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What is more relevant? A comparison of cash flows indicators versus profit or loss from listed European companies

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Abstract: There is still controversy regarding the relevance of cash flow versus accruals. Relevant information can be assessed in multiple ways, including its value relevance and predictability. This paper then compares the value relevance and predictive value of accruals and cash flow measures to determine entities' stock value and future cash flows, respectively. The data was obtained from 484 consolidated annual reports of 121 companies listed on Euronext between 2018 and 2021. Data assessment used a linear regression model. The findings suggest that cash flow measures have a more significant influence on stock prices than profit or loss (about 40% versus 20%, based on the models' explanatory power). Furthermore, historical cash flows are proven to be a better predictor of future cash flows than profit or loss (90% versus 80%). Furthermore, neither accrual nor cash flow measures forecast future profit or loss significantly (below 35% in all cases). Findings also indicate a reduced capability of accrual or cash flow measures to forecast future profit or loss. This paper contributes to the ongoing debate on the relevance of cash flow versus accrual measures, which still presents differing conclusions. As part of its innovation, it compares profit or loss with multiple cash flow measures, such as non-GAAP measures and the concept introduced by the IASB in its exposure draft for operating cash flow. Additionally, the study examines the potential impacts and benefits of changes proposed in the IASB's exposure draft, including how they can affect stock prices and forecast future cash flows.

Subjects: Business, Management and Accounting; Business & Company Law; Regulatory Policy

Keywords: cash flows; exposure draft; relevance; value relevance; predictive value

1. Introduction

To ensure the competitiveness of European capital markets and harmonise accounting standards across European countries, Regulation (EC) No 1606/2002 of the European Parliament and of the

PUBLIC INTEREST STATEMENT

This paper addresses a topic relevant to investors and practitioners, such as managers and financial analysts. Consequently, it has also attracted the attention of accountants and economists around the world who are interested in studies related to capital markets and company value. As a result, this study offers a wide range of benefits for managers, stakeholders, auditors, and regulatory bodies.

Council of 19 July 2002 identified entities on this continent covered by International Accounting Standards (IAS) and International Financial Reporting Standards (IFRS) issued by the International Accounting Standards Board (IASB). The regulation includes a mandatory scope for consolidated accounts of entities whose securities are admitted to trading on a regulated market of any member state (article 4). Furthermore, it includes an optional scope (article 5), which allows Member States to broaden the universe of entities subject to their use.

Since consolidated financial reporting provides stakeholders with useful and comparable information on an entity's economic and financial situation (Gope, 2017; Macedo et al., 2011; Santos & Coelho, 2018), it plays a relevant role in internal and external decision-making in European regulated markers. An adequate assessment of an entity's current state and prospects depends upon the quality of its financial statements (Silva et al., 2018).

IFRS Foundation (2018) defines relevance and faithful representation as one of the main qualitative characteristics of financial information defined in the IASB's Conceptual Framework. By providing users with relevant information, users can make better decisions and, consequently, improve the quality of their decisions. In addition, to be relevant, financial information should also have predictive or confirmatory value, depending on its nature and materiality (Barth et al., 2001; IFRS Foundation, 2018; Malacrida, 2009). As another perspective on the value relevance of financial information, it can also be seen in its ability to explain the market value of entities (Gunanta et al., 2015; Macedo et al., 2011; Malacrida, 2009; Percy & Stokes, 1992).

As part of the complete set of financial statements, cash flow information is an important component, and the IASB has issued the IAS 7 - Statement of Cash Flows as a specific standard for its preparation and presentation (IFRS Foundation, 2003). The purpose of IAS 7 (see the IFRS Foundation, 2003) is to provide users of financial statements with information about historical changes in cash and cash equivalents.

However, the relevance of the cash flow statement may be diminished by the opacity of the information and by the existence of different options for cash flow classification and presentation, which are defined in the literature by accounting choices (Macedo et al., 2011). Those constraints can have a direct impact on the relevance of financial statements, negatively affecting their relevance, including their ability to predict future earnings and cash flows, therefore it is important to minimize the likely impacts from these characteristics within the information provided in the entities' statement of cash flows (Bowen et al., 1987; Costa et al., 2019; Guimarães & Rover, 2022; Roychowdhury, 2006; Souza et al., 2015; Wolk et al., 2004).

Therefore, improvements in the presentation and disclosure of cash flow statements may affect the relevance and predictive power of cash flow indicators. To improve the presentation of financial statements, the IASB issued an Exposure Draft (ED)—General Presentation and Disclosure, in December 2019. While initially focused on the profit and loss statement, the discussion quickly expanded to include the cash flow statement, intending to improve their alignment.

In addition to generally accepted accounting principles (GAAP) measures under IAS and IFRS, the discussion also includes non-GAAP measures (NGM), which have gained prominence in recent decades (Brown, 2020). Despite their subjective and discretionary nature, those measures can provide useful information and contribute to the analysis of financial statements and the overall quality of financial reporting, since no specific guidance is provided regarding their disclosure (Arena et al., 2021). Aside from this, the IASB took the opportunity to avoid inconsistencies in the classification of some items in the statement of cash flows, such as interest and dividends, since these factors can contribute to reducing managerial forecast accuracy, precision, and ability to predict the performance of future entities (Chen & Gong, 2019). Work on this project is expected to be completed by the first half of 2024 for implementation in or after 2027.

This paper emerges from that recent discussion proposed by the IASB's ED to assess the relevance of fundamental measures from both financial statements, including profit or loss (P&L), as an accrual basis indicator from the statement of profit or loss, and operating cash flows (OCF), as a cash basis indicator from the statement of cash flows. The following research questions are formulated based on two widely disseminated models in the accounting literature: value relevance and predictive value of financial information.

- *Research question 1*. Which indicator (P&L or OCF) has the greatest influence on the price of the entities' share prices (ESP)?
- *Research question 2*: Which indicator (P&L or OCF) best predicts future cash flows?

This paper examines the relevance of financial information aiming to identify the indicator (accrual versus cash flow measures) that most affect the ESP and best predicts future cash flows, based on the previous research question. The issues proposed have been widely explored in the literature on accounting and finance but are usually dispersed among the proposed studies in terms of the theme (value relevance or predictive value) or the nature of the indicators (accrual or cash-flow basis) since each study is geared towards a particular topic or type of measurement. Furthermore, the findings remain controversial and inconclusive (Arthur et al., 2010; Santiago et al., 2018), which may be explained not only by different sample origins but also by a wide variety of approaches used to measure both earnings and cash flow indicators, sometimes complex, based on accrual and cash flow components other than P&L and OCF. Therefore, the current paper contributes to the existing literature in the following ways.

In the first place, this study contributes to the analysis of which type of measure (accrual versus cash-basis indicator) influences both the OCF's predictive capacity and the ESP simultaneously, two different aspects surrounding the relevance of financial information. The proposal also contributes to the discussion raised by authors who suggest a single path to measure the value relevance of earnings, which is based on earnings' ability to predict future cash flows (e.g., Dechow, 1994; Finger, 1994; Francis & Schipper, 1999), in contrast to what Ohlson (1995) proposed.

Secondly, it proposes using the simplest and most transparent indicator of accrual (P&L) versus cash-basis (OCF), which is accessible to all primary users of financial information without any adjustments or breakdowns, as it is usually proposed in the literature that focuses primarily on the relevance of earnings and/or accruals (e.g., Chen et al., 2023; Dechow, 1994; Waldron & Jordan, 2010).

Third, the research proposes a new approach to cash flow disclosure by using alternative measures compared to previous studies. Aside from using OCF, alternative measures are also considered taking the IASB's ED proposal into account, namely a measure of the OCF adjusted for the proposed changes to the ED (hereinafter called OCF') regarding dividends and interests, as well as the NGM related to cash flows, based on the proposed changes to the OCF.

Thus, the present study allows us to also contribute to the identification of potential impacts and benefits of the proposed changes under the IASB's ED, as well as the controversial NGM. The potential impact of this process, associated with the opportunity for this discussion, thus justifies the relevance of the analysis of the theme for academia, stakeholders, supervisory and regulatory bodies, as well as companies.

This paper found that cash flow measures had a greater impact on ESP than P&L. Furthermore, historical cash flows can also be used to forecast future cash flows and, although less clear, future profit and loss. Even with past performance as an indicator, projected P&L seems to be barely predicted. Furthermore, the proposed changes to the IASB's ED will not have a significant impact on forecasting future cash flows since the regression models are similar using either the reported OCF or its upcoming estimated values (OCF').

The target population for the study was the European entities listed on EU-regulated markets, whose accounts and annual reports were used as sources of data. The indices were defined by the European New Exchange Technology (Euronext) and included all entities other than those in the financial and insurance sectors that use IAS and IFRS. In total, 484 reports were analyzed for 121 entities between 2018 and 2021. Thus, the paper employs archival research as a method and content analysis as an investigation technique. Linear regression models are used for the statistical analysis.

This paper is divided into seven sections, including this introduction. Background and theoretical literature reviews are provided in the next two sections. In the fourth section, the empirical literature review and hypotheses are presented. The fifth section deals with the research design, while the sixth presents the empirical results and discussion of them. The seventh section concludes the research with a summary and conclusions.

2. Background

According to IAS 7 (see IFRS Foundation, 2003), cash flows must be classified into one of three categories: operating, investing, or financing. For users of financial statements, this classification is beneficial because it allows them to determine how each activity impacts the financial position and cash and cash equivalents of the entity, as well as how these activities interact with each other.

IAS 7 also mentioned that an entity can report OCF using either direct or indirect methods. In the direct method, the main categories of cash received, and payments are disclosed. Using the indirect method, the accrual basis net profit or loss is adjusted according to the effect of some transactions that occurred in the period that were not reflected in cash or cash equivalents, which include accruals and deferred, as well as income and expenses associated with activities other than operating activities. According to IAS 7, entities can report OCF either directly or indirectly. By using the direct method, it is possible to identify the main categories of cash received, as well as payments. Using the indirect method, the accrual basis net profit or loss is adjusted according to the effect of some transactions that occurred in the period that were not reflected in cash or cash equivalents, including accruals, deferred payments, and other income and expenses. Nonetheless, the IASB encourages entities to use the direct method, as it allows them to estimate future cash flows based on information that is not available to them by using the indirect method.

However, certain transactions may be classified differently by different entities according to their cash flows. In particular, the classification of interest and dividends (paid and received) arises in this context, since IAS 7 requires that cash flows related to those must be disclosed separately. Depending on the flow type (cash-inflow or cash-outflow), they may be classified as an operating activity, investment activity or financing activity.

The OCF corresponds to the activity that can be used for both reporting interest and dividends paid and received under IAS 7. For financial institutions in particular, IAS 7 states that interest paid and interest and dividends received are normally classified as OCF. However, there is no guidance for other industries and institutional sectors. Therefore, these operations can be classified as OCF because they affect net profit or loss. Since interest and dividends received are related to expenses incurred to obtain financial resources or returns on investment, interest and dividends paid could also be classified as financing cash flows.

In addition, dividends paid can be categorized as OCF since they represent the cost of obtaining financial resources. However, they can also be categorized as financing cash flows since they represent a cost incurred in obtaining financial resources or as operating cash flows because they determine the ability of the entity to pay dividends. Finally, income tax cash flows should also be classified as discretionary cash flows since they are usually discretionary. When specifically linked

to such activities, however, they can either be classified as financing cash flow or investing cash flow.

Recently, the IASB developed an ED entitled General Presentation and Disclosures as a response to criticisms from various stakeholders, as part of its ongoing project on primary financial statements. Some changes were proposed as future implementations to improve the information provided to stakeholders (IFRS Foundation, 2016). The IASB's ED covers presentation and disclosure requirements. It is therefore not possible to accurately measure the quantitative effects of the post-implementation process of the IASB's ED. It was initially discussed whether a standard model could be defined for the financial statements under discussion within the IASB's ED. This suggestion, however, was rejected due to the difficulty of implementing a global model that applies to all entities, regardless of their geographic location or economic activity sectors, which might introduce significant divergences from previous models. Although, the IASB also provided a set of illustrative examples of its proposed changes to its ED to guide accountants worldwide (IFRS Foundation, 2020a).

IASB began to address concerns about financial statements' comparability and transparency with public discussions in 2014, which resulted in the first feedback from stakeholders. IASB developed the ED based on the comments received between 2015 and 2019, with a final version released in December 2019. The proposed period for receiving further stakeholder comments ended in September 2020. The IASB then assessed the comments collected between December 2020 and January 2021. Since then, and using those comments as a starting point, IASB has been discussing and redeliberating progress on this project (see, for instance, IFRS Foundation, 2021e, 2021a, 2021b, 2021c, 2021d).

Specific criticisms regarding the financial statements prompted the ED, which suggested that IASB prioritize projects that have an impact on primary financial statements (IFRS Foundation, 2016). IFRS Foundation (2016, 2019) aims to improve financial information communication, particularly when it comes to transparency and comparability between entities or between periods within an entity. The discussion initially focused on the statement of profit or loss, but other financial statements were also discussed, especially the statement of cash flows. As a summary, the ED proposed amendments to the following matters (IFRS Foundation, 2019, 2021e, a, b, c, d):

(i) presentation of new subtotals for the statement of profit or loss, also improving the alignment with the statement of cash flows;
(ii) requirements relating to the disaggregation of information with a focus on relevance;
(iii) improvements regarding NGM disclosures, namely in what respects its relevance, purpose and reconciliation with measures from financial statements; and
(iv) iv. changes for the statement of cash flows to improve comparability by eliminating the existing options.

For this latter aspect, the IASB proposes some amendments specifically for cash flow statements. Since IAS 7 allows different classifications for interest and dividend components, the IASB aimed to address criticism about its lack of comparability. Additionally, the initial indicator or variable from the statement of profit or loss would also need to be identified for the indirect method of providing OCF since there is also a lack of comparability among entities.

Therefore, the entities should classify interest and dividends as financing cash flows when they are paid. The interest paid represents the entities' cost of obtaining external financing and is also consistent with its recognition as an expense within the financing category in the statement of profit or loss. As for dividends paid, the argument is that this type of flow arises from a source of financing, so classification as OCF is not considered suitable. In contrast, entities should consider interest and dividends received as investing cash flows, since interest and dividends, when recognized as income,

are expected to be included in the investing category of the statement of profit or loss. This will improve consistency with changes planned for the statement of profit or loss.

The classification of some components of the statement of cash flows was also identified as a possible source of comparability issues, depending, for instance, on the entity's economic sector. Accordingly, the IASB's ED sought to restrict entities' choices regarding the classification of their cash flows to increase the comparability of their statements. However, there is an exception for financial entities, whose dividends and interest are categorized into one category, allowing them to rank them as they see fit. Nevertheless, this classification should be consistent with those for income and expenses within the income statement. In turn, dividends paid should be classified as financing cash flows for all entities.

Since IAS 7 currently mentions profit or loss in a general sense or income and expenses presented in the statement of profit or loss adjusted for inventory and operating receivables and payables, the diversity of variables used as a starting point for providing the OCF via the indirect method mitigates the proper analysis and comparison of the statement of cash flows. According to the IASB, entities have used operating profit, net profit, and profit from continuing operations, among others.

To solve this issue, the IASB proposes using a net operating profit as a starting point for the OCF calculation using the indirect method, as it will be used in this process since this variable includes less income and expenses whose cash effects are classified as investing cash flows or financing cash flows. Choosing this variable was also influenced by the difference between operating profit and OCF. This is a measure of operating increases that is helpful for financial statement users, as it shows how operating profit is converted into cash flows.

Finally, one of the objectives of the IASB's ED was to also align the classifications used between the main categories underlying both statements of profit or loss and statements of cash flow, improving their comparability and understanding. Accordingly, the IASB recommends classifying associates and joint ventures as integral or non-integral when preparing the statement of cash flows. In the statement of cash flows, however, cash flows from the net acquisition of associates and joint ventures should be classified as investing cash flows.

As a result, the proposed amendments should enhance the quality of information used for analysis and decision-making. Due to the IASB's ED's response to criticism regarding the structure and content of financial statements, an improvement is expected.

By September 2020, the IASB requested feedback on the proposed changes. Upon receiving their comments, it was possible to verify that, overall, the proposals received positive responses, indicating that the proposed changes might have a positive impact on the relevance of financial statements from the stakeholders' perspective (IFRS Foundation, 2020b). Comments received also stressed the importance of completing the project as soon as possible (e.g. EFRAG, 2022). Thus, stakeholders generally accepted IASB's ED content, although some suggestions were made to extend certain topics, such as the NGM. Despite some criticism, both the statement of profit or loss and the statement of cash flow proposals generally received positive feedback. In addition, the IASB's pilot study confirmed that entities could respond to the proposed changes without excessive restrictions. Thus, stakeholders want to see the project implemented as soon as possible.

An IASB meeting and deliberation recently revealed the implementation deadline for ED proposals (IFRS Foundation, 2023). A deadline of 2024 has been set for them. Entities are required to apply the Standard for annual periods beginning on or after 1 January 2027, with retrospective adjustments under IAS 8 - Accounting Policies, Changes in Accounting Estimates and Errors. In this transitional period,

entities must adapt their accounting systems and address any operational challenges that hinder their adaptation.

The next section presents a literature review on the relevance of cash flows.

3. Theoretical literature review

As one of the IASB's fundamental qualitative characteristics of financial information, relevance contributes to an entity assessment, providing useful information to users. Specifically, financial information is relevant when it impacts stakeholders' decisions and influences their ability to predict future cash flows (e.g., Ball & Brown, 1968; Beaver et al., 2018; Bowen et al., 1987; Lyon et al., 2021; Wolk et al., 2004). As Malacrida (2009) points out, the relevance of information arises both from its nature and its materiality.

The ability of an entity to manage cash flows and how they are used is an essential component of economic and financial analysis (Jemaa et al., 2015; Qudratovich, 2022). A general perspective is that accounting information is relevant if it impacts stakeholder decisions (Barth et al., 2001; Holthausen & Watts, 2001; Macedo et al., 2011; Malacrida, 2009), which is also a view of the IASB (IFRS Foundation, 2018). The relevance of financial information in literature can be evaluated from different perspectives, such as those of investors, analysts, and other stakeholders as well as those of the information itself. Its value relevance and predictive value are mostly analyzed in this way.

Based on the literature, relevant information is that which has a direct impact on the ESP (Barth et al., 2001; Santos & Coelho, 2018), as a proxy for measuring it. Studies have assessed the impact of cash-flow information, particularly the OCF, in explaining ESP behaviour (Gunanta et al., 2015; Macedo et al., 2011; Malacrida, 2009; Percy & Stokes, 1992). In this context, Ohlson's (1995) value relevance model is commonly used (Santos & Coelho, 2018).

By identifying how financial information affects the financial market, Ohlson's value relevance model (1995) intends to provide stakeholders with useful information that can influence their decision-making process (Duarte et al., 2017). Specifically, Ohlson (1995) suggests that accounting information can have substantial effects on investors' expectations, along with other market information (Ball & Brown, 1968; Beaver, 1968). The model's ability to predict an entity's value allows the comparison of different information, such as measures from income and cash flow statements (Santos & Coelho, 2018).

An alternative view of relevance is based on its predictive power. Based on this perspective, the statement of cash flows is useful when it predicts earnings or future cash flows (Arthur et al., 2010; Passos & Cavalcante, 2021; Santiago et al., 2018). When cash flows are predictive, they become an efficient tool for analysis and control, since they allow a business to evaluate its vulnerability (Wolk et al., 2004). Moreover, it can improve capital allocation in healthy, mature firms, increase returns, and prevent fast-growing firms from running out of cash (Weytjens et al., 2021). Consequently, predicting future cash flows becomes important for entity financial analysis overall (Farshadfar & Monem, 2013; Hammami, 2012; Krishnan & Largay, 2000).

Furthermore, predicting future cash flows is vital for entities' continuity in a dynamic and constantly changing macro environment (Güleç & Bektaş, 2019). According to Lyon et al. (2021), cash flow forecasting is crucial not only for making projections about entities' continuity but also for assessing their performance against predicted results.

The ability of cash flows to predict also makes them an efficient tool for assessing businesses' vulnerabilities (Wolk et al., 2004). As such, Güleç and Bektaş (2019) argue that a statement of cash flows analysis is vital to the continuity of an entity in a dynamic macro environment since it forecasts future cash flows. Similarly, Lyon et al. (2021) argue that cash flow forecasts are

essential for estimating continuity or for assessing performance and comparing it with the forecast.

The following section provides an empirical literature review and the hypotheses underlying this study.

4. Empirical literature review and hypotheses development

Throughout this section, the hypotheses proposed in this research are divided into subsections. In the first section, a literature review relating to the value relevance of information is presented, while the second one examines its predictive value.

4.1. The value relevance analysis (H1)

For assessing the relevance of financial information concerning its ability to explain ESP, Ohlson's (1995) value relevance model is commonly used (Santos & Coelho, 2018). According to Ohlson's (1995) model, the value of the entities is determined by the accounting information reported in their financial statements. Therefore, if financial information is considered relevant, it must be able to directly affect the ESP (Barth et al., 2001; Santos & Coelho, 2018). This model considers the EPS to be a function of future results arising from both the information presented in a company's reports and accounts as well as market data (Santos & Coelho, 2018).

The value relevance model proposed by Ohlson (1995) is also useful to allow the comparative assessment among various financial indicators (Galdi et al., 2008), with particular emphasis on existing studies on the comparison of relevance through accruals versus cash basis indicators (Arthur et al., 2010; Barth et al., 2001; Bepari et al., 2013; Dechow & Dichev, 2002; Dechow et al., 1998; Finger, 1994; Khansalar, 2012; Lev et al., 2005, Lustosa & Santos, 2007; Malacrida, 2009; Santiago et al., 2018; Sloan, 1996).

Ohlson's (1995) model explains ESP primarily based on income and book value per share (BV PS). The OCF, however, has been included in several studies in substitution for or in addition to accrual measures (Bepari et al., 2013; Charitou et al., 2001). The relevance of the OCF in such cases is determined by comparing it with other financial indicators, namely those from profit or loss statements. Nonetheless, the literature is still inconclusive regarding which one between the accrual measures and OCF has higher levels of value relevance. This is mostly explained by different research samples and methodological approaches.

The accrual measures and OCF, for instance, are both value relevant according to Malacrida (2009) and Purbasari et al. (2020). Many studies have identified, however, that accrual basis indicators provide more relevant information than OCF indicators (Barth et al., 2001; Bartov et al., 2001; Bowen et al., 1987; Charitou et al., 2000; Greenberg et al., 1986; Gunanta et al., 2015; Haw et al., 2001; Mostafa, 2016; Pfeiffer et al., 1998; Pirie & Smith, 2008). Despite the decline in earnings over the last decade, Barth et al. (2023) found an increase in the value relevance of the OCF. Despite this, those studies also used diverse measures of profit and loss statements (accrual components) to reach their purposes, so further research is still possible.

Value relevance differences between P&L and OCF can also be explained by different factors, such as cash flow volatility and operating cycle. The seminal paper by Dechow (1994), for instance, demonstrated that cash flows can lose their value relevance in comparison to accruals measures when entities' working capital requirements and investment and financing activities are more volatile. In addition, if their operating cycles are longer.

Thus, based on the major evidence in the literature, which points out a lower value relevance of cash flows compared with accrual measures, the first hypothesis was defined as follows:

H1: The P&L has a higher value relevance than OCF, although the difference can also be dependent on the entities' countries and economic activity sectors.

4.2. The predictive value analysis (H2)

For financial information to be relevant, it must also affect and influence the entities' capacity to predict future cash flows (Ball & Brown, 1968; Beaver et al., 2018; Bowen et al., 1987; Lyon et al., 2021; Wolk et al., 2004). In addition to forecasting future earnings, cash-flow information plays an important role in estimating future OCF (Arthur et al., 2010; Passos & Cavalcante, 2021; Santiago et al., 2018). Although conclusions are ambiguous, the predictive capacity of cash flows is also prominent in the literature (Arthur et al., 2010; Santiago et al., 2018).

Several authors have also assessed the relevance of financial statements from this perspective, including those related to income and cash flow statements (accrual versus cash basis), to determine which is the most accurate predictor of OCFs. In this sense, Bowen et al. (1987) state that both the accrual measures and the OCF are relevant since they provide distinct but complementary information.

Then, it can be found in the literature studies that assess both past accruals measures (for instance, Ball & Nikolaev, 2020, 2022; Barth et al., 2001; Chotkunakitti, 2005; Dechow et al., 1998; Ebaid, 2011; Kim & Kross, 2005; Khansalar, 2012, Lustosa & Santos, 2007; Malacrida, 2009; Santiago et al., 2018; Waldron & Jordan, 2010) and cash-flow information (for instance, Arthur et al., 2010; Barth et al., 2001; Dechow & Dichev, 2002, Farshadfar & Monem, 2013; Lev et al., 2005; Nallareddy et al., 2020; Noury et al., 2020; Percy & Stokes, 1992; Sloan, 1996) as future cash flows predictors.

Although Santiago et al. (2018) identified the accruals indicator as the most accurate predictor of future cash flows, there is no consensus in this regard. In contrast, Barth et al. (2001), Noury et al. (2020) and Sloan (1996) concluded that the OCF was a more accurate predictor than accrual measures.

According to Dechow and Dichev (2002), the accrual measures are more susceptible to manipulation than the OCF. This potentially explains the different conclusions and biases from studies on this subject. However, statements of cash flows and, consequently, the OCF, can also be subject to discretion by managers and, therefore, negatively affect the ability to forecast future cash flows (Roychowdhury, 2006). Thus, the OCF's ability to predict future cash flows may also be directly related to the comparability (including consistency) of the information in the statement of cash flows, since the OCF may reflect opportunistic options to achieve a certain objective (Dechow & Dichev, 2002; Passos & Cavalcante, 2021). This discretionary use can reduce its relevance, since accounting choices can directly impact the ability to predict future cash flows and, therefore, its relevance (Chen & Gong, 2019; Costa et al., 2019, Guimarães & Rover, 2022; Macedo et al., 2011; Roychowdhury, 2006; Souza et al., 2015; Wolk et al., 2004).

Malacrida (2009), for instance, states that accrual measures generally provide more relevant information and, thus, provide better predictive capacity. Assessing Brazilian entities from 2000 to 2007, the author concluded that accrual measures were a better predictor of future cash flows than OCF, a finding corroborated by other researchers (Ball & Nikolaev, 2020, 2022; Khansalar, 2012; Lustosa & Santos, 2007; Santiago et al., 2018).

Nonetheless, there is also evidence that OCF better predicts future cash flows than accrual indicators, especially by Barth et al. (2001), Finger (1994), Lev et al. (2005) and Sloan (1996), assessing data from United States of America entities, as well as that of Arthur et al. (2010), from Australian entities. Nallareddy et al. (2020) also reinforce that cash flows can better predict future cash flows when properly measured.

Nonetheless, the controversial findings in the literature can be explained not only by different samples' origins and periods, including the impacts of national regulation but also by the various methodologies adopted. For instance, despite using data from United States of America entities, Barth et al. (2001) diverge from those by Ball and Nikolaev (2020, 2022), which is explained by the different approaches used to measure both accruals and cash flow indicators.

From a different perspective, Finger (1994) sought to assess the most effective future cash flow predictor by comparing the accrual measures and the OCF but using a short-term (one-year OCF forecast) versus a longer-term (four- and eight-year OCF forecast). From a short-term perspective, OCF was a better predictor than accruals. However, the findings were inconclusive for long-term forecasts, suggesting further studies (Finger, 1994). Jemaa et al. (2015) corroborate these conclusions, since in their short-term analyses (one-year forecast), cash flows better predict future cash flows, whereas accruals were the most reliable predictor for long-term analyses (two-year forecast).

Seminal papers such as Black's (1998) research also concluded that accruals versus cash flow predictably depend on the entity's life cycle. It found that accruals appeared to best forecast future cash flows when entities reach maturity, while cash flow proved to better predict them in the remaining phases. In turn, Passos and Cavalcante (2021) assessed whether cash flow forecasts are affected by periods of political uncertainty. To this end, they assessed several entities in Latin America between 1998 and 2018, concluding that accruals' predictive capacity can also be affected by financial instability. Besides, literature has also found different patterns for the ability of accruals measures to predict future cash flows according to the asymmetries of timely loss recognition in periods of favourable versus bad news (for instance, Chen et al., 2023).

Therefore, despite the divergencies in literature, the second hypothesis (H2) was defined considering most studies' findings, which found cash flows as a better predictor of future cash flows than accruals measures, as follows:

H2: The past P&L has a better predictive capacity of future cash flows than OCF, although the difference can also be dependent on the entities' countries and economic activity sectors.

The next section presents the material and methods used for this research.

5. Research design

Based on archival research methods and content analysis techniques, this article is eminently quantitative, using companies' economic and financial data. Data sources include annual consolidated reports and accounts of entities listed on European regulated markets that prepare their financial statements using IAS and IFRS. Reports and accounts were collected from the official websites of the entities. Additionally, the market value per share of each entity was gathered.

The main statistical analysis is based on linear regression models. In turn, Durbin-Watson tests can be used to determine whether the models are reliable and whether independent errors are present, and for values between 1.5 and 2.5, a lack of correlation with residuals is usually acceptable. Whenever lagged dependent variables are included as explanatory variables in regression models, as it is proposed for H2, this test may be inappropriate (see, for instance, Nerlove & Wallis, 1996). An analysis of variance (ANOVA) test is used to verify the global significance of the model. Through its significance level, the ANOVA test determines whether the models can be used for statistical inference. A model's explanatory power is determined by its adjusted R^2.

Linear regression models typically include bivariate correlation and multicollinearity analyses, in the latter case through the analysis of variance inflation factor (VIF) between independent

variables. Correlation values less than 0.7 are considered weak or moderate. A VIF greater than 10 (or 5, from a more conservative approach) indicates that the independent variables are multicollinear.

The following Euronext indices were then selected: Euronext Paris (CAC-40), Euronext Lisbon (PSI-20), Euronext Amsterdam (AEX), Euronext Brussels (BEL-20), Euronext Dublin (ISEQ-20) and Euronext Oslo (OBX). All sectors other than financial and insurance are included in the data collected from 2018 to 2021. Since entities from these sectors are usually regulated and supervised locally and at the European level, this option guarantees data comparability. Furthermore, there were just a few cases by index in which data for the period were not available. Data from Euronext's website was used to identify the entities that comprised those indices.

At the end of this process, all 121 entities from those six Euronext indices and five economic activity sectors were gathered at the end of the selection process. This totalled 484 reports and accounts collected throughout the four years. Considering that the regression models proposed for H1 and H2 include control variables relating to the countries and economic activity sectors of the entities, the first is based on the country of each Euronext index on which the sampled entities are listed, whereas the second is based on the Industry Classification Benchmark (ICB).

Table 1 summarizes the coding assigned to the different countries, with an indication of which countries were excluded from the initial to the final sample.

Table 2, in turn, summarizes the coding assigned to the different economic activity sectors.

For inclusion of categorical variables related to country and sector, each of these six countries and five sectors must be transformed into distinct dichotomous variables first, with "1" indicating the country and sector concerned, and "0" otherwise (entities from other countries and sectors). Moreover, the inclusion of these variables necessarily eliminates one of the existing variables used as a reference variable. Therefore, this study excludes Country 6 (Portugal) and Sector 5 (Distribution of energy, gas, and water).

The following two subsections provide an overview of the models proposed to assess hypotheses H1 and H2.

5.1. The value relevance analysis (H1)

To assess H1, related to the value relevance analysis, three linear regression models (M) are proposed, with the ESP at the time of publication of the entities' reports and accounts as the dependent variable. In Ohlson's (1995) and subsequent studies, such as Bepari et al. (2013) and Rahman and Mohd-Saleh (2008), the book value per share (BV PS) is the common variable.

Variables typically associated with value relevance and predictive value models (accrual versus cash basis) are included in the hypotheses related to the proposed objectives, namely book value per share (BV PS), profit and loss per share (P&L PS), operating cash flow per share (OCF PS).

As proposed in previous studies (e.g. Nguyen & Nguyen, 2020; Tingbani et al., 2022), leverage (Lev), based on debt to total assets, is included as a control variable in the value relevance analysis. Furthermore, within the different models of value relevance, the entities' country and economic activity sector are also included as control variables, as also proposed in similar studies (e.g. Barth et al., 2021; Ebaid, 2011; Malacrida, 2009; Santiago et al., 2018) considering the different patterns in the literature findings based on differences in economic characteristics, accounting standards, supervisory mechanisms, and capital market incentives, among others.

Then, three baseline regression models were proposed to perform the analysis related to value relevance under H1, with the ESP as the dependent variable. BV PS, P&L PS, and OCF PS,

Table 1. Distribution of entities by country

		Initial sample and exclusions (-)			Final sample	
Euronext Index	**Classification**	**(All sectors other than financial and insurance)**	**From the financial and insurance sector**	**Other exclusions**	**In number**	**In %**
CAC-40 (France)	Country 1	40	−4	−1	35	28.93
AEX (The Netherlands)	Country 2	25	−4	−1	20	16.53
BEL-20 (Belgium)	Country 3	20	−5	−1	14	11.57
ISEQ-20 (Ireland)	Country 4	20	−4	−2	14	11.57
OBX (Norway)	Country 5	25	−3	−1	21	17.36
PSI (Portugal)	Country 6	18	−1	0	17	14.05
Total	-	**148**	**−22**	**−5**	**121**	**100**

Table 2. Distribution of entities by sector

Sector (ICB Rating)	Classification	Number of entities	% of entities
Telecommunications and Technologies	Sector 1	21	17.36%
Health	Sector 2	9	7.44%
Consumer goods	Sector 3	37	30.58%
Industry	Sector 4	39	32.23%
Distribution of energy, gas, and water	Sector 5	15	12.40%
Total	-	**121**	**100%**

respectively, represent book value, profit or loss, and operating cash flow weighted per share. The control variables include leverage, countries and sectors, which indicates that the relevance of values may vary between countries and sectors.

In summary, the baseline models aim to determine which of OCF and P&L better explains ESP. As a result, the first baseline model (M1h1) includes the cash flow indicator (OCF) in addition to the BV and P&L, and all those variables are also weighted by the number of shares held by each entity.

Equation 1 shows the variables included in the first model.

$$M1h1: \text{ESP} = \beta_0 + \beta_1 BV\ PS + \beta_2 P\&LPS + \beta_3\ OCF\ PS + \beta_4\ Country_1 + \beta_5\ Country_2 + \beta_6\ Country_3 + \beta_7\ Country_4 + \beta_8\ Country_5 + \beta_9\ Sector_1 + \beta_{10}\ Sector_2 + \beta_{11}\ Sector_3 + \beta_{12}\ Sector_4 + \beta_{13}\ Lev + \varepsilon \quad (1)$$

The following baseline models (M2h1 and M3h1) include each variable separately, i.e., without incorporating the P&L PS, as summarized in Equation 2 and 3.

$$M2h1: ESP = \beta_0 + \beta_1 BV\ PS + \beta_2\ OCF\ PS + \beta_3\ Country_1 + \beta_4\ Country_2 + \beta_5\ Country_3 + \beta_6\ Country_4 + \beta_7\ Country_5 + \beta_8\ Sector_1 + \beta_9\ Sector_2 + \beta_{10}\ Sector_3 + \beta_{11}\ Sector_4 + \beta_{12}\ Lev + \varepsilon \quad (2)$$

$$M3h1: \text{ESP} = \beta_0 + \beta_1 BV\ PS + \beta_2\ P\&LPS + \beta_3\ Country\_1 + \beta_4 Country\_2 + \beta_5\ Country\_3 + \beta_6\ Country\_4 + \beta_7\ Country\_5 + \beta_8\ Sector\_1 + \beta_9\ Sector\_2 + \beta_{10}\ Sector\_3 + \beta_{11}\ Sector\_4 + \beta_{12}\ Lev + \varepsilon \quad (3)$$

As stated previously, this study also aims to evaluate alternative measures for OCF. Therefore, two additional analyses to the M1h1 are proposed by replacing the OCF for the operating cash flow adjusted according to IASB's ED proposal per share (OCF' PS) as well as the NGM for the cash flow per share (NGM PS) as disclosed by those entities.

The variables included in these models, identified as models M4h1 and M5h1, are shown in Equation 4 and 5.

$$M4h1: \text{ESP} = \beta_0 + \beta_1 BV\ PS + \beta_2\ P\&LPS + \beta_3\ OCF'\ PS + \beta_4 Country\_1 + \beta_5\ Country\_2 + \beta_6\ Country\_3 + \beta_7\ Country\_4 + \beta_8\ Country\_5 + \beta_9\ Sector\_1 + \beta_{10}\ Sector\_2 + \beta_{11}\ Sector\_3 + \beta_{12}\ Sector_4 + \beta_{13}\ Lev + \varepsilon \quad (4)$$

$$M5h1: \text{ESP} = \beta_0 + \beta_1 BV\ PS + \beta_2\ P\&LPS + \beta_3\ NGMPS + \beta_4\ Country\_1 + \beta_5\ Country\_2 + \beta_6\ Country\_3 + \beta_7\ Country\_4 + \beta_8\ Country\_5 + \beta_9\ Sector\_1 + \beta_{10}\ Sector\_2 + \beta_{11}\ Sector\_3 + \beta_{12}\ Sector\_4 + \beta_{13}\ Lev + \varepsilon \quad (5)$$

Finally, in addition to the baseline models M2h1 and M3h1, two further models were also proposed to test the isolated effects of the alternative measures OFC' PS (M6h1) and NGM' PS (M7h1), as shown in Equation 6 and 7.

$$M6h1: ESP = \beta_0 + \beta_1\ BV\ PS + \beta_2\ OCF'PS + \beta_3\ Country_1 + \beta_4\ Country_2 + \beta_5\ Country_3 + \beta_6\ Country_4 + \beta_7\ Country_5 + \beta_8\ Sector_1 + \beta_9\ Sector_2 + \beta_{10}\ Sector_3 + \beta_{11}\ Sector_4 + \beta_{12}\ Lev + \varepsilon \quad (6)$$

$$M7h1: ESP = \beta_0 + \beta_1\ BV\ PS + \beta_2\ NGMPS + \beta_3\ Country_1 + \beta_4\ Country_2 + \beta_5\ Country_3 + \beta_6\ Country_4 + \beta_7\ Country_5 + \beta_8\ Sector_1 + \beta_9\ Sector_2 + \beta_{10}\ Sector_3 + \beta_{11}\ Sector_4 + +\beta_{12}\ Lev + \varepsilon \quad (7)$$

It is then possible to compare the results from the two models (M6h1 and M7h1) above with those from the models M4h1 and M5h1, respectively. In addition, it can be compared to baseline models that included either OCF PS (M2h1) or P&L PS (M3h1).

A description of the models that were used to assess H1, including dependent variables (DV), independent variables (IV), and control variables (CV), can be found in Table 3, along with their purpose of analysis.

The next subsection describes the elements behind the models used to assess H2.

5.2. The predictive value analysis (H2)

H2 relates to the predictive value of OCF and P&L, which are lagged according to the previous three years: year *N*-1 for 2020, year *N*-2 for 2019 and year *N*-3 for 2018. Next, the OCF is used as the dependent variable for the figures from the current year (year N), that is, the most recent reference period (2021). As a result of multicollinearity, it may be necessary to decrease the number of reference years for the independent variables.

Control variables include the entities' country and economic activity sector as well, as proposed in similar studies (e.g., Ebaid, 2011; Barth et al., 2021).

During this process, two baseline regression models related to the predictive value analysis of H2 were developed. The purpose of these models is to determine which of the past OCF, and P&L models best predicts future cash flows.

Equation 8 and Equation 9 present the baseline models in which the OCF for the current year is the dependent variable, while the lagged OCF and P&L are the independent variables (M1h2 to M2h2),

$$M1h2: OCF\_N = \beta_0 + \beta_1\ OCF\_N - 1 + \beta_2\ OCF\_N - 2 + \beta_3\ OCF\_N - 3 + \beta_4\ Country\_1 + \beta_5\ Country\_2 + \beta_6\ Country\_3 + \beta_7\ Country\_4 + \beta_8\ Country\_5 + \beta_9\ Sector\_1 + \beta_{10}\ Sector\_2 + \beta_{11}\ Sector\_3 + \beta_{12}\ Sector\_4 + \varepsilon \quad (8)$$

$$M2h2: OCF\_N = \beta_0 + \beta_1\ P\&L\_N - 1 + \beta_2\ P\&L\_N - 2 + \beta_3\ P\&L\_N - 3 + \beta_4\ Country\_1 + \beta_5\ Country\_2 + \beta_6\ Country\_3 + \beta_7\ Country\_4 + \beta_8\ Country\_5 + \beta_9\ Sector\_1 + \beta_{10}\ Sector\_2 + \beta_{11}\ Sector\_3 + \beta_{12}\ Sector\_4 + \varepsilon \quad (9)$$

Based on their usefulness for comparative purposes, three additional analyses are presented following. Despite using independent and dependent variables that differ from the baseline models, the underlying models use a similar approach.

In the first set of additional analyses, the OCF in M1h2 is replaced with alternative measures similar to those proposed for H1. OCF is then replaced by both operating cash flow adjusted according to IASB's ED proposal (OCF') and NGM related to cash flow (NGM PS) as disclosed by those entities. Using all combinations of those variables as dependent and independent variables, seven regression models were constructed (M3h2 to M7h2) since it is not justifiable or even useful at this time to include the OCF as a dependent variable in a model that includes the lagged OCF' as an independent variable (OCF will be expectedly replaced by OCF' no later than 2027).

Table 3. Linear regression models related to H1

Model	DV	IV		CV	Purpose of analysis
Baseline models					
M1h1	ESP	P&L PS	OCF PS	• Lev • Country (countries 1 to 6) • Sector (sectors 1 to 5)	The effects of both P&L PS and OCF PS
M2h1			OCF PS		The isolated effect of OCF PS compared with both variables in M1h1 as well as the comparison with the single effects of P&L PS in M3h1
M3h1		P&L PS			The isolated effect of OCF PS compared with both variables in M1h1 as well as the comparison with the single effects of P&L PS in M3h1
Additional analysis					
M4h1	ESP	P&L PS	OCF' PS	• Lev • Country (countries 1 to 6) • Sector (sectors 1 to 5)	The comparison with M1h1 when the OCF PS is replaced by OCF' PS
M5h1		P&L PS	NGM PS		The comparison with M1h1 when the OCF PS is replaced by NGM PS
M6h1			OCF' PS		The isolated effect of OCF' PS compared with both variables in M4h1 as well as the comparison with the single effects of either OCF PS in M2h1 or P&L PS in M3h1
M7h1			NGM PS		The isolated effect of NGM PS compared with both in M4h1b as well as the comparison with the single effects of either OCF PS in M2h1 or P&L PS in M3h1

Notes: DV: Dependent variable; IV: Independent variables; CV: Control variables.

ESP:Entities' share price; BV PS: Book value per share; Lev: Leverage = Debt to total assets; P&L PS: Profit or loss per share; OCF PS: Operating cash flow per share; OCF' PS: Operating cash flow (under IASB's ED) per share; NGM PS: Non-GAAP measure for cash flow (as disclosed by the entity) per share; Country 1: CAC-40 (France); Country 2: AEX (The Netherlands); Country 3: BEL-20 (Belgium); Country 4: ISEQ-20 (Ireland); Country 5: OBX (Norway); Country 6 (excluded): PSI-20 (Portugal); Sector 1: Telecommunications and technologies; Sector 2: Health; Sector 3: Consumer goods; Sector 4: Industry; Sector 5 (excluded): Distribution of energy, gas, and water.

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Equations 10 and 11 identify models with lagged OCF' as independent variables, while equations 12 to 14 identify those with lagged NGM as independent variables.

$$M3h2: OCF'\_N = \beta_0 + \beta_1\ OCF'\_N-1 + \beta_2\ OCF'\_N-2 + \beta_3\ OCF'\_N-3 + \beta_4\ Country\_1 + \beta_5\ Country\_2 + \beta_6\ Country\_3 + \beta_7\ Country\_4 + \beta_8\ Country\_5 + \beta_9\ Sector\_1 + \beta_{10}\ Sector\_2 + \beta_{11}\ Sector\_3 + \beta_{12}\ Sector\_4 + \varepsilon \quad (10)$$

$$M4h2: NGM\_N = \beta_0 + \beta_1\ OCF'\_N-1 + \beta_2\ OCF'\_N-2 + \beta_3\ OCF'\_N-3 + \beta_4\ Country\_1 + \beta_5\ Country\_2 + \beta_6\ Country\_3 + \beta_7\ Country\_4 + \beta_8\ Country\_5 + \beta_9\ Sector\_1 + \beta_{10}\ Sector\_2 + \beta_{11}\ Sector\_3 + \beta_{12}\ Sector\_4 + \varepsilon \quad (11)$$

$$M5h2: OCF\_N = \beta_0 + \beta_1\ NGM\_N-1 + \beta_2\ NGM\_N-2 + \beta_3\ NGM\_N-3 + \beta_4\ Country\_1 + \beta_5\ Country\_2 + \beta_6\ Country\_3 + \beta_7\ Country\_4 + \beta_8\ Country\_5 + \beta_9\ Sector\_1 + \beta_{10}\ Sector\_2 + \beta_{11}\ Sector\_3 + \beta_{12}\ Sector\_4 + \varepsilon \quad (12)$$

$$M6h2: OCF'\_N = \beta_0 + \beta_1\ NGM\_N-1 + \beta_2\ NGM\_N-2 + \beta_3 NGM\_N-3 + \beta_4\ Country\_1 + \beta_5\ Country\_2 + \beta_6\ Country\_3 + \beta_7\ Country\_4 + \beta_8\ Country\_5 + \beta_9\ Sector\_1 + \beta_{10}\ Sector\_2 + \beta_{11} Sector\_3 + \beta_{12}\ Sector\_4 + \varepsilon \quad (13)$$

$$M7h2: NGM\_N = \beta_0 + \beta_1\ NGM\_N-1 + \beta_2\ NGM\_N-2 + \beta_3\ NGM\_N-3 + \beta_4\ Country\_1 + \beta_5\ Country\_2 + \beta_6\ Country\_3 + \beta_7\ Country\_4 + \beta_8\ Country\_5 + \beta_9\ Sector\_1 + \beta_{10}\ Sector\_2 + \beta_{11}\ Sector\_3 + \beta_{12}\ Sector\_4 + \varepsilon \quad (14)$$

A second set of additional analyses replaces the OCF as the dependent variable proposed in M2h2 with its alternatives (OCF' and NGM), while the P&L remains the lagged independent variable.

These regression models (M8h2 to M9h2) are provided by Equation 15 and 16.

$$M2h2: P\&L\_N = \beta_0 + \beta_1\ OCF\_N-1 + \beta_2\ OCF\_N-2 + \beta_3\ OCF\_N-3 + \beta_4\ Country\_1 + \beta_5\ Country\_2 + \beta_6\ Country\_3 + \beta_7\ Country\_4 + \beta_8\ Country\_5 + \beta_9\ Sector\_1 + \beta_{10}\ Sector\_2 + \beta_{11}\ Sector\_3 + \beta_{12}\ Sector\_4 + \varepsilon \quad (15)$$

$$M9h2: NGM_N = \beta_0 + \beta_1\ P\&L\_N-1 + \beta_2\ P\&L\_N-2 + \beta_3\ P\&L\_N-3 + \beta_4\ Country\_1 + \beta_5\ Country\_2 + \beta_6\ Country\_3 + \beta_7\ Country\_4 + \beta_8\ Country\_5 + \beta_9\ Sector\_1 + \beta_{10}\ Sector\_2 + \beta_{11}\ Sector\_3 + \beta_{12}\ Sector\_4 + \varepsilon \quad (16)$$

The third set examines whether OCF, OCF', and NGM, as lagged independent variables, are more effective at forecasting an accrual indicator (P&L). The findings from these models may be useful to identify their predictive ability concerning P&L versus OCF compared to previous findings.

These final four regression models (M10h2 to M13h2) are identified by Equations 16 to 20.

$$M2h2: P\&L\_N = \beta_0 + \beta_1\ OCF\_N-1 + \beta_2\ OCF\_N-2 + \beta_3\ OCF\_N-3 + \beta_4\ Country\_1 + \beta_5\ Country\_2 + \beta_6\ Country\_3 + \beta_7\ Country\_4 + \beta_8\ Country\_5 + \beta_9\ Sector\_1 + \beta_{10}\ Sector\_2 + \beta_{11}\ Sector\_3 + \beta_{12}\ Sector\_4 + \varepsilon \quad (17)$$

$$M17: P\&L\_N = \beta_0 + \beta_1\ OCF'\_N-1 + \beta_2\ OCF'\_N-2 + \beta_3\ OCF'\_N-3 + \beta_4\ Country\_1 + \beta_5\ Country\_2 + \beta_6\ Country\_3 + \beta_7\ Country\_4 + \beta_8\ Country\_5 + \beta_9\ Sector\_1 + \beta_{10}\ Sector\_2 + \beta_{11}\ Sector\_3 + \beta_{12}\ Sector\_4 + \varepsilon \quad (18)$$

$$M21: P\&L\_N = \beta_0 + \beta_1\ NGM\_N-1 + \beta_2\ NGM\_N-2 + \beta_3\ NGM\_N-3 + \beta_4\ Country\_1 + \beta_5\ Country\_2 + \beta_6\ Country\_3 + \beta_7\ Country\_4 + \beta_8\ Country\_5 + \beta_9\ Sector\_1 + \beta_{10}\ Sector\_2 + \beta_{11}\ Sector\_3 + \beta_{12}\ Sector\_4 + \varepsilon \quad (19)$$

$$M4h2: P\&L\_N = \beta_0 + \beta_1\ P\&L\_N-1 + \beta_2\ P\&L\_N-2 + \beta_3\ P\&L\_N-3 + \beta_4\ Country\_1 + \beta_5\ Country\_2 + \beta_6\ Country\_3 + \beta_7\ Country\_4 + \beta_8\ Country\_5 + \beta_9\ Sector\_1 + \beta_{10}\ Sector\_2 + \beta_{11}\ Sector\_3 + \beta_{12}\ Sector\_4 + \varepsilon \quad (20)$$

The following Table 4 summarizes the models associated with H2, indicating their dependent variables (DV), independent variables (ID) and control variables (CV), along with their purpose of analysis.

The following section provides the results of the models proposed for assessing H1 and H2, in addition to their discussion.

6. Empirical results and discussion

This section begins with an overview of the data collected, followed by the regression analyses performed.

In Table 5, the averages of the variables used are presented, including the EPS, the Lev, and the variables weighted by the number of shares of the entities, namely the BV, P&L, and cash flow measures (OCF, OCF' and NGM), with breakdowns by year, country, and sector.

The figures in Table 5 indicate a similar level of PS for OCF and OCF', which are higher than PS for P&L. Additionally, the latter has more volatile values over time. In turn, NGM PS figures are about half of OCF PS or OCF' PS. In light of the close values between those two, the implementation of the IASB's ED may have a likely reduced impact. In most cases, the most favourable changes occur from 2020 to 2021. From 2018 to 2021, Lev had the most stable changes, varying between two and three percentage points.

Based on the variables under assessment, the patterns may vary by country. Entities from France, Belgium, and Portugal have higher Lev levels. The differences between NGM and OCF or OCF' remain, as do the higher average figures for these latter variables compared to P&L, with the Netherlands being the exception. The same applies by sector, with telecommunications and technology entities being the exception. There is also a divergence in this sector between the NGM and OCF or OCF' due to their close values. There are some cases in which, either by country or by sector, the difference between those variables is, on average, even higher than half (for instance, Ireland and Portugal, as well as entities in the consumer goods sector). In turn, the level of indebtedness is higher among entities in the energy, gas, and water industries.

To identify possible collinearity or multicollinearity issues, correlation and multi-correlation analyses were performed based on Pearson's correlation and variance inflation factor.

A correlation table is provided in Table 6 showing the variables that are included in the next models.

The correlations from Table 6 do not indicate any significant issues with collinearity since they are weak or moderate, with values less than 0.7 for each of the variables. There is one exception to this rule and that is the correlation between OCF PS and OCF' PS, which is close to 1.0. However, those variables do not integrate into any specific model at the same time. Due to this, it seems that the difference between those two measures of cash flow has decreased. This indicates again, that the IASB's ED implementation will have a moderate impact on cash flow measures. According to what would be expected, the NGM PS is correlated with either the OCF' PS or the OCF PS. Even so, it is noted that there is a moderate level of correlation between them (about 0.5). Moreover, the BV PS of the entities has a similar level of correlation with either P&L PS or cash flow measures (OCF PS and OCF' PS). Despite this, it should also be noted that P&L PS has a higher correlation with the entity's BV PS than any of those cash flow measures.

A higher level of correlation with the EPS PS (the dependent variable of the value relevance model) can be observed for those variables that relate to cash flows (OCF PS and OCF' PS), followed by the NGM PS, which was also related to cash flows, and finally by the P&L PS (the accrual measure used as a basis for comparison) and Lev (a control variable). In comparison to the

Table 4. Linear regression models related to H2

Model	DV	IV	CV	Purpose of analysis
Baseline models				
M1h2	OCF	Lagged OCF	• Country (countries 1 to 6) • Sector (sectors 1 to 5)	To assess which one between OCF and P&L is a better predictor of OCF
M2h2	OCF	Lagged P&L		
Additional analysis				
M3h2	OCF'	Lagged OCF'	• Country (countries 1 to 6) • Sector (sectors 1 to 5)	The comparison with M1h2, when OCF as IV is replaced by OCF'. It is also compared with M2h2, M8h2 and M9h2, having the P&L as IV and the distinct measures of cash flows as DV (OCF' and NGM)
M4h2	NGM			
M5h2	OCF	Lagged NGM		The comparison with M1h2, when OCF as IV is replaced by NGM. It is also compared with M2h2, M8h2 and M9h2, having the P&L as IV and the distinct measures of cash flows as DV (OCF, OCF' and NGM)
M6h2	OCF'			
M7h2	NGM			
M8h2	OCF'	Lagged P&L		The comparison with M2h2, when OCF as DV is replaced by the alternative measures of cash flows (OCF' and NGM)
M9h2	NGM			
M10h2	P&L	Lagged OCF		To assess which one between the alternative measures of cash flows and P&L as IV is a better predictor of P&L, instead of using the distinct measures of cash flows (OCF, OCF' and NGM) as DV
M11h2		Lagged OCF'		
M12h2		Lagged NGM		
M13h2		Lagged P&L		

Notes: DV: Dependent variable; IV: Independent variables; CV: Control variables.

P&L: Profit or loss; OCF: Operating cash flow; OCF': Operating cash flow (under IASB's ED); NGM: Non-GAAP measure for cash flow (as disclosed by the entity) Country 1: CAC-40 (France); Country 2: AEX (The Netherlands); Country 3: BEL-20 (Belgium); Country 4: ISEQ-20 (Ireland); Country 5: OBX (Norway); Country 6 (excluded): PSI-20 (Portugal); Sector 1: Telecommunications and technologies; Sector 2: Health; Sector 3: Consumer goods; Sector 4: Industry; Sector 5 (excluded): Distribution of energy, gas, and water.

correlation between the EPS PS and either P&L PS or NGM PS, a higher correlation is observed between the EPS PS and the BV PS. However, the correlation between EPS PS and BV PS is even lower than that between EPS PS and either the OCF PS or the OCF' PS. It should be stressed that EPS PS is a key factor underpinning the value relevance model.

In a subsequent step, the VIF analysis was used to perform the multicollinearity tests on all models that were presented in the following section. The results show a valid VIF for the variables,

Table 5. Average values for the main variables used, by year, country and sector

	EPS (In Euros)	Lev (In %)	BV_PS (In 10x6 Euros)	P&L_PS (In 10x6 Euros)	OCF_PS (In 10x6 Euros)	OCF'_PS (In 10x6 Euros)	NGM_PS (In 10x6 Euros)
All	1.78	0.56	28.09	3.86	5.95	6.03	2.82
By year							
2018	83.28	0.55	26.21	3.76	5.31	5.27	2.40
2019	83.18	0.58	26.66	2.84	6.73	6.86	2.58
2020	117.33	0.57	26.88	1.67	5.17	5.31	2.64
2021	12.03	0.55	32.75	7.17	6.72	6.83	3.74
By country							
Country 1	12.17	0.61	4.32	4.70	9.20	9.27	4.43
Country 2	175.54	0.48	39.75	8.35	7.32	7.37	4.30
Country 3	139.71	0.59	21.31	3.56	5.90	5.96	2.83
Country 4	8.26	0.54	37.44	2.66	6.04	6.21	1.69
Country 5	2.73	0.50	6.96	.74	1.21	1.33	.63
Country 6	6.12	0.62	4.40	.43	1.24	1.23	.33
By sector							
Sector 1	84.96	0.53	28.67	7.64	5.73	5.76	4.97
Sector 2	81.76	0.43	39.22	1.63	5.28	5.33	2.65
Sector 3	131.58	0.56	31.94	4.66	7.42	7.50	2.73
Sector 4	98.95	0.61	25.46	2.68	5.37	5.45	2.08
Sector 5	63.78	0.59	17.98	.99	4.65	4.77	2.05

Notes: ESP: Entities' share price; BV PS: Book value per share; Lev: Leverage = debt to total assets; P&L PS: Profit or loss per share; OCF PS: Operating cash flow per share; OCF' PS: Operating cash flow (under IASB's ED) per share; NGM PS: Non-GAAP measure for cash flow (as disclosed by the entity) per share; Country 1: CAC-40 (France); Country 2: AEX (The Netherlands); Country 3: BEL-20 (Belgium); Country 4: ISEQ-20 (Ireland); Country 5: OBX (Norway); Country 6 (excluded): PSI-20 (Portugal); Sector 1: Telecommunications and technologies; Sector 2: Health; Sector 3: Consumer goods; Sector 4: Industry; Sector 5 (excluded): Distribution of energy, gas, and water.

to the extent that they did not exceed the threshold defined. This is based on what is the maximum limit for considering the existence of acceptable levels of multicollinearity in this research (below 3.0). Exceptions, in this context, are for the lagged variables related to cash flows (OCF, OCF', NGM), for which it was necessary to eliminate one of the years to mitigate the high multicollinearity (below 7.0) between the variables, with the last year (*N*-3) being the option.

Finally, the Durbin-Watson analysis showed no autocorrelation in the residuals for all relevant cases, namely for all models other than those related to predictive value analysis since it is not suitable to them (see, for instance, Nerlove & Wallis, 1996).

Following the previous overview of the data collected, the next two subsections are devoted to explaining the results of the two hypotheses.

6.1. The value relevance analysis (H1)

This subsection is divided into three subsubsections related to the first hypothesis on value relevance. The first presents the baseline models, while the second includes additional analyses. The third discusses their findings.

Table 6. Correlations between the variables

	BV PS	Lev	P&L PS	OCF PS	OCF' PS	NGM PS	Country _1	Country _2	Country _3	Country _4	Country _5	Country _6	Sector _1	Sector _2	Sector _3	Sector _4	Sector _5
EPS	.39	−.106*	.172**	.589**	.584**	.264**	0.072	.194**	.092*	−0.043	−.164**	−.213**	−0.041	−0.030	.112*	−0.007	−0.077
BV PS	1	−.193**	.669**	.595**	.606**	.494**	.214**	.135**	−0.077	.094*	−.204**	−.252**	0.009	0.085	0.063	−0.047	−.099*
Lev	−.193**	1	−.098*	.065	.065	.008	.139**	.136**	0.055	−0.048	−.108*	−.211**	−.098*	−.172**	−0.027	.155**	0.068
P&L PS	.669**	−.098*	1	.261**	.277**	.316**	0.030	.107*	−0.006	−0.023	−0.060	−0.073	.094*	−0.034	0.026	−0.044	−0.057
OCF PS	.595**	0.065	.261**	1	.998**	.505**	.251**	0.067	−0.002	0.005	−.203**	−.221**	−0.011	−0.022	.108*	−0.046	−0.056
OCF' PS	.606**	0.065	.277**	.998**	1	.504**	.245**	0.073	−0.003	0.008	−.199**	−.224**	−0.015	−0.023	.113*	−0.048	−0.055
NGM PS	.494**	0.008	.316**	.505**	.504**	1	.141**	0.087	0.001	−0.056	−.107*	−.133**	.134**	−0.006	−0.010	−0.069	−0.038
Country_1	.214**	.139**	.030	.251**	.245**	.141**	1	−.292**	−.282**	−.233**	−.231**	−.258**	−0.004	0.028	0.051	0.028	−.129**
Country_2	.135**	.136**	.107*	.067	.073	.087	−.292**	1	−.202**	−.167**	−.166**	−.185**	−0.037	−.130**	−0.020	0.011	.159**
Country_3	−.077	0.055	−.006	−.002	−.003	.001	−.282**	−.202**	1	−.161**	−.160**	−.179**	.137**	−0.040	0.047	−0.065	−.098*
Country_4	.094*	−0.048	−.023	.005	.008	−.056	−.233**	−.167**	−.161**	1	−.132**	−.148**	0.053	.190**	−.131**	0.022	−0.060
Country_5	−.204**	−.108*	−.060	−.203**	−.199**	−.107*	−.231**	−.166**	−.160**	−.132**	1	−.146**	−.166**	.094*	.152**	−0.028	−0.058
Country_6	−.252**	−.211**	−.073	−.221**	−.224**	−.133**	−.258**	−.185**	−.179**	−.148**	−.146**	1	0.003	−.115*	−.113*	0.026	.209**
Sector_1	.009	−.098*	.094*	−.011	−.015	.134**	−0.004	−0.037	.137**	0.053	−.166**	0.003	1	−.130**	−.304**	−.316**	−.172**
Sector_2	.085	−.172**	−.034	−.022	−.023	−.006	0.028	−.130**	−0.040	.190**	.094*	−.115*	−.130**	1	−.188**	−.195**	−.107*
Sector_3	.063	−0.027	.026	.108*	.113*	−.010	0.051	−0.020	0.047	−.131**	.152**	−.113*	−.304**	−.188**	1	−.458**	−.250**
Sector_4	−.047	.155**	−.044	−.046	−.048	−.069	0.028	0.011	−0.065	0.022	−0.028	0.026	−.316**	−.195**	−.458**	1	−.259**

Notes: *Significance level at 5%; **Significance level at 1%.

ESP:Entities' share price; BV PS: Book value per share; Lev: Leverage = Debt to total assets; P&L PS: Profit or loss per share; OCF PS: Operating cash flow per share; Country 1: CAC-40 (France); Country 2: AEX (The Netherlands); Country 3: BEL-20 (Belgium); Country 4: ISEQ-20 (Ireland); Country 5: OBX (Norway); Country 6 (excluded): PSI-20 (Portugal); Sector 1: Telecommunications and technologies; Sector 2: Health; Sector 3: Consumer goods; Sector 4: Industry; Sector 5 (excluded): Distribution of energy, gas, and water.

6.1.1. Baseline models

To identify which between P&L PS and OCF PS best explains the ESP underlying the H1 proposed, Table 7 presents the results for the three baseline regression models (M1h1 to M3h1), where the coefficients of the independent variables OCF PS and P&L PS, the levels of associations, and the model's explanatory power are presented. ANOVA and adjusted R^2 tests are also provided. In M1h1, OCF PS and P&L PS are presented together, while in M2h2 and M3h1, these two variables are presented separately, with ESP as the dependent variable and BV PS as the independent variable, with leverage, country and sector defined as the control variables.

Based on Table 7, M1h1 and M2h1 have higher adjusted R^2 than M2h1 (39%, versus about 21% for M1h3), and are therefore the models with greater explanatory power. As for BV PS, it is not significant in the models that include OCF PS (M1h1 and M2h1). Lev, on the other hand, has a negative sign of association within those models.

Furthermore, the coefficient for P&L PS in M3h1, where this variable is significant, shows a negative association, in contrast to the coefficients for OCF PS in M1h1 and M1h2.

Models show similar patterns regarding country and sector. More specifically, a few significant variables related to two countries and one sector with positive associations and close coefficient values should be mentioned as common characteristics among the three models.

The next subsubsection provides additional analyses for assessing H1.

6.1.2. Additional analyses

In Table 8, the results for the additional analyses (models M4h1 to M7h1) are presented, with the ESP as the dependent variable again. Similarly to the baseline models (M1h1-M1h3), the M4h1 to M7h1 aim to examine more in-depth how the findings might change if OCF is replaced with alternative measures of cash flows (OCF' and NGM).

Similarly, the baseline models that included OCF PS (M1h1 and M2h1) and those now including OCF' PS (M4h1 and M6h1) show similar patterns, including the non-significance of BV PS and P&L PS in all those models and the level of explanatory power based on the adjusted R^2 (about 40%). Furthermore, it has a negative sign of association with Lev as a common characteristic.

In turn, the baseline model (M3h1), which includes the P&L PS, presents a pattern more similar to M5h1 and M7h1, which include NGM PS. Notwithstanding, in contrast to models with either OCF PS or OCF PS, these models demonstrate a similar level of explanatory power (about 20%) and the significance of the BV PS. Furthermore, the P&L PS has a negative association sign in M5h1 exclusively, as it also occurred in M3h1.

The inclusion of NGM PS in M3h1 reveals that this variable is also significant, despite its lower level than either OCF PS or OCF' PS. Therefore, the inclusion of NGM PS did not significantly change the explanatory power of M5h1, compared to M3h1. Finally, the baseline and the additional models exhibit similar patterns by country or sector.

The findings for the H1 on value relevance are discussed in the following subsubsection.

6.1.3. Findings discussion

Considering the literature review previously presented for the value relevance analysis, this section discusses the findings.

According to the value relevance model originally proposed by Ohlson (1995), it was observed that the models with either the OCF or OCF' as an independent variable had a higher adjusted R^2, compared to the P&L and NGM, because of the influence of the indicators under analysis (accruals

Table 7. Regression models M1h1 to M3h1

	ESP as the dependent variable		
Independent variables	**M1h1**	**M2h1**	**M3h1**
BV PS	0.03	−0.11	2.10***
P&L PS	−0.10		−1.46***
OCF PS	11.85***	11.90***	
Lev	−1.19***	−1.20***	−0.26
Country_1	10.75	11.44	38.55
Country_2	77.48***	77.79***	99.88***
Country_3	71.57***	71.77***	98.33***
Country_4	5.86	6.68	10.11
Country_5	−11.52	−11.70	−5.03
Sector_1	0.01	−0.45	1.20
Sector_2	12.19	12.61	−9.17
Sector_3	38.35*	38.37*	45.93*
Sector_4	35.98	36.01	26.89
Constant	45.71	45.79	−5.13
Statistics of the models			
R^2	0.40	0.40	0.24
R^2 adjusted	0.39	0.39	0.22
ANOVA Significance	<.001	<.001	<.001

Notes: *Significance level at 10%; **Significance level at 5%; ***Significance level at 1%.

ESP:Entities' share price; BV PS: Book value per share; Lev: Leverage = Debt to total assets; P&L PS: Profit or loss per share; OCF PS: Operating cash flow per share; Country 1: CAC-40 (France); Country 2: AEX (The Netherlands); Country 3: BEL-20 (Belgium); Country 4: ISEQ-20 (Ireland); Country 5: OBX (Norway); Country 6 (excluded): PSI-20 (Portugal); Sector 1: Telecommunications and technologies; Sector 2: Health; Sector 3: Consumer goods; Sector 4: Industry; Sector 5 (excluded): Distribution of energy, gas, and water.

basis and cash basis). Since most entities also present their statement of cash flows using the indirect method, beginning with a measure from the income statement, the similarity between P&L and NGM may indicate P&L is built primarily on accrual indicators.

Hence, this contrasts with what was proposed for H1, which considered some of the findings from previous studies (for example, Barth et al., 2001; Bowen et al., 1987; Pfeiffer et al., 1998). Nevertheless, it is in line with research by Barth et al (2021), which found that OCF has increased in relevance over the past few years, whereas earnings have declined because of the shift to new economies. As both BV PS and P&L PS were found to have reduced significance, the findings are consistent with this view, indicating that cash flow measures are increasingly relevant over accrual basis measures.

Furthermore, based on the previous findings, the control variables regarding countries and sectors included in the models are significant, especially for countries. Ebaid (2011) suggests that value relevance may vary between countries due to local regulatory differences, among other factors.

Table 8. Regression models M4h1 to M7h1

	ESP as the dependent variable			
Independent variables	**M4h1**	**M5h1**	**M6h1**	**M7h1**
BV PS	0.05	1.85***	−0.04	1.30***
P&L PS	−0.20	−1.39***		
OCF' PS	11.61***		11.70***	
NGM PS		2.20**		2.40**
Lev	−1.20***	−0.37	−1.22***	−0.47
Country_1	11.67	37.90	13.12	50.00**
Country_2	76.24***	97.66***	76.89***	103.55***
Country_3	71.72***	97.06***	72.15***	101.57***
Country_4	4.45	14.64	6.15	27.83
Country_5	−12.94	−8.12	−13.31	−10.73
Sector_1	1.31	−4.42	0.38	−11.77
Sector_2	12.55	−8.39	13.42	−3.10
Sector_3	38.05*	47.64*	38.10*	48.58*
Sector_4	36.42*	28.47	36.47*	28.42
Constant	45.77	2.63	47.24	11.34
Statistics of the models				
R^2	0.40	0.24	0.40	0.23
R^2 adjusted	0.39	0.22	0.39	0.21
ANOVA Significance	<.001	<.001	<.001	<.001

Notes: *Significance level at 10%; **Significance level at 5%; ***Significance level at 1%.

ESP:Entities' share price; BV PS: Book value per share; P&L PS: Profit or loss per share; OCF PS: Operating cash flow per share; OCF' PS: Operating cash flow (under IASB's ED) per share; NGM PS: Non-GAAP measure for cash flow (as disclosed by the entity) per share; Lev: Leverage = Debt to total assets; Country 1: CAC-40 (France); Country 2: AEX (The Netherlands); Country 3: BEL-20 (Belgium); Country 4: ISEQ-20 (Ireland); Country 5: OBX (Norway); Country 6 (excluded): PSI-20 (Portugal); Sector 1: Telecommunications and technologies; Sector 2: Health; Sector 3: Consumer goods; Sector 4: Industry; Sector 5 (excluded): Distribution of energy, gas, and water.

Finally, a negative sign of association was found for the leverage in the models with the highest explanatory power, namely within those where the OCF or OCF' were included as independent variables. This may be aligned with the agency's theory, as suggested by Tingbani et al. (2022) from the hypothesis of the agency's cost of debt formulated by Jensen and Meckling (1976). This theory suggests that managers may have an incentive to consider covenants and their costs in the debt agreement from a certain point of indebtedness, which may reduce the future entities' cash flows and, consequently, their market value.

6.2. The predictive value analysis (H2)

This subsection is divided into three subsubsections related to the second hypothesis on the predictive value. The first presents the baseline models, while the second includes additional analyses. The third discusses their findings.

6.2.1. Baseline models

To identify the best predictor of future cash flows underlying the H2 proposed, Table 9 presents the results of the two baseline regression models (M1h2 and M2h2), where it is shown the coefficients, the associations levels, and the explanatory power. The results of the adjusted R^2 and ANOVA tests are also provided. As independent variables, the first model (M1h2) includes the lagged OCF PS, while the second one (M2h2) has the lagged P&L PS, with the OCF as the dependent one in both cases. Country and sector are also included in both as control variables.

It is shown in Table 9 that the model with lagged OCF as an independent variable (M1h2) has a high adjusted R^2 level (about 90%), while the model with lagged P&L as an independent variable (M2h2) has a lower level (about 80%). Nevertheless, the first model only integrates two previous periods since including a third would increase multicollinearity. Even so, this can be seen as an advantage since it can allow cash flow forecasting to be simplified since it can reduce the number of previous periods that need to be considered.

The second model, however, is less consistent than the first one, considering that the immediately previous period (year *n*-1), with a negative sign for its coefficient, is not significant.

Furthermore, the first model is also more consistent regarding the negative signs of association across all sectors.

Additional analyses are provided in the following subsubsection.

6.2.2. Additional analyses

In an alternative to baseline models M1h2 and M2h2, the first set of additional analyses (M3h2 to M7h2) incorporates different measures of cash flows as dependent and independent variables (lagged).

Table 10 presents the results of these regression models.

Based on Table 11, the model with OCF as a dependent variable (M8h2), as an alternative to OCF, has a similar explanatory power to the baseline model M2h2, which is close to 80%. In contrast, the M9h2 produces similar results to those previous models M4h2 and M6h2 that intend to predict OCF' or NGM based on the alternative cash flow measures lagged (NGM and OCF', respectively). Overall, these findings indicate that models with NGM as dependent variables perform worse when using different lagged variables as independent ones.

Additionally, the third set of models M10h2 to M13h2 has P&L as the dependent variable, with all lagged variables regarded as independent, namely P&L and cash flow measures (OCF, OCF', and NGM).

These models are presented in Table 12.

According to Table 12, these models have similar explanatory powers, ranging from a minimum of 22% for M11h2 to a maximum of 33% for M12h2, which includes NGM as a lagged independent variable. This is a result to be stressed since the dependent and the independent variables are not the same (the latter as a lagged variable, as usual). For this statistic, the models that have, as independent variables, the lagged OCF or OCF' as well as that with P&L (the same as the dependent variable) produce similar results (between 23 and 25%).

The findings for H2 on predictive value are discussed in the following subsection.

6.2.3. Findings discussion

This section discusses the findings in light of the literature review that was presented previously.

Table 9. Regression models M1h2 and M2h2

OCF as the dependent variable

Independent variables	M1h2	M2h2
OCF_N-1	0.45***	NA
OCF_N-2	0.71***	NA
OCF_N-3		NA
P&L *N*-1	639.94	−0.01
P&L *N*-2	624.40	1.65***
P&L *N*-3	606.03	0.58***
Country_1	911.58	1,304.78
Country_2	639.94	2,504.15**
Country_3	624.40	81.20
Country_4	606.03	122.97
Country_5	673.30	856.21
Sector_1	−1,741.75**	−1885.84
Sector_2	−1,987.37*	−1785.58
Sector_3	−2,016.49***	−3631.76**
Sector_4	−1,832.97**	−1631.37
Constant	1,200.14	1,612.59
Statistics of the models		
R^2	0.91	0.81
R^2 adjusted	0.90	0.79
ANOVA Significance	<.001	<.001

Note: *Significance level at 10%; **Significance level at 5%; ***Significance level at 1%.

P&L: Profit or loss; OCF: Operating cash flow; Country 1: CAC-40 (France); Country 2: AEX. (The Netherlands); Country 3: BEL-20 (Belgium); Country 4: ISEQ-20 (Ireland); Country 5: OBX (Norway); Country 6 (excluded): PSI-20 (Portugal); Sector 1: Telecommunications and technologies; Sector 2: Health; Sector 3: Consumer goods; Sector 4: Industry; Sector 5 (excluded): Distribution of energy, gas, and water.

Using the comparative analysis (accruals versus cash) of the predictive value underlying the H2, it was found that, once again, the model best predicts future cash flows is the past OCF or OCF' themselves, as opposed to those models that included the P&L and NGM historical information as independent variables. Nonetheless, all the cash flow measures, including the NGM, performed more consistently if they had been proposed as lagged independent variables to forecast themselves.

Globally, the P&L is the dependent variable among the proposed forecasting models that produced the worst results, which may be due to its higher level of uncertainty, volatility, and discretion. Overall, the several models proposed also indicate that the best results are those that came from the same dependent variable used as lagged independent one. The P&L is an exception as a dependent variable since the best results were found with the NGM as a lagged independent variable.

Based on the adjusted R^2, the model that includes the OCF' as a dependent and independent (lagged) variable (M3h2) has similar explanatory power to the baseline model (M1h2),

Table 10. Regression models M3h2 to M7h2

Independent variables	Models (and dependent variables)				
	M3h2 (OCF')	M4h2 (OCF')	M5h2 (NGM)	M6h2 (NGM)	M7h2 (NGM)
OCF_N-1	NA	NA	−0.11	NA	NA
OCF_N-2	NA	NA	0.76***	NA	NA
OCF_N-3	NA	NA		NA	NA
OCF'_N-1	0.50***	NA	NA	−0.13	NA
OCF'_N-2	0.66***	NA	NA	0.74***	NA
OCF'_N-3		NA	NA		NA
NGM_N-1	NA	0,38*	NA	NA	0.26*
NGM_N-2	NA	−0,10	NA	NA	0.52***
NGM_N-3	NA	0,98***	NA	NA	0.50***
Country_1	887.08	3,523,81***	368.23	591.09	922.30
Country_2	779.59	2,198,53*	417.79	420.55	1233.98
Country_3	369.07	1,019,51	1698.51*	2,064.29**	602.91
Country_4	846.63	2,341,87	−196.74	−222.52	665.55
Country_5	627.89	368,79	429.38	471.75	176.56
Sector_1	−1,445.60	−3,693,80***	−2086.54**	−2,592.43**	−2,122.76**
Sector_2	−1,710.29	−3,652,61**	−1646.92	−2,104.93	−1,966.69*
Sector_3	−1,554.36**	−1,857,56	−2654.76***	−3,093.28***	−1,744.14**
Sector_4	−1,574.92**	−2,775,53**	−1937.68**	−2,360.27**	−1,907.83**
Constant	970.65	2,398,84*	1374.70	1,720.60	1,467.99*
Statistics of the models					
R^2	0.90	0.72	0.73	0.68	0.77
R^2 adjusted	0.89	0.69	0.70	0.65	0.74
ANOVA Significance	<.001	<.001	<.001	<.001	<.001

Notes: *Significance level at 10%; **Significance level at 5%; ***Significance level at 1%.

OCF: Operating cash flow; OCF': Operating cash flow (under IASB's ED); NGM: Non-GAAP measure for cash flow (as disclosed by the entity); Country 1: CAC-40 (France); Country 2: AEX (The Netherlands); Country 3: BEL-20 (Belgium); Country 4: ISEQ-20 (Ireland); Country 5: OBX (Norway); Country 6 (excluded): PSI-20 (Portugal); Sector 1: Telecommunications and technologies; Sector 2: Health; Sector 3: Consumer goods; Sector 4: Industry; Sector 5 (excluded): Distribution of energy, gas, and water.

which is close to 90%. Among the remaining models, the explanatory power ranges from 65% (M4h2) to 74% (M5h2). Nonetheless, those models present less consistent results regarding the signs of association among the lagged periods. The model that consistently uses the same variable (NGM) as the dependent and independent variable (M5h2), which has the second highest explanatory power (74%), should be given an exception. Additionally, the results for the sector appear more consistent in those models than those for the countries.

Table 11. Regression models M8h2 to M9h2

Independent Variables	Models (and dependent variables)	
	M8h2 (OCF')	M9h2 (NGM)
P&L_N-1	0.08	−0.42***
P&L_N-2	1.64***	0.83***
P&L_N-3	0.57***	0.38***
Country_1	1,251.04	1,081.55
Country_2	2,579.87**	1,751.03*
Country_3	−83.22	1,228.21
Country_4	412.21	−410.57
Country_5	867.25	357.22
Sector_1	−1,910.03	−1,218.59
Sector_2	−1,863.02	−398.87
Sector_3	−3,437.37***	−2,617.91***
Sector_4	−1,581.97	−1,337.58
Constant	1,547.89	1,183.78
Statistics of the models		
R^2	0.80	0.68
R^2 adjusted	0.78	0.64
ANOVA Significance	<.001	<.001

Notes: *Significance level at 10%; **Significance level at 5%; ***Significance level at 1%.

P&L:Profit or loss; OCF': Operating cash flow (under IASB's ED); NGM: Non-GAAP measure for cash flow (as disclosed by the entity); Country 1: CAC-40 (France); Country 2: AEX (The Netherlands); Country 3: BEL-20 (Belgium); Country 4: ISEQ-20 (Ireland); Country 5: OBX (Norway); Country 6 (excluded): PSI-20 (Portugal); Sector 1: Telecommunications and technologies; Sector 2: Health; Sector 3: Consumer goods; Sector 4: Industry; Sector 5 (excluded): Distribution of energy, gas, and water.

The second set of additional analyses (M8h2 and M9h2) includes lagged P&L as an independent variable (M8h2 and M9h2), forecasting alternative measures of cash flows (OCF' and NGM).

These models are summarized in Table 11.

Consequently, the future measure of OCF (the OCF') has not significantly reduced the predictability of future cash flows. Furthermore, these findings may indicate that the changes in the IASB's ED do not significantly affect the predictive capacity of cash flows and, therefore, the relevance of this indicator.

These findings contrast with other studies (such as Lustosa and Santos, 2009; Khansalar, 2012; Malacrida, 2009; Nallareddy et al., 2020; Noury et al., 2020; Santiago et al., 2018). However, although the results are also contrary to the proposed H2, they are similar to those found by other researchers (for instance, Arthur et al., 2010; Barth et al., 2001; Dechow & Dichev, 2002; Lev et al., 2005), which found that the OCF was more predictive than the P&L indicators.

In this context, it is also worth mentioning that Barth et al. (2001) found separate components of accruals that had greater predictive capacity than accruals themselves. Thus, OCF had a greater predictive capacity than accruals in their aggregate form. The greater discretion

Table 12. Regression models M10h2 to M13h2

P&L as the dependent variable

Independent variables	Models			
	M10h2	**M11h2**	**M12h2**	**M13h2**
OCF_N-1	−0.17	NA	NA	NA
OCF_N-2	0.59***	NA	NA	NA
OCF_N-3		NA	NA	NA
OCF'_N-1	NA	−0.17	NA	NA
OCF'_N-2	NA	0.58***	NA	NA
OCF'_N-3	NA		NA	NA
NGM_N-1	NA	NA	0.68***	NA
NGM_N-2	NA	NA	0.54***	NA
NGM_N-3	NA	NA	−0.01	NA
P&L_N-1	NA	NA	NA	−0.07
P&L_N-2	NA	NA	NA	0.54*
P&L_N-3	NA	NA	NA	0.39**
Country_1	1,437.52	1,551.76	1,438.06	1,651.99
Country_2	2,497.52	2,458.54	2,646.51*	2,908.74*
Country_3	1,370.50	1,592.81	80.42	911.29
Country_4	−232.77	−250.61	443.52	−231.08
Country_5	180.71	208.62	47.08	286.48
Sector_1	2,677.75	2,337.16	2,789.76	2,397.31
Sector_2	679.44	357.50	263.02	757.91
Sector_3	897.30	617.69	1,647.95	272.09
Sector_4	366.96	101.36	431.17	340.86
Constant	−793.40	−574.85	−857.31	−560.71
Statistics of the models				
R^2	0.30	0.29	0.40	0.32
R^2 adjusted	0.23	0.22	0.33	0.25
ANOVA Significance	<.001	<.001	<.001	<.001

Notes: *Significance level at 10%; **Significance level at 5%; ***Significance level at 1%.

P&L:Profit or loss; OCF: Operating cash flow; OCF': Operating cash flow (under IASB's ED); NGM: Non-GAAP measure for cash flow (as disclosed by the entity); Country 1: CAC-40 (France); Country 2: AEX (The Netherlands); Country 3: BEL-20 (Belgium); Country 4: ISEQ-20 (Ireland); Country 5: OBX (Norway); Country 6 (excluded): PSI-20 (Portugal); Sector 1: Telecommunications and technologies; Sector 2: Health; Sector 3: Consumer goods; Sector 4: Industry; Sector 5 (excluded): Distribution of energy, gas, and water.

associated with accruals, which hinder the forecasting of future cash flows, is presented by Dechow and Dichev (2002) as a possible justification for a possible higher predictive capacity of OCF. This suggestion is also aligned with the findings by Li (2019), who found that discretionary measurement (earnings management) could reduce the earnings' predictive power regarding future cash flows since it is generally assumed that cash flows are subject to lower levels of manipulation than accruals measures.

Finally, predictive value seems to be more affected by entities' economic activity sectors than their countries, as opposed to the findings for value relevance. These results are, therefore, consistent with the literature, as multiple studies have examined the effect of the entity's economic activity sector on future cash flows. By examining the effect of the entity's economic activity sector on future cash flows, some have found, for instance, significant differences in their forecasting capability (like Malacrida, 2009; Santiago et al., 2018).

The next section summarizes the paper's findings, as well as its limitations and future research opportunities.

7. Summary and conclusion

Based on the value relevance and predictive value of data related to cash flows versus an accrual measure, the empirical analyses carried out in this paper focused on relevance as a qualitative characteristic of financial information.

For this purpose, two hypotheses are developed by comparing, for this purpose, different measures of cash flows (cash basis) with P&L (accrual basis). Findings showed that the OCF has the greatest impact on the ESP. Further, it was found that OCF is also the most suitable to forecast future cash flows. The regression analyses also showed similar patterns for both the reported OCF and the OCF', which suggests that the IASB's ED changes will have no significant impact on forecasting future cash flows. The NGM of cash flow is also a suitable measure to forecast itself, despite also reducing its explanatory power concerning future P&L. Notwithstanding, lagged NGM also provided the best results when this latter was proposed as the dependent one. Finally, among the several additional models proposed, the predictive capacity to forecast P&L revealed the worst results, with no significant differences between the use of lagged P&L or cash flow measures as lagged independent variables.

All these findings point to the increasing relevance of cash flows over accruals, which aligns with Barth et al. (2023). As Li (2019) suggests, the differences may arise from the discretionary and non-discretionary components underlying P&L, which reduces its relevance relative to OCF. From a different point of view, Chen and Gong's (2019) research examines the negative effects of comparability issues on the relevance of accounting information, in particular for accrual measures. As a result, these findings indicate that its impact on cash flow information is likely lower than that on earnings information.

As a result of its transversal approach particularly devoted to the cash flow analysis, this paper may contribute to the academic and business environment. The study also compares different indicators of cash flows in terms of the influence on the ESP and the predictive capacity of future cash flows, including, in this context, NGM indicators related to cash flows that were not found in previous studies. In addition, the study contributes to the understanding of the effects of the various explanatory factors by including the leverage, the sector and the country.

ven though it does not depart from most studies on this subject in this context, the conclusion reached by this paper should consider some limitations, namely, the study was limited to the forecast of cash flows for the last year assessed. It is therefore possible to carry out similar analyses in the future for relevance, extending the period to compare the short- and long-term value relevance and predictive value of cash flows based on quarterly P&L data. It is also suggested that a more detailed analysis be conducted on the accrual or cash basis components that may perform better in these two areas of analysis.

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Correction
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