Lisbon School of Economics & Management
Universidade de Lisboa

MASTERS
IN ACCOUNTING

MASTER´S FINAL WORK
DISSERTATION

THE VALUE RELEVANCE OF OVERLAYS

SARA CATARINA RAMOS AMARAL

MARCH - 2023

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GLOSSARY

COVID-19 – Coronavirus disease

ECL – Expected Credit Losses

IAS – International Accounting Standards

IAS 39 – International Accounting Standard 39 Financial Instruments: Recognition and Measurement

IASB – International Accounting Standards Board

IFRS – International Financial Reporting Standards

IFRS 9 – International Financial Reporting Standard 9 Financial Instruments

IRB – Internal Ratings-Based

NI – Net Income

OCF – Operating Cash Flows

SICR – Significant Increase in Credit Risk

US – United States

ABSTRACT

The COVID-19 pandemic and its successive lockdowns and restrictions have had severe economic consequences. The measurement of Expected Credit Losses (ECL) under the International Financial Reporting Standard (IFRS) 9 Financial Instruments is a complicated process, made more challenging by the lack of comparable data from past events. As a result, ECL models were unable to accurately predict these losses. To address this issue, entities turned to overlays, adjustments made outside of the ECL models, as a means to try and mitigate the problem (PwC, 2020). The main aim of this paper is to evaluate the value relevance of overlays for investors and to examine whether they are significant in predicting earnings and operating cash flows (OCF). To achieve this, the study employed the price regression model based on Ohlson's (1995) framework and models based on Dhaliwal et al.'s (1999) methodology to assess the predictiveness of earnings and OCF. The study used a sample of 36 European Union banks and analysed data from 2020 and 2021, which was the period when the pandemic had the most severe impact. The findings revealed that while overlays had a negative value relevance, they did not significantly contribute to predict earnings and OCF.

KEYWORDS: IFRS 9; Impairment; Financial Instruments; Overlays; Value relevance.

JEL CODES: C12; G10; M41.

RESUMO

Os sucessivos confinamentos e restrições causadas pela pandemia COVID-19 provocaram consequências económicas severas. A mensuração das perdas de crédito esperadas (PCE) segundo a *Internacional Financial Reporting Standard* (IFRS) *9 Financial Instruments* é um processo complicado, que fica mais desafiante com a falta de informação passada comparável. Como resultado, os modelos de PCE foram incapazes de preverem estes valores com precisão. Para enfrentar esta incerteza, as entidades utilizaram *overlays* – ajustamentos feitos fora dos modelos de PCE – como uma forma a atenuarem este problema (PwC, 2020). O principal objetivo deste estudo é avaliar a relevância dos *overlays* para os investidores e aferir se estes são significantes na previsão de rendimentos e de fluxos de caixa operacionais (FCO). Para alcançar isto, o estudo utiliza o modelo da regressão de preço com base em Ohlson's (1995) e modelos baseados na metodologia de Dhaliwal et al.'s (1999) para determinar a previsibilidade de rendimentos e FCO. Foi utilizada uma amostra de 36 bancos da União Europeia e analisados dados relativamente a 2020 e 2021, que coincide com o período em que a pandemia teve o seu maior impacto. Os resultados evidenciam que enquanto os *overlays* tiveram uma relevância negativa, não contribuíram de forma significativa para a previsibilidade de rendimentos e FCO.

PALAVRAS-CHAVE: IFRS 9; Imparidade; Instrumentos Financeiros; Overlays; Relevância da informação financeira.

CÓDIGOS JEL: C12; G10; M41.

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1. INTRODUCTION

The year 2020 was characterized by the rapid spread of the COVID-19 pandemic which forced many countries to impose lockdowns to contain its transmission. As a result, the global economy was impacted, with significant consequences all over the world. According to the International Monetary Fund (2021a), the worldwide gross domestic product in 2020 shrank by approximately 3.3%. As far as 2021 was concerned, economic challenges and uncertainties were projected even then, despite the positive outlook at the end of 2020 following the development of vaccines. In particular, there was a considerable degree of unpredictability as regards the administration of these vaccines, as well as in respect of new variants of COVID-19. The estimated global growth in 2021 was 5.9% (International Monetary Fund, 2021b).

The impact of the economic decline in 2020 has varied across countries, with Europe experiencing a more pronounced downturn than the United States (US) (Arriola et al., 2022). It is worth noting that this crisis differed from previous ones, given that it did not originate from the financial sector (Priorities, 2022). However, the effects of the COVID-19 pandemic were severe, causing significant economic disruptions.

Governments worldwide acted to protect the public and the companies, including financial institutions, from the economic shock. One such action in financial institutions was to grant grace periods and moratoria for loan repayments to ensure that creditworthy borrowers could avoid default (Priorities, 2022). In addition, some countries relaxed accounting standards, banking regulations and capital provisioning rules for bad loans (Priorities, 2022). These measures can raise questions about the credit risk presented on the financial statements of these institutions (Priorities, 2022). The measures and regulations to financial institutions vary from country to country.

The economic shock led to significant uncertainties, which were reflected in accounting. This was particularly evident in the application of IFRS 9 for banks, which use models to compute ECL for financial instruments. These models incorporate historical, current and projected data. The ECL models experienced difficulties in accurately predicting the values as there was no prior data available from a similar pandemic. Another big constraint with respect to the application of these models during

this crisis was the forward component of these models, as there was unpredictability about future macroeconomic scenarios.

A solution for the correction of the values from these models was the use of overlays, also known as post-model adjustments. According to PwC (2020), overlays are adjustments made outside the models that companies use to compute ECL. With overlays, it is possible to make a quick solution for the limitations present in the ECL models. These adjustments limit the automatization of models (European Banking Authority, 2021). Under the new impairment model present in IFRS 9, entities are able to incorporate overlays in their ECL when components are not immediately able to be included in models. The use of overlays was recommended by IASB during this crisis (International Accounting Standards Board, 2020).

Although banks and other entities were already using overlays to capture uncertainties and other components not included in the models, the use of overlays have increased since 2020, with the rise in economic uncertainties (European Banking Authority, 2021). As such, these overlays may be because of the pandemic, or for other reasons. Overlays should be of a temporary nature and not a permanent one, and institutions should add overlays to the model components to capture credit risk factors (European Banking Authority, 2021).

Previous literature provides evidence that bank managers use loan loss provisions (LLP) to perform earnings management. The literature contains studies on LLP earnings management during crisis periods and the value relevance of LLP. However, there is a gap in research on overlays and on the COVID-19 crisis, as it differs from previous crises. Therefore, the objective of this paper is to contribute to this area of literature by investigating whether overlays are relevant to the capital market and investors in terms of value, by examining their impact on stock prices. With this, it is possible to analyse whether overlays are a good use by companies in case of components not being able to be put in models.

Research into overlays is important as their main purpose is, as mentioned prior, to correct the values obtained from the ECL models. It is necessary to obtain values of ECL that are as accurate as possible, which, in turn, result in a more accurate view of the financial health of entities. This has especially a big effect in financial institutions since

their financial health assists in estimating capital ratios, assessing the framework of capital planning in the medium and long terms, and in guaranteeing the adequate sustainability and profitability of these institutions. If the financial health of financial institutions is not accurately represented it can have deleterious consequences, and, in the worst case scenario, it may result in a financial crisis. This makes the research into ECL and, more specifically, overlays rather important.

This research will be conducted using a price regression model based on Ohlson's (1995) approach, and data from a sample of 36 European Union banks from 2020 and 2021. The findings indicate that overlays have value relevance to investors, but this relevance is negative. Specifically, an increase in the use of overlays results in a decrease in the stock price. We also examine whether overlays contribute to the predictiveness of earnings and OCF based on the model by Dhaliwal et al. (1999). We can conclude that overlays did not contribute to the predictiveness of earnings and OCF.

Section 2 presents the background while Section 3 reviews the relevant literature and develops the hypotheses of this study. The methodology is described in Section 4, followed by the results in Section 5. Finally, Section 6 presents the main conclusions, the limitations, and the scope for further research.

2. BACKGROUND

IFRS 9 deals with the classification and measurement of financial instruments and introduces changes in the classification and impairment measurement. This new standard has impacted all entities that deal with financial instruments, but, in particular, has affected financial institutions, the assets and liabilities of which mostly consist of financial instruments. This standard is applicable to banks for periods beginning from 1 January 2018.

IFRS 9 was issued by the International Accounting Standards Board (IASB) to replace the previous International Accounting Standard (IAS) 39 Financial Instruments: Recognition and Measurement and the limitations of this standard. IAS 39 was criticized due to being too complex, delaying the recognition of losses, and not being consistent with how entities manage their risks and businesses (PwC, 2017).

Under the incurred loss approach of IAS 39, entities would recognize credit risk only when there was objective evidence that impairment loss had occurred (Novotny-Farkas,

2016). Because of this, this incurred loss approach was characterized by the delayed recognition of impairment, which was one of the aspects of this standard that was criticized (Novotny-Farkas, 2016).

One of the main differences between IFRS 9 and IAS 39 is the impairment model. To reduce the negative aspects of IAS 39 impairment model, the model in IFRS 9 is based on ECL, which makes it possible to make the recognition of losses earlier. This new impairment model is also more aligned with the regulatory measurement (Novotny-Farkas, 2016). The delayed recognition of losses in IAS 39 is mentioned to have a negative effect on the procyclical effect of the bank regulation (Novotny-Farkas, 2016). It is believed that IAS 39 may have had a negative effect on the financial crisis in 2008 (Huian, 2012). Following the new standard, as it recognizes losses earlier, this procyclical effect is reduced. Overall, this new standard is able to lower concerns regarding capital inadequacy during a crisis period (Novotny-Farkas, 2016).

IFRS 9 has three categories of classification and measurement, while the previous one had four categories of classification and three of measurement (Gornjak, 2017).

While IAS 39 is more based on rules, IFRS 9 is more based on principles (Gornjak, 2017). Some advantages of this new standard are the simplification of classification, losses being detected in a more efficient way and the improvement of transparency (Gornjak, 2017).

3.1 Impairment Model in IFRS 9

The assessment of impairment can occur at an individual level, but, in many cases, there is no data with reference to it at an individual level, and this impairment can be done at a collective level. There are 3 possible approaches to impairment, the general approach, the simplified approach and the purchased or originated credit-impaired financial assets.

In the general approach, there are 3 stages of impairment. The financial instrument is placed on stages 1, 2 or 3 based on the change in credit risk (Gornjak, 2017). To assess the significant increase in credit risk (SICR), the entity must use the change in the risk of a default materializing over the expected life of the financial instrument (IFRS 9, 5.5.9). For this, users must compare the risk of default arising on the financial instrument at the reporting date with this risk at the date of initial recognition and use reasonable and supportable information (IFRS 9, 5.5.9). The standard does not provide a definition for

the term default, each entity should do it. To determine whether a financial instrument is in default each entity should consider qualitative indicators and be consistent with what is utilized for internal credit risk management (IFRS 9, B5.5.37). If reasonable and supportable forward-looking information is available without undue cost or effort, an entity cannot rely solely on past due information when determining whether credit risk has increased significantly (IFRS 9, 5.5.11).

To determine the measurement value of ECL, it is necessary to evaluate a range of plausible outcomes and incorporate the time value of money (IFRS 9, 5.5.17). To incorporate this component, losses must be discounted to the reporting date by using the effective interest rate. The entity should consider the probability of occurring a credit loss, and the probability that this event does not occur (IFRS 9, 5.5.18). To determine the value of ECL, entities should use data regarding past and current conditions and should make reasonable projections of future economic conditions (IFRS 9, 5.5.17). Owing to these requirements, entities have models to obtain this value.

2.2. Stages of Impairment

A Financial Asset is in **stage 1** if it has low credit risk or if the financial instrument has an insignificant credit risk (Gornjak, 2017). According to IFRS 9, this risk is considered low if the counterparty has the capacity to meet its contractual cash flow obligations in a short period of time, the instrument has low risk of default, and changes in economic and business conditions in the long term will not necessarily reduce the counterparty ability to comply with its obligations (IFRS 9, B5.5.22). For these assets, the 12-month ECL is recognized, which reflects the credit losses from defaults that are expected in the next 12 months after the end of the period (IFRS 9, Appendix A). At every reporting date, the entity shall inspect the credit risk of the financial asset, to detect whether the credit risk has increased, and accordingly make appropriate changes in the classification of stages (IFRS 9, 5.5.9). The computation of future cash flows of the annual effective interest rate depends on the stage; in stage 1, this interest income is calculated over the gross amount of the financial assets (Gornjak, 2017).

Stage 2 comprises financial assets with significant decrease in credit quality since its initial recognition, but with no evidence of impairment (Novotny-Farkas, 2016). The

lifetime ECL is recognized in the financial statements as a loan loss allowance (Gornjak, 2017). Here, the interest is calculated based on the gross carrying amount of the financial assets. Transfer from stage 2 to stage 3 should only occur when there is evidence of impairment (Gornjak, 2017).

In **stage 3** are present assets that have objective indications of impairment at the reporting date. Here, the lifetime ECL is recognized as loan loss allowance (Gornjak, 2017). According to this new standard, when compared with the IAS 39, the recognition of lifetime credit loss will happen in IFRS 9 before it occurs in stage 2, when there is an SICR (Novotny-Farkas, 2016). If it were according to IAS 39, it would happen only when the actual default occurs (Novotny-Farkas, 2016). In this stage, the interest is computed over the carrying amount deducted by the loan loss allowance.

2.3 IFRS 9 and COVID-19 pandemic

Owning to the uncertainty relating to pandemic, some factors considered by entities in their models for computing ECL can no longer be used (International Accounting Standards Board, 2020). Entities should also take into consideration the COVID-19 crisis and government support measures in the forward-looking information (International Accounting Standards Board, 2020).

The effects of COVID-19 and government support measures should also be present in the macroeconomic scenarios in their weightings (International Accounting Standards Board, 2020). These macroeconomic scenarios are a representation of the best estimate of the entities at the reporting date (EY, 2020). If it is not possible to include all effects in the models, IASB states that adjustments or post-model overlays should be used (International Accounting Standards Board, 2020).

Many entities have chosen to update the macroeconomic scenarios and to use overlays in complement to capture other uncertainties as regards COVID-19, or components not captured in the models (International Accounting Standards Board, 2020).

The definition of default must be corrected for this situation, as the European Banking Authority has clarified, payment moratoria should not result in default and in forbearance classification. But this institution also emphasizes the importance of assessing the long-

term obligators who are more probable to not comply with payments, and for these to be considered in default (European Banking Authority, 2020). The changes in the SICR criteria by financial institutions should be disclosed (EY, 2020).

3. LITERATURE REVIEW

3.1. Value relevance

Value relevance is a topic that has been widely discussed in accounting research. Value relevance is a component of accounting quality along with reliability (Barth et al., 2001). An accounting value is relevant when there is an association between the value and equity market value, such as share price (Barth et al., 2001). The first research was conducted by Ball & Brown (1968), in which the authors concluded that there was an association between abnormal stock returns and unexpected earnings, evidencing a relationship between the capital market and accounting information. The authors state the stock returns reflect the investors' expectations regarding the entity's future performance. Additionally, Beaver (1968) concluded that the most significant change in stock volume was at the time of earnings announcements, indicating the informativeness of this information. However, it was Amir et al. (1993) who used the term value relevance for the first time to express the association between price/return and accounting measures.

Value relevance research evaluates whether information of accounting is relevant to investors' decisions. Most of studies in this area use the Ohlson (1995) model with some adjustments. This model represents the consequences of accounting information on the market valuation, by including the components of financial statements (Kaaya, 2015). These components include cash flows, earnings per share, and book value of equity (Ohlson, 1995).

The existing literature has stipulated certain limitations in respect of the purpose of value relevance research, considering that the association between common equity valuations and accounting numbers are nothing more than associations, unless related to descriptive theories (Holthausen & Watts, 2001). But research on value relevance can contribute to topics of interest to the standard setters, as it assesses quality and relevance of accounting amounts, which is a part of the theory of accounting and standard setting

(Barth et al., 2001). This topic is mostly of interest to academics, who use it to study the value relevance of equity amounts (Barth et al., 2001).

More specifically, there has been a vast strand of literature about the value relevance of the IFRS, after it became the accounting setting used worldwide. These standards were imposed on the basis of the belief that they are of better quality. Most previous studies have found that IFRS are determinants for reporting quality. However, these are not conclusive with conflicting results (Kaaya, 2015).

Using a sample of companies that are listed on five European stock exchanges, Devalle et al. (2010) found mixed evidence of higher value relevance after IFRS adoption. While the results provide evidence of an increase in earnings value relevance, there is a decrease in the value relevance of the book value of equity (Devalle et al., 2010). However, the results for individual countries are mixed (Devalle et al., 2010). Barth et al. (2007) found that firms that applied IAS have less managerial discretion, more quality accounting amounts, less delayed recognition of losses, and greater value relevance, providing evidence that stock prices and returns are associated with accounting values. Erin et al. (2017) researched value relevance of accounting information in Nigeria before and after adoption of IFRS, and found that these standards have contributed to a higher value relevance of cash flow, book value, earnings, and net income (NI).

However, according to Tsalavoutas et al. (2012), there was no significant difference in the explanatory power of value relevance of NI and book value of equity in Greece before and after the adoption of IFRS. Clarkson et al. (2011) also evaluated the differences in value relevance before and after IFRS adoption of Australian and European firms; they found no differences between IFRS and national standards.

Agostino et al. (2011) conducted a study on a sample of European banks and found that the adoption of IFRS increased the relevance of earnings in the market valuation. However, they also discovered that the adoption did not increase the relevance of equity book values.

There is no consistent result throughout the literature in respect of the value relevance of the adoption of IFRS. However, it should be noted that most of these studies are based on the implementation of IFRS in general, and, on the samples of individual countries. Considering that, in this study, we are investigating the value relevance of overlays in a

sample of European banks, we believe that we can contribute to the literature as regards value relevance.

Beaver et al. (1989) confirmed a positive relationship between LLP and stock returns. Liu & Ryan (1995) on the other hand, argued that LLP contain both bad and good news, and the market reaction depends on the loan portfolio composition. They found that the market had a negative reaction to LLP in respect of both the types of loan portfolios studied by these authors, when the time frame was augmented. In accordance with this, Kim & Ahn (2019) also found that loan loss reserve, not including add-back, had a negative value relevance.

Using a sample of European countries, Hamadi et al. (2016) investigated whether Basel II affected the market valuation of discretionary LLP. Under Basel II internal ratings-based (IRB), banks must calculate a forward-looking expected loss. Basel II also makes it less appealing to undertake income smoothing through discretionary LLP. The authors found that the discretionary LLP of IRB banks have a higher market valuation when compared with standardized banks; non-opportunistic discretion in provisions are more valued by market users.

Morris et al. (2016) researched the value relevance of discretionary LLP of US banks during the 2008 financial crisis; they found that it had a positive value relevance. During the period 2006-2008, the market valued the use of discretionary LLP to decrease earnings of banks that were under performing, for the period of 2009-2010 as economic conditions became better, the market valued the use to smooth earnings of banks that had a better performance.

By using a sample of Indian banks, it was found that the value relevance of nondiscretionary LLP is consistent. As for the discretionary LLP, the results of association between this and the market value of the banks' equity were inconsistent for different models and regression techniques (Pandey & Guhathakurta, 2022).

3.2. IFRS 9

The introduction of IFRS 9 had a significant impact on banks, considering the weight of the financial instruments for these entities.

This standard brings a fair value measurement (Gornjak, 2017). This measurement is characterized for leaving more opportunity for managerial discretion, which can originate a trade-off relationship between reliability and relevance (Marra, 2016). Overall, fair value measurement is considered a plus, as it is more relevant to investors than historical cost (Penman, 2007; Véron, 2008). On the other hand, authors have stated that this measurement may have made financial crisis more critical (Landsman, 2007). But others defend that is not probable that this measurement has significantly contributed to the financial crisis (Laux & Leuz, 2010).

A case study regarding impairment of Greek government bonds under IAS 39 and IFRS 9 confirmed the increased reliance on managerial expectations. Since stage 1 only requires the recognition of the 12-month ECL, recognition of full expected losses is delayed till there is a significant increase in the risk of default, and the authors claimed the new impairment model could be improved (Gebhardt, 2016).

IFRS 9 causes some difficulties for its users, since the adoption of this standard requires professional judgement, which can result in greater subjectivity (Gornjak, 2017). It also increases complexity by switching the looking back approach (IAS 39) to a forward looking approach (IFRS 9) (Gornjak, 2017). Management may not be capable of, or inclined to, move the asset from stage 1 to stage 2, and so does not identify SICR, which results in lifetime losses not being recognized (Novotny-Farkas, 2016). Here, the problem present in IAS 39 would not be solved (Novotny-Farkas, 2016). In this respect, the results from IFRS 9 depend on how financial institutions and other entities apply this standard and the regulatory roles in supervising this application.

Mechelli & Cimini (2021) argued that three characteristics of the new IFRS 9 impairment model should be more value relevant to investors than IAS 39, the first reason being that losses are detected and reported in a more efficient and timely manner. Another characteristic of this model that increases value relevance is the fair value measurement (Mechelli & Cimini, 2021). Lastly, since there is an approximation between accounting impairment allowance and prudential rules, the surveillance by authorities is smoother (Mechelli & Cimini, 2021).

The increased opportunity for managerial discretion and greater complexity of the new impairment model can have negative effects on the value relevance of IFRS 9

(Mechelli & Cimini, 2021). Regarding the effect of earnings management on value relevance, the literature suggests that in the presence of managerial discretion, the value relevance of earnings decreases but the value relevance of book equity increases (Callao et al., 2016; Marquardt & Wiedman, 2004). As for complexity, this can cause misstatements in the estimation of ECL; this reduces the value relevance of the information contained in the financial statements (Mechelli & Cimini, 2021).

There are control mechanisms to ensure the implementation and compliance of a standard in the correct manner (Kaaya, 2015). One of these control measures is corporate governance.

Studies have found that in Australia entities with stronger corporate governance structures enhance the value relevance of accounting information (Habib & Azim, 2008; Koh et al., 2007). Shan (2015) investigated the effect of earnings management on value relevance and the consequences of corporate governance on earnings management on entities listed in Shanghai, finding that earnings management has a negative effect on value relevance and good corporate governance has a negative effect on the practice of earnings management. Using a sample of European non-financial entities, Callao et al. (2016) found that the quality of enforcement mechanisms and ownership diffusion, which are used as proxies for the quality of corporate governance, limits the loss of the value relevance of earnings.

Another component that may affect earnings management is investor protection. The degree of investor protection in a country differs in accordance with its legal origins (Larrain et al., 2017). The strongest protection of outside investors is found in common law countries, and the weakest is found in French civil law (Larrain et al., 2017).

Leuz et al. (2003) found that across 31 different countries, investor protection influenced the differences in earnings management, with strong enforcement resulting in lower earnings management. It was shown that stronger investor protection countries have had better quality earnings, before and during the 2008 crisis (Persakis & Iatridis, 2016).

By decreasing the incentives for earnings management, a higher value relevance for investors is expected. Siekkinen (2016) found that in countries with medium/strong investor protection, fair values are value relevant. As for countries with weak investor

protection, only level 1 of fair values was considered value relevant to investors. Cimini et al. (2022) found that value relevance judgements vary in accordance with the quality of investor protection and corporate governance. To measure the quality of corporate governance, the authors used the percentage of independent directors to total board members. In a strong investor protection environment and firms with strong corporate governance, there is a higher value relevance of earnings; as when these characteristics don't apply, the value relevance of earnings decreases.

Mechelli & Cimini (2021) evaluated the effect of the investor protection environment and corporate governance on the value relevance of IFRS 9 and IAS 39. The sample consisted of 316 listed financial entities, with the authors concluding that in presence of high-quality investor protection or high-quality corporate governance, IFRS 9 is more value relevant, and IAS 39 is more value relevant when the opposite qualities are present. The authors explained the point of IFRS 9 being more value relevant under these conditions on the account of the positive features of the new standard being more relevant to investors. In this environment, the negative characteristics of this standard, such as greater opportunities for earnings management and greater complexity, should be countered.

Overlays may be used as a way for the management to perform earnings management, which may, in turn, reduce its value relevance to investors. But the control measures mentioned earlier can reduce the scope for overlays to be used incorrectly.

Hence, overall, in good environments, the new impairment model of IFRS 9 should be more relevant to investors than the impairment model present in IAS 39, as Mechelli & Cimini (2021) suggested.

3.3. IFRS 9 and COVID-19 pandemic

The COVID-19 pandemic caused unprecedented challenges to public health and to the world economy. In response, governments were quick to take action, with the hope of containing this pandemic. The measures included lockdowns, social distancing, testing and economic support.

The effect of the COVID-19 pandemic on financial markets was one never seen before, with a significant level of risk at the global level. This caused financial markets to be unpredictable and more volatile than preceding periods (Zhang et al., 2020). Compared with previous pandemics, such as the Spanish flu, the COVID-19 pandemic has affected the stock markets in a more severe way, even though the previous pandemics resulted in a higher excessive mortality rate (Baker et al., 2020). This can be attributed to the measures to prevent this more recent disease from being more severe and being applied for a longer period than before (Baker et al., 2020). These restrictions included those on commercial activities, which had big effects on a service-based economy (Baker et al., 2020). As such, the US stock market saw a reaction not observed ever earlier (Baker et al., 2020). Another reason why this crisis had such an effect on the markets is because of globalization: even though the pandemic started in a single place, it quickly turned into a worldwide crisis.

Through the COVID-19 pandemic, government responses were created to try to mitigate the negative effects. Beer et al. (2023) analysed the impact of three different government responses on capital markets. They found that together, the support reduced the declines of the stock prices, indicating that investors value governmental measures (Beer et al., 2023). Kumar et al. (2021) also found that all the measures together had a positive impact on the market returns of an international group of seven countries.

Other authors found governmental economic interventions to have an impact on the volatility of capital markets by reducing it, resulting in positive market returns (Ashraf, 2020; Beer et al., 2023; Zaremba et al., 2021). Aharon & Siev (2021) studied the impact of government measures on the capital markets of emerging countries and found that the response to economic measures depends on the type; there was a positive response if the economic measure corresponds to a direct income support, and a negative response when related to contract or debt relief, which might represent the markets preference for the type of measures.

As for the measures not related to economic support, public awareness was found to have had a positive effect on market returns (Aharon & Siev, 2021; Ashraf, 2020). On the other hand, Zaremba et al. (2020) stated that information campaigns is one of the main drivers of government interventions that increases volatility in stock markets. Social

distancing measures, including lockdowns, were found to have a negative effect on market returns (Alexakis et al., 2021; Zaremba et al., 2020). Related to these last measures Ashraf (2020) argued that these have both a negative and a positive effect on market returns; a positive is caused by these measures containing the number of confirmed COVID-19 cases, which, in turn, result in positive market returns.

Following the difficulties engendered by the crisis, bank regulators undertook two types of actions to aid banks, one by allowing the delay in accounting standards, giving guidance in the macroeconomic scenarios, and by giving more flexibility to the interpretation and application of accounting standards (Barnoussi et al., 2020). Another way in which bank regulators helped was by extending transition periods, relaxing capital requirements, and by interfering in regulatory accounting (Barnoussi et al., 2020).

The calculation of ECL under IFRS 9 requires a model in which entities use statistically weighted probabilities of risks, but under the high level of uncertainty, the present banks had difficulties assessing these statistical probabilities (Barnoussi et al., 2020). Owing to the limitations of the loss allowance model many banks relied on the use of overlays to capture risks of the crisis and the effects of the support measures, which resulted in a significant increase in the use of temporary overlays when compared to previous years (European Banking Authority, 2021).

These overlays were an important tool during the pandemic; these corrected the gaps in the models for computing ECL, have the assurance that the capital levels would be held, and guaranteed the adequacy of the provision system of banks (Mohamed, 2021). Overlays were able to contribute to a level of banking stability (Mohamed, 2021).

A European Banking Authority (2021) IFRS 9 monitoring report analysed the implementation of IFRS 9 in the European Union with a sample of 47 institutions, which represent about 60% of the total assets of baking groups applying IFRS. It was found that a fifth of these institutions reported that the pandemic had an impact of above 50% on ECL. With many of these changes occurring with overlays, there is a need to monitor the use of these and the effects they have had.

The portfolios in which institutions mostly apply temporary overlays consists of large corporates, loans and advances to non-financial corporates, and for loans and advances to

households, being that almost half of the overlays used by the institutions relate to the COVID-19 crisis (European Banking Authority, 2021).

According to Mechelli & Cimini (2021) the new impairment model in IFRS 9 should be more value relevant than the previous model. Overlays are a part of the total LLP, and according to the literature, LLP appears to be relevant to investors. According to Morris et al. (2016) in previous crisis the use of discretionary LLP was valued by investors to decrease the earnings of banks to correctly reflect their performance (Morris et al., 2016). As the use of overlays increased during the pandemic and played an important role in ensuring the levels of provisions (Mohamed, 2021), it can be expected that overlays are value relevant, and the following hypothesis is proposed:

H1: Overlays applied by banks are value relevant to investors.

3.4. Predictiveness of Earnings and OCF

Throughout the literature there has been research as regards the predictiveness of future earnings and future OCF, with the debate whether present earnings or OCF are a better tool to estimate future OCF. Overall, there is no consensus on who is the most efficient in predicting future OCF.

Finger (1994) found that earnings are a significant estimator of future earnings for most of the sample, but the earnings of states are not better than cash flows at predicting future cash flows. On the other hand, Dechow et al. (1998), by using a model of accruals, earnings and cash flows, found that present earnings were better than present cash flows at predicting future cash flows. Consistent with the latter, Ball & Nikolaev (2022) found that earnings on an accrual basis are better than OCF at predicting future OCF.

The signalling hypothesis consists of a positive relationship between future earnings and LLP. There are studies that contradict this hypothesis; as they found a negative relationship between LLP and future earnings (Ahmed et al., 1999; Anandarajan et al., 2003).

In respect of future cash flows, by using a sample of banks in Malaysia, Singapore and Hong Kong, Eng & Nabar (2007) found that LLP were positively related to future

cash flows, consistent with the hypothesis mentioned above. The authors also found this association to be significantly lower in crisis periods.

Another contribution of this paper is the analysis of whether overlays are associated with future earnings and future OCF. Since it has been found in research that LLP has a predictive power regarding earnings and cash flows, the same is expected for overlays, as it is a part of LLP. As such, the following hypotheses are developed:

H2: Overlays contribute to the predictiveness of earnings.

H3: Overlays contribute to the predictiveness of OCF.

4. SAMPLE AND METHODOLOGY

4.1. Methodology

To test the value relevance of overlays, we used a model based on the Ohlson (1995) price regression model, in this linear regression, the dependent variable corresponds to the stock price per share, which is a proxy for the firm value. The price model is a regression of the market value as a function of earnings and book value.

There is a possibility of using two models: a price and a return one. The return model is used when the objective of the study is to analyse changes in value over a period, whereas the price model aims to assess if a component is reflected in the firm value (Barth et al., 2001). Earnings response coefficients are more unbiased in price models, but when these models are compared, the return models have less severe econometric issues, as they reject fewer heteroscedasticity tests and model misspecification (Kothari & Zimmerman, 1995).

In this research, it was deemed more appropriate to use the price model, since the sample of this research is considered small, and the objective of this research is to assess whether a specific accounting component, overlays, has an impact on stock prices.

The price model corresponds to the following regression:

(1) $P_{it} = \beta_0 + \beta_1 BV\_S_{it} + \beta_2 NI\_S_{it} + \varepsilon_{it}$

Where:

P_{it} - share price of entity i three months after the ending of the fiscal year t; BV_S_{it} - book value of common equity of entity i at the end of the fiscal year t deflated by the number of outstanding shares at t; NI_S_{it} – net income of entity i at the end of the fiscal year t deflated by the number of outstanding shares at t.

An essential part of value relevance research is the selection of variables (Barth et al., 2001). To assess the value relevance of overlays the following model is used (Almeida, 2022; Pinto & Morais, 2022):

(2) $P_{it} = \beta_0 + \beta_1 BV\_S_{it} + \beta_2 NI\_CorrectedS_{it} + \beta_3 Overlays\_S_{it} + \varepsilon_{it}$

Where P_{it} and BV_S_{it} have the same meaning as above, and: $Overlays\_S_{it}$ –value of overlays recognized by company i at the end of the fiscal year t deflated by the number of outstanding shares at t; $NI\_CorrectedS_{it}$ –net income of the company i at the end of the fiscal year t corrected from the recognized value of overlays of company i at the end of the fiscal year t deflated by the number of outstanding shares at t.

In order to analyze whether overlays impact the predictiveness of future cash flows and future earnings, the following models was developed, based on the model used by Dhaliwal et al. (1999):

(3) $OCF\_S_{it+1} = \beta_0 + \beta_1 NI\_CorrectedS_{it} + \beta_2 Overlays\_S_{it} + \varepsilon_{it}$

(4) $NI\_S_{it+1} = \beta_0 + \beta_1 NI\_CorrectedS_{it} + \beta_2 Overlays\_S_{it} + \varepsilon_{it}$

Where $NI\_CorrectedS_{it}$ and $Overlays\_S_{it}$ have the same definitions as above, and: OCF_S_{it+1} –operating cash flows of entity i at the end of the fiscal year t+1 deflated by the number of outstanding shares at t+1; NI_S_{it+1} –net income of company i in at the end of the fiscal year t+1 deflated by the number of outstanding shares at t+1.

The variables are deflated by the number of outstanding shares to reduce the scale effect (Barth & Clinch, 2009).

All the models were estimated on the basis of the Ordinary Least Squares method, using clustered robust errors.

4.2. Sample

The sample comprises financial entities directly supervised by the European Central Bank, which are considered significant.

According to the European Central Bank an entity is considered significant if it fulfils, at the minimum, one of the following criteria: (i) the total value of assets is higher than 30€ billion; (ii) it has economic importance for a country or European Union economy; (iii) it has received or requested funds from the European Financial Stability Facility or from the European Stability Mechanism, and finally; (iv) if its total value of assets is higher than 5€ billion and the ratio of cross border assets/liabilities in several more additional participating member state to total assets/liabilities is higher than 20%. Other than these aspects, it can also be identified as significant if it is considered one of the three most significant of a country (European Central Bank, 2021).

We hand collected data from the annual reports of 2020 and 2021 of these entities to study the use of overlays. This period was chosen as the use of overlays by financial institutions increased significantly during the COVID-19 crisis. In addition, in respect of stock prices, we obtained information from the numeric database Eikon DataStream.

These entities apply IFRS and their financial reports are in euros. Initially, the sample consisted of 110 banks, but some were excluded because we were unable to manually collect data on overlays from their annual financial reports. Again, some entities were not publicly traded, making it impossible to obtain the additional information required for the study. These were, as such, excluded from the sample. Finally, another entity was excluded because it did not have information available at the end of the fiscal year. As a result, the sample size was reduced to 36 banks.

The sample consists of European banks; the composition of the sample per country is presented in Table I. We observed that the countries most represented in the sample are Italy (consisting of 19,44% of the sample) and Spain (consisting of 13,89% of the sample).

TABLE I – FINAL SAMPLE PER COUNTRY

Country	Nº of Entities	Percentage (%)
Austria	4	11,11%
Belgium	1	2,78%
Cyprus	1	2,78%
Finland	1	2,78%
France	3	8,33%
Germany	3	8,33%
Greece	4	11,11%
Ireland	2	5,56%
Italy	7	19,44%
Malta	2	5,56%
Portugal	1	2,78%
Spain	5	13,89%
The Netherlands	2	5,56%
Total	**36**	**100,00%**

Table II shows the descriptive statistics of the variables used in the price regression model.

TABLE II – PRICE MODEL DESCRIPTIVE STATISTICS

Variable	Obs.	Mean	Median	Std. dev.	Min	Max
P	72	11.136	4.716	16.210	0.103	86.000
Overlays_S	72	1.511	0.039	9.988	-1.185	84.279
NI_CorrectedS	72	1.730	0.460	11.193	-36.377	84.487
BV_S	72	26.215	8.434	40.737	0.405	268.288

Banks still had a positive NI (not including overlays) despite the economic environment; on an average, banks had a profit, without overlays, of 1.73€ per outstanding share. This may be attributable to the government support measures, which also mitigated the decline in stock prices, in accordance with previous research (Aharon & Siev, 2021; Ashraf, 2020; Beer et al., 2023).

In addition, Appendix A presents the descriptive statistics of overlays of 2020 and 2021, to better understand the differences between these years, since these correspond to different phases of the COVID-19 crisis. Thus, Overlays_2020S correspond to the value of overlays recognized by banks in 2020 deflated by the number of outstanding shares of 2020, while Overlays_S2021 to the value of overlays recognized by banks in 2021 deflated by the number of outstanding shares of 2021.

The year in which banks recognized the most overlays was in 2021, on an average it was recognized 2.419€ per outstanding share in 2021, and 0.603€ per outstanding share in 2020. There is, therefore, a substantial difference between these two averages. But we can see that some banks in 2021 decided to reverse the overlays recognized earlier, and, in 2020, there was only an increase overall in the value of overlays.

Table III shows the descriptive statistics of the variables used in the predictiveness of earnings and OCF models.

TABLE III – PREDICTIVENESS OF EARNINGS AND OCF MODELS DESCRIPTIVE STATISTICS

Variable	Obs.	Mean	Median	Std. dev.	Min	Max
NI_St+1	36	1.617	0.703	2.455	-2.407	7.626
OCF_St+1	36	-10.774	-1.210	21.166	-78.589	14.507
Overlays_S	36	0.603	0.156	1.865	0.000	11.161
NI_CorrectedS	36	-0.575	0.183	6.802	-36.377	5.873

As can be observed from the table, these models only have 36 observations. This is because information regarding the NI and OCF of 2022 was not yet available at the time this study was undertaken. For this reason, we can only research if the overlays and NI (not including overlays) of 2020 had predictiveness power in the NI and OCF of 2021. So, NI_S_{it+1} and OCF_S_{it+1} correspond respectively to the NI and OCF of 2021, respectively. And $Overlays\_S_{it}$ and $NI\_CorrectedS_{it}$ correspond to those of 2020.

As can be seen by analysing the variable $NI\_CorrectedS_{it}$, on an average, banks in 2020 had a negative NI (not including overlays), which can be attributed to the COVID-19 pandemic. Even with governmental support measures, these were not sufficient to cause a positive NI, not including the values of overlays.

By analysing the variable NI_S_{it+1}, on an average, banks had a positive NI in 2021. As for the value of OCF of 2021, it has a negative value on an average, meaning banks had a negative cash flow of operating activities.

The difference in the mean observed between $NI\_CorrectedS_{it}$ in Table III and Table II is because of the fact that in the latter are included both 2020 and 2021, and, in Table III, only 2020. These two years correspond to a very different situation with regards

to the COVID-19 crisis. In 2021, global economic growth was seen. This was also reflected in the NI of the entities examined in this study, as when compared with 2020, almost all entities increased their NI in 2021. Another reason is the substantial difference in the mean of values recognized in 2020 and 2021, as in 2021 this was higher, and this also caused the value of NI without overlays to be higher.

In Table IV the price regression model Pearson correlation matrix is present. A statistically significant correlation between overlays and NI, and the book value of a bank and its stock price was found in this.

TABLE IV – PEARSON CORRELATION MATRIX OF PRICE MODEL

	P	NI_CorrectedS	Overlays_S	BV_S
P	1			
NI_CorrectedS	0.007	1		
	0.953			
Overlays_S	-0.051	0.860	1	
	0.670	0,000***		
BV_S	0.418	-0.1833	0.039	1
	0,000***	0.1232	0.744	

Note: *, **, and *** refer to 10%, 5% and 1% significance levels, respectively.

The Variance Inflation Factors were also computed for all the variables. This confirmed that these models do not have a severe problem of multicollinearity, as all values are below 5 (James et al., 2013).

5. RESULTS

5.1. Value Relevance of Overlays

The results from the price regression model are presented in Table V.

TABLE V – PRICE REGRESSION MODEL RESULTS

Independent Variables	Coefficient	P-value
NI_CorrectedS	0.967	0,060*
Overlays_S	-1.050	0,038**
BV_S	0.225	0,000***
Constant	5.150	0,016**
F-Test	9.150	0,000***
Number of observations:	**72**	
R^2	**27.42%**	

Note: *, **, and *** refer to 10%, 5% and 1% significance levels, respectively.

The results provide evidence that overlays have a negative coefficient and are statistically significant at the 5% level, indicating a negative association between overlays and the stock price of a bank. In line with previous studies about LLP (Beaver et al., 1989; Kim & Ahn, 2019; Liu & Ryan, 1995; Morris et al., 2016), we can conclude the overlays are value relevant to investors, confirming our first hypothesis.

The negative coefficient contradicts previous findings that showed investors positively valued discretionary LLP during crisis periods as a representation of better financial performance for poorly performing banks (Morris et al., 2016). However, it is consistent with previous research that found a negative market reaction to LLP (Kim & Ahn, 2019; Liu & Ryan, 1995). Therefore, during crisis periods, investors have a different perspective on the use of overlays and other LLP.

This indicates that in 2020 and 2021, when uncertainty was high, the stock market paid attention to the value of overlays used by banks, but viewed it negatively. This occurred likely because it was associated with economic uncertainty and the inability of the ECL models to accurately predict these losses. On an average, for each unit increase of overlays per outstanding share, the stock price of a bank decreased by 1.050.

The findings also provided evidence that while the book value of a bank is value relevant for investors, the coefficient of NI before overlays is not statistically significant at a 5% significance level.

The variable BV_S is statistically significant with a positive coefficient, indicating its positive value relevance to investors during the crisis. On an average, for each unit increase in BV_S, the stock price of a bank increased by 0.225.

During the COVID-19 crisis, the book value of a bank had value relevance to the market and was viewed positively. As regards the NI, it was not value relevant to investors during these years. When analysing the statistically independent variables, we can conclude the variable that has had the most influence on the stock price during the COVID-19 crisis was overlays.

As for the R^2 value of 27.42%, it means that the independent variables represent about 27.42% of the change in the price stock of each bank. This small percentage can be attributed to the small size of the sample.

This model is statistically significant, as the coefficient from the F-test is positive and its p-value is below 5%.

5.2. Predictiveness of Earnings and OCF

Table VI presents the results in respect of the predictiveness power of overlays:

TABLE VI – PREDICTIVENESS OF EARNINGS MODEL RESULTS

Independet Variables	**Coefficient**	**P-value**
NI_CorrectedS	-0.024	0.822
Overlays_S	-0.208	0.400
Constant	1.729	0.000***
F-Test	0.400	0.676
Number of observations:	**36**	
R²	**2.39%**	

Note: *, **, and *** refer to 10%, 5% and 1% significance levels, respectively.

From Table VI, we can see that the F-test of the model fails, as its p-value isn't statistically significant; this means that the independent variables are not significant in explaining the dependent variable.

Hence, the results show that the NI before overlays does not have a predictiveness power with respect to the NI of 2021. These findings are not consistent with previous research, which has proven the earnings ability of predicting future earnings (Anandarajan et al., 2003).

Overlays are also not statistically significant in the prediction of future NI, this contradicts prior research, which has found a relationship between LLP and future earnings (Ahmed et al., 1999; Anandarajan et al., 2003).

R^2 has a value of 2,39%, which can be explained by an even smaller number of observations than the one used in the price model, as it was only possible to use 1 observation per bank.

In Table VII are presented the results from the predictiveness of OCF regression.

TABLE VII – PREDICTIVENESS OF OCF MODEL RESULTS

Independet Variables	**Coefficient**	**P-value**
NI_CorrectedS	-1.115	0,054*
Overlays_S	-1.565	0.187
Constant	5.150	0,005***
F-Test	2.130	0.135
Number of observations:	**36**	
R^2	**12.16%**	

Note: *, **, and *** refer to 10%, 5% and 1% significance levels, respectively.

From Table VII we can observe that the F-test of the model fails, which means that NI, not including overlays, and overlays do not have predictiveness power of OCF. The failure of this test could also be because of the small sample.

The result of NI before overlays not having the predictive power of future OCF contradicts prior research (Ball & Nikolaev, 2022).

As overlays are not statistically significant, too, it does not have the predictiveness power of OCF of 2021. This also contradicts prior research, which has found that LLP are related to future cash flows (Eng & Nabar, 2007). However, it can be explained by this model using data from the crisis period, and the association between LLP and future cash flow was found to be lower during this period (Eng & Nabar, 2007).

NI, not including overlays, does not have predictive power regarding future OCF and NI, which contradicts prior results. This can be caused by uncertainty present in the economic environment, possibly reducing the predictiveness power.

From these results, we can conclude that Hypotheses 2 and 3 are rejected, as overlays do not have a predictiveness power in future earnings and OCF. As it appears, overlays tend to not follow the same behavior as the rest of LLP in this aspect, as the latter have a predictiveness association with future earnings and cash flows. This difference may be caused by its exceptional use, as overlays are used only when the rest of LLP are not sufficient, and the latter are computed on the basis of assigned models.

It is important to note the small sample used for these models, as this may have affected the quality of these results. Because of this, these results should be interpreted carefully.

6. CONCLUSION

The COVID-19 pandemic came with full force in 2020, and it was unpredicted. Even with governmental support to reduce the negative effects, the restrictions and lockdowns generated severe economic effects, and the capital market was not spared.

According to the new impairment model under IFRS 9 entities dealing with financial instruments must recognize losses based on past, present and forward-looking information (IFRS 9, 5.5.17). Since entities models did not have prior information of a crisis similar to this one, they were unable to properly compute these losses. As a result, and as a recommendation from IASB, entities used more overlays (International Accounting Standards Board, 2020). The European Banking Authority (2021) found that of 47 European Union institutions, a fifth had differences in ECL above 50% caused by this crisis. During these years, about half of the overlays were caused by the COVID-19 crisis (European Banking Authority, 2021).

This study used a sample of 36 European Union banks to assess if overlays are value relevant to investors and to find out if they contribute to the predictiveness of earnings.

For value relevance, we used data from 2020 and 2021 on the price regression model based on Ohlson (1995). The results show that overlays are indeed value relevant to investors, but they have a negative value relevance, since they cause a decrease in stock price. This negative value is consistent with prior studies, which showed that the market valued LLP negatively (Kim & Ahn, 2019; Liu & Ryan, 1995).

For the predictiveness of earnings and OCF, we used data from 2021 and 2020, and models based on the methodology adopted by Dhaliwal et al. (1999). The results showed that overlays do not contribute to the predictiveness of earnings and OCF, something which contradicts prior research, which found an association between LLP and future earnings and OCF (Ahmed et al., 1999; Anandarajan et al., 2003; Eng & Nabar, 2007).

The first limitation of this study is that information regarding overlays was collected manually, which, in turn, resulted in a small sample. Because of this, it was also not possible to use a return model, as the value of R^2 would be too small. Another limitation is that information from 2022 was not available at the time of this study, causing the number of observations of the models of predictiveness of earnings and OCF to be even smaller.

This study contributes to the value relevance literature and the effects that COVID-19 had on IFRS 9 application. As there was an increase in the use of overlays by banks, research in this topic has importance. While there is literature on the value relevance of LLP, there is not a lot specifically on the value relevance of overlays.

For future research, it would be beneficial to use a larger sample of data including information from 2020, 2021, and 2022. In addition, an interesting topic to explore would be an assessment of whether corporate governance and investor protection impacted the value relevance of overlays, as they have been shown to affect the value relevance of accounting information. Finally, another area of interest would be to investigate whether overlays were utilized as a means of conducting earnings management during this crisis.

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APPENDICES

Appendix A – Descriptive Statistics of Overlays per year

Variable	Obs.	Mean	Median	Std. dev.	Min	Max
Overlays_S2021	36	2.419	0.007	14.043	-1.185	84.279
Overlays_S2020	36	0.603	0.156	1.865	0.000	11.161