary that the adjustments increase the GAAP financial result; b) the adjustments are mainly based on *ex-ante* "recurring" motives; c) an incoherence exists in the adjustment process and scheme the companies implement from period to period. Accordingly, *OPPORTUNISM* is a dummy variable coded as 1 when an opportunistic aim is supposed, and 0 otherwise.

3.3. Definition of explanatory and control independent variables

We consider different institutional aspects of countries where the companies are listed as the main exchange. We obtained the market development (*MARKET*) starting from two variables: total market capitalization of the listed companies as the average percentage of Gross Domestic Product (GDP) during the period 2008-2012, and average total value of stocks traded, as a percentage of GDP, in the same period. We collected the data from the World Bank "World Development Indicators Database". Then, we ran a principal component analysis on the two variables and we found that over 94.0% of the total variance was explained by the first component. A similar procedure was followed to define the quality of the legal system of each country (*LEGAL*). We started from the data of four different variables: "Regulatory Quality", "Voice and accountability", "Rule of Law" and "Control of corruption" obtained from The Worldwide Governance Indicators (Kaufmann et al., 2010)[2]. The principal component analysis revealed a first component responsible for 92.7% of the total variance[3]. Similar procedure was run also to define the total level of antitrust protection (*ENFORCEMENT*). We started from the level of "Private Enforcement" and "Public Enforcement", representing respectively the level of antitrust protection provided to private companies by public authorities (Djankov et al. 2008). The principal component analysis revealed a first component responsible for 94,3% of the total variance. The specific legal system (*COMMON_LAW*) adopted in each country was again derived by the list provided by Djankov et al. (2008). The investor protection level (*ANTIDIRECTOR*) is represented through the Djankov et al. (2008)'s "anti-self-dealing index" that is an upgrade of the "revised anti-director index" as of La Porta et al. (2006) and it represents the legal protection of minorities. *REGULATION* represents the existence of specific rules on how to disclose NGIs transparently in the main stock exchange where the companies are listed.

[2] Regulatory quality captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Voice and accountability captures perceptions regarding the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. Rule of law captures perceptions in respect of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Control of corruption captures perceptions as regards 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. (source: World Bank website: www.worldbank.org). The 2015 update database is available at http://info.worldbank.org/governance/wgi/index.aspx#home Data collected on the 20th of Feb. 2015.

[3] The selection of the first principal component was supported by the Kaiser criterion (the eigenvalues of the correlation data matrix were 3.709, 0.223, 0.045 and 0.023 respectively for the four components) and the scree plot. The coefficients of the linear combination defining the first principal components for the four variables considered were: 0.504, 0.473, 0.512 and 0.510 respectively.

In order to have a comprehensive model, we introduced as control variables company-specific financial measures taken into considerations by previous studies on NGIs. The size of the company (*SIZE*) is measured through the natural logarithm of total assets. The profitability (*PROFITABILITY*) is measured as the ratio between Net Income and Net Sales. The financial debt (*DEBT*) is expressed through the natural logarithm of the ratio between total liabilities and total. The Market-to-Book ratio (*MTB*) is calculated as the ratio between the market capitalization and the book value of equity. All financial data are extracted from the OSISRIS database.

3.4. Research models

We analyse the research hypothesis described in section 3.1. by using logistic and pooled panel regression models. Based on the hypothesis presented, we empirically tested the following equation[4].

$$\begin{aligned} logit(Y_{it}) = \beta_0 &+ \beta_1 LEGAL_{it} + \beta_2 ANTIDIRECTOR_{it} + \beta_3 REGULATION_{it} + \beta_4 MARKET_{it} \\ &+ \beta_5 COMMON\_LAW_{it} + \beta_6 ENFORCEMENT_{it} + \beta_7 PROFITABILTY_{it} \\ &+ \beta_8 LEVERAGE_{it} + \beta_9 SIZE_{it} + \beta_{10} MTB_{it} + \varepsilon_{it} \end{aligned}$$

where $logit(Y_{it})$ is the logit of Y observed at the time t for the company i. $Logit(Y_{it})$is the logarithm of the odds $P(Y_{it} = 1)/P(Y_{it} = 0)$, where $P(Y_{it})$ is the probability that at the time t the company i has at the least one NGI in the financial report (Model 1) or the probability that at the time t the company i shows NGI with opportunistic aim (Model 2). The estimation method used is the maximum likelihood estimation method that proceeds by maximizing the binomial likelihood function according to the nature of the dependence variable (Agresti 2002; Wooldridge 2002).

Model (1) implements *PRESENCE* as dependent variable, and it refers to the hypothesized positive relationship between a strong institutional context and the propensity to disclose NGIs (Hp1.1 and Hp2.1), and to the hypothesized negative relationship between the presence of a regulation on NGIs and the propensity to disclose NGIs. Model (2) implements *OPPORTUNISM* as dependent variable, and it refers to the hypothesized positive relationship between a strong institutional context and the propensity to disclose NGIs with opportunistic

[4] Before the analysis of the models the presence of multicollinearity is evaluated through the variance inflation factor (VIF). We analyse each estimated model through the VIF and we removed the variables with the highest VIF, one at a time, until the VIF for all the covariates in the model was no greater than 10.

aim, and to the hypothesized negative relationship between the presence of a regulation on NGIs and the propensity to disclose NGIs with opportunistic aim (Hp1.2 and Hp2.2). Models (1) and (2) are a generalized linear regression models with binomial dependent variable and logistic link function. Each regression coefficient β_i represents the change in the logit of the probability associated with a unit change in the i-th predictor holding all other predictors constant. We run model (2) on the subsample companies adjusting the net income. For all computations, the R software was used; in particular, the main R package chose was "pglm" by Y. Croissant.

4. SAMPLE SELECTION AND DATA COLLECTION

The study includes all the companies of the Oil and Gas (O&G) industry listed in the Standard & Poor's Global Oil Index. We chose a specific industry because industry-based research maximises the comparability of management and accounting behaviours as well as their profitability trend (Fairfield et al. 2009; Misund et al., 2008; Biddle et al. 1995). We decided to select the O&G industry because NGIs play a particularly important role in this industry. Earnings and stock prices in O&G industry are strictly linked to the oil price (Dayanandan and Donker 2011), and consequently characterized by high variability. As a consequence, O&G companies could use NGIs in order to constrain earnings variance. Moreover, measuring reserves is difficult as in-ground oil and gas deposits are unobservable, so that reserves entered in the balance sheet are subject to frequent revisions (Cormier and Magnan 2002). Consequently, traditional GAAP earnings may not be the most value-relevant measures for information users. Finally, due to high risks associated with this industry, O&G companies might find it necessary to adjust their results more frequently in order to exclude special items linked to non-recurring events. The S&P Global Oil Index includes 120 companies having legal registration in 23 different countries, and they are listed in 22 different exchange markets with specific rules (if any) for NGIs disclosure. This is a relevant difference compared to previous studies. We hand-picked information about non-GAAP indicators from the management reports associated with the financial reports on a quarterly time basis, from the full-year (and fourth quarter) 2008 to the half-year (and second quarter) 2012. Each management report was analysed and coded by two researchers. The data coded by the two researchers were compared and further analysed when dissimilar. For each company we analysed a panel of 15 documents in ascending chronological order, with potentially 1,800 firm-quarter observations[5]. We obtained the quarterly financial reports from the companies' websites. We collected all other firm-specific information from the OSIRIS Database (Bureau VanDijk)[6].

5. RESULTS AND DISCUSSION

5.1. The effect of institutional variables on disclosure of NGIs

For model (1), regression results are presented in Table 2. Our results show a positive effect of REGULATION, COMMON LAW and ANTIDIRECTOR on the disclosure of NGIs, while a negative impact of LEGAL, MARKET and ENFORCEMENT.

Table 2. Model (1) results: estimated coefficients and t-statistic with significance evaluation

Variable	Coefficient	t
(Intercept)	-2,5650	-2.823**
LEGAL	**-0,1831**	**-3.779*** **
ANTIDIRECTOR	**1,6300**	**4.130*** **
REGULATION	**0,9327**	**5.715*** **
MARKET	**-0,6153**	**-3.647*** **
COMMON_LAW	**0,9027**	**3.441*** **
ENFORCEMENT	**-1,8060**	**-3.658*** **
PROFITABILITY	-0,0000	-0.401
LEVERAGE	0,0176	7.817***
SIZE	0,1619	3.287**
MTB	-0,1758	-4.440***
Significance levels *** 0.001, ** 0.01, * 0.05, . 0.1		

The presence of a regulation on NGIs has a partially unexpected positive effect on the disclosure of NGIs. Previous studies, mainly focused on the US, have shown a mitigation of the disclosure of NGIs after the introduction of a regulation, specifically SEC Regulation G (Entwistle et al. 2006b; Marques 2006; Nichols et al. 2005). Those analyses were mainly based on an opportunistic view of the use of NGIs, while in this first step we consider the whole set of NGIs included in the management reports. The presence of a regulation can increase the propensity to disclose informative NGIs because it provides a clear set of guidelines and boundaries for companies that want to provide a higher level of information while respecting all the rules. The

[5]Only nine companies presented incomplete financial documentation for the period considered, mostly because they were founded or publicly traded after 2008. A total of 1,731 individual documents have been analysed.

[6] Due to the different currencies used in the financial reports, we extracted the financial data on a local currency basis at each point in time, and then we converted them into US dollars considering the exchange rates existing at the 31st of December 2012.

regulation can be an enabler and facilitator for the informative use of NGIs. Considering the other institutional variables, the results show a negative impact of market development (MARKET), quality of the legal system (LEGAL) and public and private enforcement (ENFORCEMENT) on the adoption of NGIs.

Again, the results seem inconsistent with Isidro and Marques (2015), the only previous study approaching this issue. They state that in a well-developed market the pressure to present financial results meeting the targets is higher and, where the legal system is strong, managers cannot distort GAAP results to mislead investors. As a consequence, they adopt NGIs, less strictly regulated than GAAP values, for this purpose. The main difference between the two studies is that Isidro and Marques (2015) specifically refer to the adoption of NGIs for opportunistic purposes (to meet the analysts' benchmarks), while in this first question we consider all the NGIs, without any ex-ante consideration about the aim of the disclosure. If we consider companies disclosing NGIs for informative purposes it is easier to understand the negative impact of a strong institutional environment. Where the market is developed and well informed and the law enforcement is high, companies that want to provide useful information to the market could perceive the risk to be considered more opportunistic disclosing NGIs. The global picture of the results provided by the first analysis suggests the presence of companies that want to show KGFMs for informative purpose, but feel the constraints of a strong institutional environment. The introduction of the regulation, coding a defining the barriers of the disclosure, has the role to reduce the reluctance to provide non-GAAP information.

5.2. The impact on the opportunistic use of NGIs

The results show in Table 3 highlight a lower level of impact of institutional factors if compared with the previous research question. Only three variables are statistically significant and all of them positively impact opportunism: the quality of the legal system (LEGAL), the market development (MARKET) and the presence of a common law legal system instead of civil law (COMMON LAW).

Table 3. Model (2) results: estimated coefficients and t-statistic with significance evaluation

Variable	Coefficient	t
(Intercept)	-20.558440	-5.409***
LEGAL	**1.180615**	**2.765****
ANTIDIRECTOR	**1.143236**	**0.340**
REGULATION	**0.143968**	**0.271**
MARKET	**0.575888**	**1.920***
COMMON_LAW	**5.927522**	**2.522***

ENFORCEMENT	**-0.888061**	**-0.206**
PROFITABILITY	-0.001945	-1.011
LEVERAGE	-0,0306	-3.583***
SIZE	0.711456	4.858***
MTB	0.322368	3.306***
Significance levels *** 0.001, ** 0.01, * 0.05, . 0.1		

In this case the results are coherent with Isidro and Marques (2015): the presence of a developed market increases the pressures on short-term financial results, but a strong institutional environment with a strong legal system and based on common law reduces the possibility to use strongly regulated GAAP measures to mislead investors. Consequently, companies with opportunistic aims use NGIs. What is also important in this situation is that the presence of a regulation does not reduce opportunism. The limited effect of regulation in reducing the opportunistic use of NGIs could be due to different factors. First, most of the regulations requires companies only to provide information and transparency about the adjustments without clearly lists acceptable and not acceptable behaviours. As a consequence, companies feel legitimate to adjust opportunistically just providing information through the reconciliation table. Second, most of the regulations can be considered as soft laws without relevant sanctions in case of opportunistic behaviours. Future research could be aimed to better understand the limited role of the regulation in constraining the opportunistic use of NGIs.

Jointly considered with the results of the previous model it means that regulation works as an enabler for informative disclosure, but it is not able to reduce the opportunistic use of NGIs. As clearly demonstrated by the values in Table 3, the company-specific financial factors here considered as control variables also play a relevant role in affecting opportunism.

6. CONCLUSIONS, LIMITATIONS AND FUTURE DEVELOPMENTS

The objective of this study was to understand whether and how country-specific institutional factors affect the adoption of NGIs, specifically when they are used for opportunistic aims.

The topic is very important from different point of views. First, the adoption of NGIs is increasing not only in the US (Heflin and Hsu 2008; Webber et al. 2013), but also in the UK (Walker and Louvari 2003) and in Europe (Isidro and Marques 2013a; Aubert and Grudnitski 2014; Hitz 2010). Second, a plethora of studies have demonstrated that NGIs are highly considered by investors in their decisions and that adjusted values particularly influence less sophisticated investors (Fredrickson and Miller 2004; Allee et al. 2007). Third, many researches have demonstrated at least a partial opportunistic use of NGIs (Chen 2010; Marques 2010;

Doyle et al. 2013; Jennings and Marques 2011), that leads regulators and standard setters to develop rules for disclosing NGIs in many different countries (ESMA 2015; IOSCO 2014; SEC 2003). Jointly considering these three themes we have a very important research topic, because there is a growing accounting behaviour that seriously affects the financial markets and is often led by opportunistic aims.

Compared to the relevance of the phenomenon we thought there are still relevant gaps in the literature. First of all, the concept of "opportunistic aims" in NGIs is not clear enough. The key question deals with when an adjustment should be considered as opportunistic. The literature has provided different definitions, ranging from the effect on profitability (Isidro and Marques 2015) to the level of transparency and prominence of the adjustment itself (Fiechter 2013). The first contribution of our work is related to this point. We discuss the previous definitions of opportunism linked to NGIs and provide a motivated new position. To consider an NGFM as opportunistic three elements are needed: a) it must be positive b) it must be related to a fact or risk that is commonly associated to the business in which the company operates and c) the company adjust the results for that specific fact or risk only in certain periods and not in others. Our concept of opportunism starts from the idea that the role of adjustments is to express a "normal" level of performance, in order to provide investors, the information related to a "repeatable" profitability level.

The second main contribution of the paper is related to the analysis of the impact of institutional factors on opportunism. The two models analysed show a very different role played by the institutional context if we consider the general disclosure of adjusted financial values or if we focus only the opportunistic use of NGIs. In the first case a strong institutional context reduces the adoption of NGIs, probably because managers want to avoid the risk to be perceived as opportunists by such a strong institutional environment. Uncertainty avoidance plays probably a role, dissuading managers to discover data that could enrich the information available for the investors. In this context, the introduction of a regulation provides a set of clear boundaries for the disclosure of NGIs, defines the acceptable behaviours thus reducing the uncertainty perceived by managers. As a consequence, regulation has a positive impact on NGIs use. On the contrary, if we focus on NGIs opportunistically disclosed the landscape completely changes. In this case a strong institutional context increases the use of opportunistic adjustments. A developed market generates a huge pressure on short-term financial results and where the institutional context is strong it's hard to use GAAP values for misleading investors because the sanctions could be very severe. Consequently, companies that want to use financial information with an opportunistic aim prefer to use NGIs that are less strictly ruled than GAAP values. Unfortunately, contrarily to previous studies (Kolev et al. 2008) in this context our results show that the introduction of a regulation on NGIs does not moderate the opportunistic use of NGIs.

We think these results are very interesting for understanding the context in which NGIs are used and provide useful practical insights. First of all, the regulation of NGIs is more relevant in strong institutional contexts, because there is a higher possibility of an opportunistic use of adjustments. Second, a relevant issue for regulators arises, since the regulation on NGIs is not able to constrain the opportunistic use of NGIs. Further studies could address this issue, trying to understand the reason of this ineffectiveness and trying to understand how to evolve the rules in order to reduce the level of opportunism in NGIs' disclosure.

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