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Forward-looking Disclosure and IPO Underpricing: Evidence From Euronext Paris

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This study investigates the effect of forward-looking disclosure (FLD) on IPO underpricing in the Euronext stock market by assessing the informational content of both quantitative and qualitative FLD in IPO prospectuses. Using a content analysis approach to construct qualitative FLD variables, our findings indicate that a higher level of narrative forward-looking information disclosed in the prospectus is associated with reduced IPO underpricing. The stock market appears more responsive to narrative FLD when it is supported by simultaneously disclosed quantitative information, which enhances its verifiability. Furthermore, we find that risk-related disclosures significantly mitigate IPO underpricing. By analyzing the tone of disclosures, our results reveal a complementary effect between quantitative and qualitative FLD on IPO underpricing, particularly when disclosures are framed in an optimistic and confident tone. Introducing a new measure for FLD, this study provides new empirical evidence on the informational content of qualitative FLD in the IPO prospectus. These findings offer important theoretical and practical implications for regulators, investors, and issuing firms' managers.

1. Introduction

Most previous studies on the information content of voluntary disclosures have focused exclusively on the numerical values contained in corporate financial disclosures, and more specifically on management forecasts of future results. However, in the specific context of an initial public offering (IPO), the core documents published by companies contain narrative information about the company's prospects. However, several studies have shown that quantitative information about the firm's earnings (bottom-line earnings news) explain only a part of asset price movements (Davis et al., 2012; Demers & Vega, 2010; Tetlock et al., 2008).

In the specific case of IPO companies, Brockman and Cicon (2013) and Demers and Vega (2010) confirmed that part of the market reaction around the announcement date is due to other qualitative information (soft information) that managers release simultaneously with quantitative information (hard information) on earnings forecasts. Moreover, the issue stems from the preponderance of qualitative information disclosures as a tool to provide a basic introductory document according to current regulations, or, on the contrary, offers potential investors relevant information on the firm

value. In this study, we attempt to find answers to this question by analyzing the quantitative and qualitative forward-looking information content in the context of short-term IPO underpricing.

The form and content of an IPO prospectus are less regulated than other types of disclosures. Managers have some flexibility in combining quantitative and qualitative forward-looking information. Therefore, it would be appropriate to examine whether managers use this leeway to communicate forward-looking information of relevant value through qualitative terms. Demers and Vega (2010) proved that the announcement of qualitative information has a positive and significant impact on stock prices that exceeds the impact of quantitative information. Moreover, they showed that it is more difficult for investors to interpret qualitative information than quantitative (or numerical) information. Brockman and Cicon (2013) found a positive and significant association between cumulative abnormal returns and quantitative forward-looking earnings information. Similarly, they argued that *soft* information, measured by the two variables “*optimism-net*” and “*certainty-net*”, has a positive and more significant effect (compared with that of hard information) on cumulative abnormal returns.

In line with recent research on corporate disclosure, several studies have further explored the crucial role of FLD in enhancing market efficiency and shaping investor perceptions of firm value. Qi et al. (2023) examined the tone of FLD in IPO prospectuses in China and demonstrated that a more positive tone is associated with higher underpricing, suggesting that optimistic language may lead investors to perceive greater uncertainty, thereby demanding a higher initial return. Additionally, Kim et al. (2024) analyzed the effect of conditional conservatism in financial reporting on IPO outcomes, finding that firms exhibiting higher levels of conservatism experience less underpricing and greater post-IPO survival rates.

These studies collectively highlight the nuanced influence of quantitative and qualitative FLD and related factors on IPO performance, emphasizing the importance of disclosure quality and investor interpretation in the IPO process. The main objective of this study is to analyze the information content of quantitative and qualitative forward-looking information published by 209 IPOs listed on Euronext Paris from 2006 to 2015. Firstly, we evaluated the explanatory power of these two types of information for IPO underpricing, measured by the abnormal initial returns, as well as the type of relationship (complementarity or substitution) between soft and hard information in explaining IPO underpricing. Secondly, we examined the association between abnormal initial returns and risk disclosure. Our study contributes to the literature on content analysis of accounting information as a tool for assessing the usefulness of qualitative information and its impact on stock returns. Similarly, this study highlights the relevance of the narrative tone of FLD in IPO prospectuses—a dimension that, to the best of our knowledge, has received little attention in prior research.

The research is structured as follows: The second section presents the theoretical framework. The third section provides a synthesis of the literature and develops the hypotheses. The fourth section describes the methodological aspects of the study. The fifth section presents empirical findings and discussion. The sixth section summarizes the main results and offers the conclusion. Finally, the seventh section outlines the contributions and implications of the study.

2. Theoretical Framework of Forward-looking Disclosures and IPO Underpricing

The disclosure of forward-looking information in IPO prospectuses is a critical mechanism for reducing uncertainty and information asymmetry between issuers and investors. Three key theoretical frameworks support the use of FLD in IPO prospectuses and explain managers' incentives to disclose such information. According to information asymmetry theory (Akerlof, 1970; Rock, 1986), issuers possess more information about their future prospects than investors. This discrepancy can lead to potential adverse selection problems and higher risks for investors. By providing FLD in IPO prospectuses, firms attempt to bridge this gap and mitigate the information asymmetry, offering insights into future growth prospects, financial expectations, and risk factors. However, concerns about the reliability and credibility of FLD persist, as managers may have incentives to overstate future performance (Hanley & Hoberg, 2010).

In parallel, agency theory provides another perspective on the implications of information asymmetry, emphasizing the conflict of interest between managers and shareholders. Agency theory highlights the problem of information asymmetry between managers and shareholders, which increases agency costs when managers act in their own interest rather than those of shareholders. Disclosure mitigates these costs, but managers may be reluctant to disclose information if it harms their position. According to agency theory, corporate governance mechanisms such as transparency and disclosure practices can improve company performance by addressing conflicts between management and investors. Increased transparency reduces uncertainty about firm value, which incentivizes managers to disclose more information, especially when performance declines (Hassanein & Hussainey, 2015; Healy & Palepu, 2001).

Further, within agency theory, two schools of thought explain discretionary disclosure and its role in managing information asymmetry. The Incremental Information school suggests that managers use narrative information to reduce information asymmetry, thereby lowering the cost of capital (Baginski et al., 2000). In contrast, the Impression Management school posits that managers may disclose information opportunistically to shape investors' perceptions, often obscuring failures and highlighting

successes (Aerts, 2005; F. Li, 2006; Merkl-Davies, 2007). This aligns with the obfuscation hypothesis, which assumes managers manipulate disclosures to manage perceptions of the firm's performance (Courtis, 1998).

Signaling theory further expands the understanding of discretionary disclosure, particularly in distinguishing between high- and low-performing firms. Signaling theory explains the voluntary disclosure of good news by high-performing firms, who use this information to distinguish themselves from lower-performing companies (Akerlof, 1970; Miller, 2002; Spence, 1973). This theory suggests that high-performing companies disclose more to signal their superior performance, potentially benefiting from higher stock market valuations. On the other hand, firms with bad news may withhold information to avoid reputational damage (Clarkson et al., 1994; Deegan & Uneman, 2006; Skinner, 1994). Thus, both agency and signaling theories help explain the incentives for managers to engage in forward-looking disclosures.

These theoretical frameworks converge in highlighting how disclosure is not always neutral but may be strategically employed by managers to shape external perceptions. Executives may use discretionary disclosures opportunistically to exploit information asymmetry with external stakeholders, a practice known as impression management (Merkl-Davies, 2007). According to Hooghiemstra (2000), this concept, rooted in social psychology, involves behaviors aimed at eliciting favorable evaluations from others. In the context of corporate reporting, impression management consists of shaping the content and presentation of financial information to influence users' perceptions of firm performance and potentially affect their investment decisions (Godfrey et al., 2003; Merkl-Davies, 2007).

Similarly, in IPO underpricing, managers may manipulate the initial pricing of shares as a strategic tool to influence investor behavior and perception, creating an impression management effect that enhances market interest in the offering. This phenomenon has been explained by several theories (Yusup, 2022). Rock (1986) attributed it to information asymmetry theory, which suggests that underpricing arises from the unequal distribution of information among issuers and investors. Issuing firms do not share all the available information to secure the highest offer price, creating an asymmetrical information problem with the investors. Within this framework, signaling theory (Allen & Faulhaber, 1989) suggests that firms intentionally underprice their IPOs to signal their future success. Winning curse theory (Rock, 1986) highlights the disadvantage of uninformed investors, who typically purchase unprofitable IPOs due to lack of information. Meanwhile, book-building theory (Benveniste & Spindt, 1989) emphasizes the role of institutional investors, who, with superior information, can influence IPO pricing during the book-building process, leading to underpricing as a reward for their informational advantage.

The relationship between FLD and IPO underpricing is driven by how investors perceive the reliability and informativeness of FLD. Studies suggest that FLD should reduce information asymmetry, leading to lower underpricing (Ritter & Welch, 2002). However, overly optimistic FLD may not be trusted by investors, limiting its effectiveness in reducing IPO mispricing (Loughran & McDonald, 2011).

3. Forward-looking Information Disclosure and IPO Underpricing: Literature Review and Hypotheses Development

Assuming the informational efficiency of markets, “to be useful, information must be relevant to the decision-making needs of users. Information has the quality of relevance when it influences the economic decisions of users by helping them evaluate past, actual or future events or confirming, or correcting, their past evaluations” (IASB, 2004, para. 26).

To be “relevant”, accounting information should be useful to investors and have predictive value. Since the study of Ball and Brown (1968), the relevance of accounting disclosure has received particular attention and become a mainstream research area. Forward-looking information enables market actors to evaluate better the future financial performance of firms and their future strategy (Cazier et al., 2020). Previous studies on the relevance of FLD have focused on examining the credibility and usefulness of quantitative information, while few studies have analyzed the relevance of qualitative FLD (*soft information*). In what follows, we propose a synthesis of the theoretical and empirical literature on the association between FLD and IPO underpricing.

3.1 Complementarity Between Quantitative and Qualitative FLD in IPO Underpricing

Most previous studies have explored FLD regarding the assumptions of managers’ incentive theories, in particular agency theory and signaling theory. In line with agency theory, the disclosure of forward-looking information should reduce information asymmetry between managers and shareholders. Corporate disclosure is the best way to mitigate information asymmetry problems. Its potential benefits lead to an improvement in the functioning of an efficient stock market by increasing the stock-market liquidity, minimizing the cost of capital, and improving the financial analysis following (Healy & Palepu, 2001). Based on agency theory, previous studies on impression management consider that managers are assumed to opportunistically provide a self-interested view of firm performance and prospects (Aerts, 2005; F. Li, 2006; Merkl-Davies, 2007). This opportunistic behavior leads to the obfuscation hypothesis, which assumes that narrative corporate disclosures are not neutral. Firms with bad news obscure failures and emphasize successes to manipulate investors’ perceptions of the firm’s future performance (Courtis, 1998).

Signaling theory assumes that firms with high performance tend to disclose good news to distinguish themselves from their (low-performing) competitors (Hassanein & Hussainey, 2015). As a result, these companies often receive an above-average stock market value, whereas it can be very costly for low-performing firms to credibly disseminate similar information on the capital market (Clarkson et al., 1994). Therefore, firms with different types of news (good, bad, or neutral) are expected to disclose such information to update investors and increase their confidence in the firm (Hassanein & Hussainey, 2015). As in the case of agency theory, signaling provides a relevant explanatory framework for understanding managerial incentives related to FLD. Building on these insights, Jog and McConomy (2003) investigated the incremental impact of voluntary disclosure of management earnings forecasts in IPO prospectuses on IPO underpricing and post-issue performance. Using a sample of 258 Canadian IPO firms from 1983 to 1994, this study proved that forecasters obtain a lower degree of underpricing and higher post-issue performance by alleviating information asymmetry and signaling firm value. Similarly, Bédard et al. (2016) found that the voluntary disclosure of management earnings forecasts in IPO prospectuses reduced underpricing. Moreover, the quality of the firm's governance, auditor, and underwriter seemed to substitute for the disclosure of earnings forecasts, reducing underpricing for non-forecasting firms.

According to Bayesian learning models, investors observe more than one signal of numerical information related to the fundamental value of an asset. When the investor has two (or more) signals that contain relevant information, each signal must be incorporated into asset prices (Hautsch & Hess, 2010; O. Kim & Verrecchia, 1994). Based on this evidence, we expect that the tone of qualitative forward-looking information released simultaneously with quantitative information will have a significant and progressive impact on stock prices.

The behavior of stock prices following the release of earnings forecasts has also been reviewed in previous studies (Lev & Penman, 1990; McNichols, 1989). In addition, Gounopolous (2011) analyzed the association between management earnings forecast errors and the pricing of IPOs in Greece. Using a sample of 208 IPOs during the period 1994 to 2001, he concluded that pessimistic management earnings forecasts (negative bias) are associated with a low level of underpricing, while optimistic management earnings forecasts (positive bias) are associated with high initial returns. The literature asserts a symmetric association between management earnings forecasts (MEF) accuracy and stock returns. Optimistic forecasts are associated with a high level of stock returns. However, stock prices decline with the announcement of pessimistic forecasts.

Several studies, such as Chen et al. (2024), Conroy and Aggarwal (2000), Conroy et al. (1998), Darrough and Harris (1991), found that stock price reactions around the announcement date are much more pronounced to management earnings forecasts than to earnings release. FLD is, therefore,

more relevant for stock price valuation than historical information. Ota (2001) investigated, in the Japanese context, the value-relevance of book value, earnings, and management earnings forecasts, and he has shown that the incremental explanatory power of earnings changes almost disappears when the variation in management earnings forecasts is included in the price return model. Similarly, he has shown that the variation in earnings forecasts has additional explanatory power than that of earnings release.

Recent research continues to emphasize the importance of financial forward-looking information in the context of IPO underpricing. Chen et al. (2024) demonstrated that textual and numerical information disclosed in voluntary forward-looking management forecasts reports play a crucial role on the pricing of default risk, influencing investor assessments. However, some other studies have confirmed that other narrative accounting and financial information mutually complement quantitative information in the stock price valuation (Brockman & Cicon, 2013; Davis et al., 2012; Demers & Vega, 2010). Several studies have shown that quantitative information explains only a part of asset price movements (Mitchell & Mulherin, 1994; Roll, 1988; Shiller, 1981). In the specific context of earnings announcements, an important part of the market reaction around the announcement date is attributable to the disclosure of narrative information simultaneously with numerical *earnings news*. Narrative disclosure is qualitative information describing the company environment, business policies and strategy, analysis of operating results as well as risk information and development prospects.

Several studies investigated the informational content of narrative disclosure using different measurement tools. Some of them have used linguistic tone measures (Davis et al., 2012; Demers & Vega, 2011; Loughran & McDonald, 2011), but other studies have used the content analysis approach (Davis et al., 2012; Frankel et al., 2010; Huang et al., 2014). In addition to quantitative information, qualitative or narrative disclosure can also provide a signal tool to the market. The analysis of the information content of narrative disclosure has been conducted using its temporal component (forward-looking information versus historical information). Bonsall et al. (2013) found a significant difference between the market response to forward-looking information versus historical information. This difference was explained by analysts' expectations of the future value of fundamental variables and realizations. In addition, the gap between the market's response to forward-looking information compared with historical information is more significant for firms with lower economic performance, in financial distress, or operating in highly competitive sectors.

More recent studies continue to investigate the relevance of FLD in financial reporting. Based on a sample of Chinese A-share listed companies from 2011 to 2020, Li et al. (2023) proved a significant and positive association between the level of forward-looking information and stock liquidity. Forward-looking statements significantly impact investor sentiment and stock liquidity, suggesting the growing role of FLD in market pricing

dynamics. Using data from A-share listed companies in China's Shanghai and Shenzhen markets from 2007 to 2022, Zhang and Wang (2024) highlighted that non-financial FLD contribute to capital market information efficiency by improving analysts' forecast accuracy and reducing stock price synchronization. Similarly, the authors argue that non-financial forward-looking information disclosed by firms with a high level of media attention has a more significant impact on capital market information efficiency. Moreover, the magnitude of stock price movements in response to the announcement of forecast errors is also affected by other variables such as legal environment, auditor reputation, and management's retention of capital (Bédard et al., 2008).

In the Italian context, Tutino et al. (2013) presented the “state of the art” of narrative disclosure in the Management Discussion & Analysis (MD&A) Report. Considering a sample of 218 Italian firms listed from 2006 to 2010, this study proved a positive correlation between FLD-related variables and financial variables (i.e. risk, profitability, and leverage indicators), as well as corporate governance-related factors such as government ownership, outside directors' percentage, and foreign funds presence among shareholders. Athanasakou and Hussainey (2014) investigated the credibility of forward-looking performance disclosure in the narrative sections of annual reports in the United Kingdom. Based on a content analysis, they found that management incentives affect the frequency of forward-looking information. When the firm raises debts or reports bad earnings news, managers tend to disclose more forward-looking information in the annual report. Investors' use of FLD in assessing current and future performance increases with the quality of earnings disclosure.

Based on a sample of 85 companies listed on the Italian stock exchange between 1999 and 2005, Bozzolan and Ipino (2007) studied the association between IPO underpricing and voluntary disclosure of forward-looking information in the prospectus. They analyzed the association between narrative FLD and IPO underpricing. The results of this study showed that, when firms disclose forward-looking information about their strategies, industries, and planned research and development activities, they achieve a lower level of stock underpricing. In cases where forward-looking disclosures are only about earnings management, the phenomenon of underpricing will be accentuated.

Previous studies showed that FLD contains soft information that helps to evaluate firms' future performance (Demers & Vega, 2011; F. Li, 2010; Loughran & McDonald, 2011). In addition, qualitative information disclosure in the prospectus provides useful and relevant information about future earnings. Focusing on pre- and post-IPO pricing, Tao et al. (2018) explored the relationship between forward-looking statements (FLSs) in IPO prospectuses and IPO valuation. Using machine learning techniques, this study demonstrated that MD&A sections in IPO prospectuses contain valuable information that is relevant for ex-ante analysis during the IPO

process. The authors proved that FLSs' features (such as topics, readability, and semantic similarity) are more effective in predicting pre-IPO revisions than post-IPO first-day returns, indicating that forward-looking information is more closely related to the initial pricing of IPOs.

Using textual analysis programs, Demers and Vega (2011) compared the market response to qualitative disclosure for firms with high versus low hard information precision. The study found that soft information contained in the earnings announcement is incrementally informative when hard information provides a less precise valuation signal. Also, the market is more responsive to soft information when it is more verifiable through the simultaneous release of financial information. Hence, qualitative information plays an important role in the stock return valuation. Brockman and Cicon (2013) analyzed, in the US context, the market's interpretation of quantitative and qualitative FLD and its impact on abnormal returns. Based on 15,000 annual forecasts disclosed by companies, the study proved a positive and significant association between quantitative information and cumulative abnormal returns. Similarly, they found that soft information contains relevant values. Thus, soft information is particularly useful when the firm's environment is uncertain, and its value depends on future growth opportunities.

Concerning the tone of narrative FLD, some previous studies have shown that positive textual tone increases short-term market returns (Athanasakou & Hussainey, 2014; Motaleghi et al., 2023; Widiastuti et al., 2022). Other studies have proved that language is inherently ambiguous, an attribute that managers often exploit in corporate disclosures, where they have significant discretion over word choice. This is evident in the strategic use of extreme language to influence stock price reactions (Bochkay et al., 2020). Building on these insights, Chen et al. (2024) investigated the relationship between tone management in forward-looking statements and managers' self-serving overinvestments. Using data from the US-listed firms from 2003 to 2019, the authors found that the abnormal tone of non-earnings-related qualitative forward-looking statements is positively related to firms' overinvestments. This relationship is more pronounced in financially unconstrained firms, suggesting that managers with more resources are more likely to engage in opportunistic behavior. Further analysis reveals that this behavior is exacerbated when there is less monitoring and greater managerial career concerns. Overall, the study highlights how managers strategically use tone in specific disclosures to potentially mislead investors' perception for self-serving purposes, particularly concerning overinvestment.

In this study, we examined the market's interpretation of qualitative information versus quantitative information contained in FLD. Similarly, we examined whether hard and soft information are substitutes or complements in explaining IPO underpricing. Based on the managers' incentive theories, in particular agency theory, we tested the following two hypotheses:

H₁: Forward-looking disclosure level has a significant association with IPO underpricing.

H₂: Qualitative forward-looking disclosure complements quantitative forward-looking disclosure in explaining IPO underpricing.

3.2 Risk Disclosure and IPO Underpricing

The IPO prospectus is a legally required document describing to potential investors the company's context, activities, strategy, and development prospects, as well as any other useful information. This document includes a section entitled "Risk Factors", which is intended to provide a clear and concise summary of the significant risks that firms may face. The narrative risk disclosure can guide investors' judgments about the firms' development perspectives and their future value (Deumes, 2008).

According to signaling theory, firms with high performance tend to disclose good news to distinguish themselves from their (low-performing) competitors (Hassanein & Hussainey, 2015). As a result, these companies often receive an above-average stock market value, whereas it can be very costly for low-performing companies to send the same signal on the capital market (Clarkson et al., 1994). Therefore, firms with different types of news (good, bad, or neutral) should signal it to update investors and increase confidence in their companies (Hassanein & Hussainey, 2015). In an ever-changing international economic environment, the analysis of the information content of risk disclosure is of particular importance. Transparent and clear risk disclosure is essential for the smooth functioning of the stock market. To make an accurate assessment of the value of a newly introduced company's shares, investors need information about the company's background, uncertainties, risks, and prospects. Duong et al. (2024) prove that mandatory ESG disclosures, encompassing FLD, significantly reduce IPO underpricing by enhancing transparency. The impact of mandatory ESG disclosures becomes more pronounced for firms facing severe information asymmetry problems and operating in environments with higher climate risk. Extending this line of research, Widiastuti et al. (2022) examined FLD in the pandemic context and found that it played a critical role in shaping firm value through enhanced transparency and investor trust.

Therefore, communicating clear and transparent information about risks can prevent serious damage to the company's reputation because of overvalued share prices (Fuller & Jensen, 2002). More specifically, other studies have focused on analyzing the readability and usefulness of risk disclosure (D. Campbell & Slack, 2008; Deumes, 2008). Using a normative "longitudinal" approach, Abraham and Shrivies (2014) examined the quality of risk disclosure in annual reports. The results showed that risk disclosure is symbolic and standardized rather than substantive. Consistent with the

proprietary cost theory, the authors argued that managers prefer general risk disclosure that bears no relation to real risks faced by companies. Campbell et al. (2014) examined the informational content of the “Risk factors” section as mandatory information in annual reports (10-k form) published by US companies. In contrast to Abraham and Shrivies (2014), this study found that companies tend to disclose detailed non-standardized information that truly and meaningfully reflects the specific risks faced by companies. This type of disclosure reduces information asymmetry and is reflected in systematic risk, idiosyncratic risk, and firm value. They also showed that narrative risk disclosure is associated with low bid-ask spread and leads to high systematic risk and return stock volatility. These results suggested that managers communicate useful and non-standardized narrative risk information that investors can incorporate into their post-disclosure assessments of the firm value.

Bao and Datta (2014) wrote one of the first papers to use topic modeling for analyzing risk types from risk disclosure in 10-k forms. They examined the impact of textual risk disclosure on investors’ perceptions of risk factors. In contrast to the results of Kravet and Muslu (2013) and Campbell et al. (2014), this study argued that around two-thirds of the risk types (22 out of 30 risk types) lack informational content and have no significant influence on investors’ risk perception. Managers tend to reveal generic risk factor disclosures that are not useful for assessing business uncertainties and future cash flows.

While previous studies have generally examined the usefulness of textual risk disclosure in annual reports, the focus of our study is to analyze the correlation between narrative risk disclosure and IPO underpricing. According to the agency and signaling theories, we examined the following hypothesis.

H₃: Risk disclosure level is positively correlated with IPO underpricing.

4. Research Design

4.1 Sample Selection and Data Sources

The final sample consists of 209 IPOs listed on Euronext Paris between 2006 and 2015, after applying standard exclusions. Specifically, we excluded financial institutions and investment funds, due to their unique regulatory and capital structure characteristics, and IPOs with missing data, for which the market information or IPO prospectus required for the content analysis was unavailable. Forward-looking information, as well as variables related to firm characteristics and capital structure, were gathered from the IPO prospectus. However, the historical information was collected from the annual reports. IPO prospectuses and annual reports were downloaded from the AMF website, while the stock market data was collected from the Datastream database.

To contextualize the relevance of our dataset, it is crucial to understand the characteristics of the market in which these IPOs were issued.

Euronext Paris is part of Euronext, a pan-European exchange that integrates the markets of Amsterdam, Brussels, Dublin, Lisbon, Milan, and Paris. Operating within the European regulatory framework, it follows the Prospectus Directive and subsequent EU regulations, ensuring standardized disclosure practices. This exchange hosts IPOs across a wide range of industries and firm sizes, offering a valuable and representative dataset for analyzing the impact of FLD on IPO underpricing. Euronext Paris was selected because it is one of the major European stock exchanges, characterized by a diverse range of listed firms, including domestic and international firms. More significantly, Euronext operates under a well-established regulatory framework that mandates extensive disclosure requirements in IPO prospectuses, rendering it an ideal setting to study the relevance of forward-looking disclosures. Moreover, existing research on IPO underpricing has predominantly focused on US markets, particularly NASDAQ and the NYSE (Brockman & Cicon, 2013; Dambra et al., 2018; Klausner et al., 2022), as well as on Chinese markets, notably the Shanghai and Shenzhen stock exchanges (Abedin et al., 2024; C. Li et al., 2023; Xie et al., 2024). In contrast, European markets, and specifically Euronext Paris, remain underexplored. Therefore, our study contributes to filling this gap by providing insights from a European perspective.

In addition to the selection of the stock exchange, the timeframe chosen for the study also played a critical role in shaping our empirical analysis. The period was chosen strategically for several reasons. First, it provided a sufficient sample size (209 IPOs) to conduct robust statistical analyses and allowed for adequate variation in both FLD characteristics and IPO underpricing, enhancing the generalizability of our findings. Second, the timeframe included the 2008 global financial crisis, a significant exogenous event that indirectly influenced the environment surrounding IPOs. Starting in 2006 allowed us to include IPOs before, during, and after the 2008 financial crisis, enabling us to observe how market conditions influence FLD practices and IPO underpricing. While our models do not directly incorporate macroeconomic variables, analyzing IPOs across different phases of crisis allowed us to examine how the general market conditions and investor behavior prevalent during these periods might have shaped firms' disclosure practices and affected IPO underpricing. Finally, selecting 2015 as the endpoint helped to mitigate potential distortions from subsequent regulatory changes in disclosure requirements and accounting standards that could affect the consistency and comparability of FLD data. Given our reliance on content analysis of IPO prospectuses, maintaining data consistency was crucial for accurately measuring and interpreting qualitative (narrative) disclosure. By focusing on this defined period, the study provides a consistent analytical framework to explore the relationship between FLD and IPO underpricing within a relatively stable regulatory environment.

4.2 Measurement of Qualitative Forward-looking Disclosure Level

To assess the level of qualitative FLD in IPO prospectuses, we used the approach of *content analysis*. This method involves coding words and phrases according to an area of focus. Berelson (1952) defined content analysis as “a technique for seeking an objective, systematic and quantitative description of the content of a communication”. Krippendorff (2004) presented this approach as “a research technique for making reproducible and valid inferences from data”. Content analysis is, thus, a semantic and expressive tool based on regrouping text units into different categories.

In this study, we used content analysis of narrative forward-looking information in all sections of the IPO prospectus document, as follows: (1) Chapter 4 “Risk factors”, (2) Chapter 5 “Information about the company”, (3) Chapter 6 “Business overview”, (4) Chapter 12 “Trend information”.

Based on previous studies and the *Help Manual of DICTION software*, which presents the didactic variables of *certainty* and *optimism*, we have drawn up a list of forward-looking information keywords ([Appendix A](#)) and a list of optimism/certainty keywords ([Appendix B](#)). Consistent with recent studies on narrative disclosure (Brockman & Cicon, 2013; Feldman et al., 2010; Ferguson et al., 2015; Kothari et al., 2009; Wisniewski & Moro, 2014), *the coding unit* is identified as the number of sentences contained in narrative sections. We have also proceeded with a double categorization of the coding units (the sentences) according to two focus areas. The first category is based on the content of forward-looking information: information about risks that the company may face, and information about the company’s future strategy. The second category relates to the tone of forward-looking communication, through an analysis of the presence of semantic features in the language used by managers, and in particular the presence of specific key terms that refer to an attitude of *optimism (or pessimism)* and *certainty (or uncertainty)*. We calculated the three following scores measuring the level of qualitative FLD:

Overall narrative disclosure score (Narr-IP): It is equal to the number of narrative sentences containing at least one word from the list of forward-looking information keywords ([Appendix A](#)). Through a more refined analysis, we categorized this narrative information according to whether it was information about the risks that the company may face or information about the company’s future strategy. This analysis also generated two subsidiary scores: (1) Risk disclosure score (**Risk-IP**) and (2) Future strategy disclosure score (**Strategy-IP**).

The score of qualitative forward-looking disclosure that reflects an attitude of optimism (optimism-net): Optimism is defined as language that endorses an event or highlights its realization in a positive sense. This score is calculated through three steps:

1. Coding of sentences containing a word from the list of key terms reflecting an optimistic tone

2. Coding of sentences containing a word from the list of key terms reflecting a pessimistic tone
3. Calculation of the **optimism_net score** using the following formula

$$\text{Optimism_net} = \text{Total of Optimistic sentences} - \text{Total of Pessimistic sentences}$$

The score for qualitative forward-looking disclosure that reflects a certainty tone (**certainty-net**): Certainty represents language expressing firmness, rigidity, completeness, and precision. This score is generated in three steps:

1. Coding of sentences containing a word from a list of key terms that reflects a certainty tone
2. Coding of sentences containing a word from a list of key terms that reflects an uncertainty tone
3. Calculation of the **certainty_net score** using the following formula:

$$\text{Certainty_net} = \text{Total sentences_Certainty} - \text{Total sentences_uncertainty}$$

To ensure the reliability of the coding process, we initiated the process by coding an initial sub-sample of 10 IPO prospectuses randomly selected from our overall sample of 209 IPO prospectuses. This same sub-sample was recoded independently by a researcher experienced in the accounting sciences and familiar with the technique of content analysis while explaining the aim of the study, the coding instructions, and the different coding categories. Considering a double coding performed independently by the coder and the researcher, we performed Krippendorff's alpha test, which is "a reliability coefficient developed to measure the agreement among coders" (Krippendorff, 2010), and to calculate inter-coder reliability. This test is considered the most appropriate to measure intercoder reliability. An alpha coefficient of around 0.8 means a high level of reliability. A minimum level of reliability is guaranteed when it is equal to or greater than 0.6 (the minimum required). Our test generated an *alpha* coefficient equal to 0.8, which means a satisfactory level of intercoder reliability.

4.3 Measuring Quantitative Forward-looking Information Level

To determine the disclosure score for quantitative forward-looking financial information (*FIN_IP*), we focused on the analysis of Chapter 13, "earnings forecasts or estimates", of the IPO prospectus.

To measure the level of disclosure of quantitative forward-looking financial disclosure, we followed Baginski et al.'s (2000) method based on a scoring grid composed of five categories of financial estimates: (1) a specific point financial

estimate (i.e., a single numerical value), (2) a bounded interval estimate, (3) an open interval estimate, (4) a simple qualitative description, (5) a non-disclosure of financial estimates.

We then assigned different scores to each of these levels of financial disclosure: a score of 4 if there is a point estimate, 3 for a bounded interval estimate, 2 for an open interval estimate, 1 for a simple qualitative description, and 0 for non-disclosure. Using this scoring method, we defined the variable *FIN_IP* measuring the level of quantitative information disclosure (*financial estimates*).

4.4 Research Models

Considering the hypotheses raised above and the study's theoretical framework, the following four models were developed. These models are designed to measure the impact of FLD (both qualitative and quantitative) on IPO underpricing. Specifically, they aim to test the relationship between different types of disclosure and market reactions, while also assessing whether qualitative and quantitative disclosures act as complements or substitutes.

Model 1: Impact of Forward-looking Disclosure on IPO Underpricing (H1)

This model tests the first hypothesis (H1) by examining the impact of quantitative (*FIN_IP*) and qualitative (*Narr_IP*) FLD on IPO underpricing. This model explores whether narrative disclosure plays a significant role in explaining IPO underpricing. **The formula of Model 1 is as follows:**

$$\begin{aligned} UPr_{i,t} = & \beta_0 + \beta_1 FIN_IP_{i,t} + \beta_2 Narr_IP_{i,t} + \beta_3 VRT \\ & + \beta_4 LEV + \beta_5 AUDIT + \beta_6 OwC + \beta_7 SIZE \\ & + \beta_8 IND + \beta_9 AGE + \varepsilon_{i,t} \end{aligned} \quad (1)$$

Where underpricing ($UPr_{i,t}$) is calculated as follows: $UPr_{i,t} = \left[\frac{P_{i,1}}{P_{i,0}} - 1 \right] \times 100$, $FIN_IP_{i,t}$ is the score of quantitative financial forward-looking disclosure level (measured as described in subsection 4.3), $Narr_IP_{i,t}$ is the score of the level of overall narrative disclosure (measured as described in subsection 4.2), VRT is the coefficient of variation of operating income in years $t-3$, $t-2$, and $t-1$, LEV (leverage) is the debt ratio calculated by dividing total liabilities by total assets (in $t-1$), $AUDIT$ is a dummy variable equal to 1 if the company is audited by at least one Big Four auditor, and 0 otherwise, OwC is the percentage of shares held by the owners, $SIZE$ is the natural logarithm ($\ln$) of total assets (expressed in thousand euros), IND (industry) is a dummy variable that takes the value of 1 if the company belongs to the industrial sector and the value of 0 if it belongs to other sectors, and AGE is the natural logarithm ($\ln$) of the number of years from the firm's creation date to its prospectus date.

Model 2: Association Between Disclosure Tone and IPO Underpricing (H1 Extended)

This model further investigates the first hypothesis by analyzing how the tone of qualitative FLD (Optimism_Net and Certainty_Net) affects IPO underpricing. **The formula of Model 2 is as follows:**

$$\begin{aligned} UPr_{i,t} = & \beta_0 + \beta_1 FIN_IP_{i,t} + \beta_2 Optimism_Net_{i,t} \\ & + \beta_3 Certainty_Net_{i,t} + \beta_4 VRT + \beta_6 LEV \\ & + \beta_8 AUDIT + \beta_9 OwC + \beta_{10} SIZE \\ & + \beta_{11} IND + \beta_{12} AGE + \varepsilon_{i,t} \end{aligned} \quad (2)$$

Where underpricing ($UPr_{i,t}$) is calculated as follows: $UPr_{i,t} = \left[\frac{P_{i,1}}{P_{i,0}} - 1 \right] \times 100$, $FIN_IP_{i,t}$ is the score of quantitative financial forward-looking disclosure level (measured as described in subsection 4.3), **Optimism_Net_{i,t}** is the score of qualitative forward-looking disclosure reflecting an attitude of optimism (measured as described in subsection 4.2), **Certainty_Net_{i,t}** is the score of the level of qualitative forward-looking disclosure reflecting an attitude of certainty (measured as described in subsection 4.2), **VRT** is the coefficient of variation of operating income in years t-3, t-2, and t-1, **LEV** (leverage) is the debt ratio calculated by dividing total liabilities by total assets (in t-1), **AUDIT** is a dummy variable equal to 1 if the company is audited by at least one Big Four auditor, and 0 otherwise, **OwC** is the percentage of shares held by the owners, **SIZE** is the natural logarithm (Ln) of total assets (expressed in thousand euros), **IND** (industry) is a dummy variable that takes the value of 1 if the company belongs to the industrial sector and the value of 0 if it belongs to other sectors, and **AGE** is the natural logarithm (Ln) of the number of years from the firm's creation date to its prospectus date.

Model 3: Interaction Between Quantitative and Qualitative FLD in Explaining IPO Underpricing (H2)

To test Hypothesis H2, we estimated Regression Model 3, which includes interaction terms between quantitative FLD (FIN_IP) and qualitative FLD variables ($Optimism_Net$ and $Certainty_Net$). The purpose of these interactions is to examine whether the two disclosure formats act as substitutes or complements in explaining IPO underpricing. A positive and significant coefficient indicates a complementarity effect, meaning that the qualitative tone becomes more informative when accompanied by quantitative forecasts, whereas a negative and significant coefficient suggests a substitution effect, implying that one type of disclosure reduces the informational value of the other. **The formula of Model 3 is as follows:**

$$\begin{aligned}
UPr_{i,t} = & \beta_0 + \beta_1 FIN_IP_{i,t} + \beta_2 Optimism_Net_{i,t} \\
& + \beta_3 Certainty_{i,t} - Net \\
& + \beta_4 FIN_IP_{i,t} Optimism_Net_{i,t} \\
& + \beta_5 FIN_IP_{i,t} Certainty_{i,t} - Net + \varepsilon_{i,t}
\end{aligned} \tag{3}$$

Where underpricing ($UPr_{i,t}$) is calculated as follows: $UPr_{i,t} = \left[\frac{P_{i,1}}{P_{i,0}} - 1 \right] \times 100$, $FIN_IP_{i,t}$ is the score of quantitative financial forward-looking disclosure level (measured as described in subsection 4.3), $Optimism_Net_{i,t}$ is the score of qualitative forward-looking disclosure reflecting an attitude of optimism (measured as described in subsection 4.2), $Certainty_Net_{i,t}$ is the score of the level of qualitative forward-looking disclosure reflecting an attitude of certainty (measured as described in subsection 4.2).

Model 4: Risk Disclosure and IPO Underpricing (H3)

This model tests the impact of risk disclosure ($Risk_IP$) on IPO underpricing. It assesses whether transparent communication about risk factors contributes to mitigate information asymmetry and reduce IPO underpricing. **The formula of Model 4 is as follows:**

$$\begin{aligned}
UPr_{i,t} = & \beta_0 + \beta_1 Risk_IP_{i,t} + \beta_2 Stgy_IP_{i,t} + \beta_3 VRT \\
& + \beta_4 LEV + \beta_5 OwC + \beta_6 SIZE + \beta_7 IND \\
& + \beta_8 AGE + \varepsilon_{i,t}
\end{aligned} \tag{4}$$

Where underpricing ($UPr_{i,t}$) is calculated as follows: $UPr_{i,t} = \left[\frac{P_{i,1}}{P_{i,0}} - 1 \right] \times 100$, $Risk_IP_{i,t}$ is the score of risk information disclosure level (measured as described in subsection 4.2), $Stgy_IP_{i,t}$ is the score of the level of future strategy information disclosure (measured as described in subsection 3.2), VRT is the coefficient of variation of operating income in years t-3, t-2, and t-1, LEV (leverage) is the debt ratio calculated by dividing total liabilities by total assets (in t-1), OwC is the percentage of shares held by the owners, $SIZE$ is the natural logarithm (Ln) of total assets (expressed in thousand euros), IND (industry) is a dummy variable that takes the value of 1 if the company belongs to the industrial sector and the value of 0 if it belongs to other sectors, and AGE is the natural logarithm (Ln) of the number of years from the firm's creation date to its prospectus date.

For the four models, the definitions and measurements of the variables used are provided in [Appendix C](#).

5. Findings and Discussion

This section reports the main empirical results of the study. It includes descriptive statistics, robustness checks, regression analysis, and a discussion of the key findings.

Table 1. Descriptive Statistics of Qualitative and Quantitative FLD (*in Volume*)

	Obs	Mean	SD	Min	Max
Narr_IP	209	48.55	21.05	12	140
Risk_IP	209	34.86	13.67	8	77
Stgy_IP	209	13.59	11.86	3	73
Optimism_Net	209	7.82	19.05	-61	81
Certainty_Net	209	-29.20	19.06	-108	39
FIN_IP	209	4.31	5.26	0	16

Narr_IP is the score of overall narrative disclosure level, **Risk_IP** is the score of risk information disclosure level, **Stgy_IP** is the score of the level of future strategy information disclosure, **Optimism_Net** is the score of qualitative forward-looking disclosure reflecting an attitude of optimism, **Certainty_Net** is the score of the level of qualitative forward-looking disclosure reflecting an attitude of certainty, **FIN_IP** is the score of quantitative financial forward-looking disclosure level.

Table 2. Descriptive Statistics of the Level of Qualitative FLD (*in Percentage*)

	Obs	Mean	SD	Min	Max
Per_Risk	209	74.8	16.72	25.80	100
Per_Stgy	209	24.90	16.40	0	65.51
Per_Opt	209	57.20	23.11	-39.18	100
Per_Pess	209	38.24	25.91	-67.5	95.45
Per_Cert	209	20.69	14.31	0	92.85
Per_Uncert	209	72.03	34.35	-86.25	100

Per_Risk is the percentage of risk information disclosure score relative to the overall narrative disclosure score, **Per_Stgy** is the percentage of strategy information disclosure score relative to the overall narrative disclosure score, **Per_Opt** is the percentage of the score of qualitative FLD reflecting an optimistic attitude relative to the overall narrative disclosure score, **Per_Pess** is the percentage of the score of qualitative FLD reflecting a pessimistic attitude relative to the overall narrative disclosure score, **Per_Cert** is the percentage of the score of qualitative FLD reflecting a certainty attitude relative to the overall narrative disclosure score, **Per_Uncert** is the percentage of the score of qualitative FLD reflecting an uncertainty attitude relative to the overall narrative disclosure score.

5.1 Descriptive Statistics

The average IPO Underpricing (UPr), measured by the difference between the closing stock price on the first trading day (P_{i1}) and the offer price (P_{i0}) as set out in the IPO prospectus, varies from -0.94 in 2006 to 2.08 in 2015. We report descriptive statistics for the key independent variables in [Table 1](#) and [Table 2](#). [Table 1](#) shows the descriptive statistics of the qualitative forward-looking disclosure level in volume. It includes all types of forward-looking narrative disclosure.

[Table 2](#) shows the descriptive statistics of the qualitative forward-looking disclosure level in percentage.

For qualitative FLD, it has a mean score of 49 against 4.31 for quantitative FLD. This means that IPO firms listed in Euronext Paris from 2006 to 2015 were more susceptible to disseminating narrative forward-looking information than financial estimates. In addition, 74.8% of qualitative FLD is about risk factors and 24.9% is about the company's future strategy. This result could be explained by the direct effect of this type of disclosure on the competitiveness of the company. Finally, 57.2% of qualitative FLD has an optimistic tone.

Table 3. Descriptive Statistics of the Independent and Control Variables

Variables	Obs	Mean	SD	Min	Max
VRT	209	-0.89	31.43	-402.39	172.67
LEV	209	0.68	0.47	0.00	3.88
OwC	209	1.20	6.97	0.05	86
AGE	209	2.16	0.93	0.00	7.60
SIZE	209	9.71	2.01	5.81	18.85

VRT is the coefficient of variation of operating income in years t-3, t-2, and t-1, **LEV** (leverage) is the debt ratio calculated by dividing total liabilities by total assets (in t-1), **OwC** is the percentage of shares held by the owners, **AGE** is the natural logarithm (Ln) of the number of years from the firm's creation date to its prospectus date, and **SIZE** is the natural logarithm (Ln) of total assets (expressed in thousand euros).

We report descriptive statistics for the secondary independent variables and for the control variables used in the regression models in [Table 3](#). To reduce the potential influence of extreme values and outliers on the regression estimates, all continuous variables were Winsorized at the 1% and 99% percentiles. This procedure replaces the most extreme values with the value at the respective percentile, ensuring that the results are not driven by a few abnormal observations, such as the single firm exhibiting a leverage ratio greater than 1.

The earnings variability (VRT) shows a high standard deviation (31.43) with a mean of -0.89, indicating substantial variation in firms' historical performance. The average leverage ratio (LEV) is 0.68; however, ratios above 1 are observed for a few firms in the sample that exhibit negative book equity, which may occur during periods of financial distress or restructuring. Given that the sample period (2006–2015) includes the 2008 global financial crisis (as indicated in Section 4.1, Sample Selection and Data Sources), such values are economically plausible. Ownership concentration (OwC) is highly dispersed, with a mean of 1.20 and a maximum of 86, reflecting diverse shareholder structures across IPO firms.

5.2 Preliminary Analysis

To verify the underlying assumptions of the linear regression: normality, homogeneity of variance (homoscedasticity), as well as collinearity problems, we performed the following tests.

Normality

We first assessed the distribution of all study variables using skewness–kurtosis and Shapiro–Wilk tests. In each case, the null hypothesis of normality was rejected at the 1% level, indicating that several explanatory variables deviate from a normal distribution. This result justifies the use of Spearman correlation coefficients instead of Pearson's correlation to assess the associations between variables. Given the non-normal distribution of several variables, as confirmed by the Shapiro–Wilk and skewness-kurtosis tests, we employed Spearman correlation as a robust non-parametric measure

Table 4. Summary of the Results of the Breusch-Pagan Test for Heteroscedasticity

Dependent variable: UPr				
	Model 1	Model 2	Model 3	Model 4
Chi2 test	156.76*** (0.000)	145.61*** (0.000)	57.98*** (0.000)	103.67*** (0.000)

*** indicates significance at a lower level of 1%.

of monotonic relationships. However, to ensure the reliability of our multicollinearity assessment, we also computed variance inflation factors (VIFs) and tolerance values.

We then evaluated the normality of the regression *residuals* using both the skewness–kurtosis test and the Shapiro–Wilk test. For each of our four models, neither test rejected the null hypothesis of normality at the 5% level ($p > 0.05$), confirming that the residuals approximate a normal distribution.

Correlation and Multi-collinearity

In this study, linear regression requires the absence of a multicollinearity problem between the independent variables introduced in the same model. We verify this condition by using the Spearman correlation test between the variables. The results show the absence of the collinearity problem between variables (no significant correlations that exceed the value of 0.6). Furthermore, the values of the variance inflation factor (VIF) and the tolerance indices indicated a limited multicollinearity problem for the three models of the study. By applying the VIF test, the values obtained are lower than the threshold value for all variables. The average of the VIF is equal to 1.17 for the first model and 1.11 for the second. These results confirm the absence of the multicollinearity problem in the multiple regression models. The Spearman correlation matrix is presented in [Appendix D](#), followed by the values of the VIF in [Appendix E](#).

Homoscedasticity Test

To examine the problem of heteroscedasticity, we used the Breush-Pagan test. The results of this test, presented in [Table 4](#), show a significant chi2 and p_value at only 1%. We therefore reject the null hypothesis (homoscedasticity) and accept the alternative hypothesis that the Residual Variance is not homogeneous.

The Breusch-Pagan test for heteroscedasticity is significant for the different models in the study, indicating the presence of the heteroscedasticity problem. Thus, the most appropriate estimation for these types of problems is the Generalized Least Squares (GLS) regression.

Table 5. The Effect of Quantitative and Qualitative FLD on IPO Underpricing (Model 1)

Independent variables	Dependent variable RIA		
	Coefficient	Z	P-value
FIN_IP	0.247***	9.79	0.000
Narr_IP	-0.109***	-11.61	0.000
VRT	-0.181***	-5.99	0.000
LEV	2.154***	4.59	0.000
AUDIT	-0.446	-1.61	0.107
OwC	0.045***	6.26	0.000
IND	-2.335***	-6.63	0.000
AGE	0.223	1.52	0.129
SIZE	-0.097*	-1.80	0.072
_cons	0.694	1.05	0.293
Number of observations		209	
Chi2		500.79***	
Prob> chi2		0.000	

The significance levels are: * = 10%, ** = 5% and *** = 1%.

FIN_IP is the score of quantitative financial forward-looking disclosure level, **Narr_IP** is the score of the level of overall narrative disclosure, **VRT** is the coefficient of variation of operating income in years t-3, t-2, and t-1, **LEV** (leverage) is the debt ratio calculated by dividing total liabilities by total assets (in t-1), **AUDIT** is a dummy variable equal to 1 if the company is audited by at least one Big Four auditor, and 0 otherwise, **OwC** is the percentage of shares held by the owners. **IND** (industry) is a dummy variable that takes the value of 1 if the company belongs to the industrial sector and the value of 0 if it belongs to other sectors, and **AGE** is the natural logarithm (Ln) of the number of years from the firm's creation date to its prospectus date, **SIZE** is the natural logarithm (Ln) of total assets (expressed in thousand euros). “_cons” denotes the intercept (constant term) of the regression model, representing the baseline level of IPO underpricing when all explanatory variables are zero.

5.3 Association Between Forward-looking Disclosure Level and IPO Underpricing

The first hypothesis suggests forward-looking information disclosures are significantly associated with IPO underpricing. The results of the two models' estimation (Model 1 and Model 2) are represented in [Table 5](#) and [Table 6](#).

For both models, Model 1 and Model 2, the estimated coefficient of the FIN-IP variable, representing quantitative FLD, is positive and highly significant at the 1% level, which proves that quantitative FLD (earnings forecasts) is likely to accentuate IPO underpricing. Considering that quantitative disclosure is more verifiable than qualitative disclosure and that management earnings forecasts have a significantly optimistic bias, for accurate earnings forecasts, investors prefer a lower discount on the offer price compared with the expected stock value.

A more detailed analysis of regression Model 1 shows that the estimated coefficient of the soft information variable (“Narr-IP”) is negative and significant at the 1% level. These findings imply that the disclosure of soft forward-looking information reduces IPO underpricing. Moreover, the regression of Model 2 shows that the estimated coefficient of the “Optimism_Net” variable is negative and significant at the 1% level. This result affirms a negative association between optimistic qualitative FLD and IPO underpricing. These findings show that the stock market reacts to

Table 6. Results of the Multivariate Analysis of the Association Between Quantitative and Qualitative FLD and IPO Underpricing (Model 2)

Independent variables	Dependent variable RIA		
	Coefficient	Z	P-value
FIN_IP	0.184***	5.96	0.000
Optimism_Net	-0.040***	-4.54	0.000
Certainty_Net	0.124***	17.04	0.000
VRT	-0.146***	-6.88	0.000
LEV	2.798***	7.74	0.000
AUDIT	-0.669***	-3.75	0.000
OwC	0.040***	9.69	0.000
IND	-3.941***	-12.18	0.000
AGE	0.097	0.63	0.531
SIZE	-0.139	-1.64	0.101
_cons	0.583	0.65	0.516
Number of observations		209	
Chi2		7159.74***	
Prob> chi2		0.000	

The significance levels are: * = 10%, ** = 5% and *** = 1%.

FIN_IP is the score of quantitative financial forward-looking disclosure level, **Optimism_Net** is the score of qualitative forward-looking disclosure reflecting an attitude of optimism, **Certainty_Net** is the score of the level of qualitative forward-looking disclosure reflecting an attitude of certainty, **VRT** is the coefficient of variation of operating income in years t-3, t-2, and t-1, **LEV** (leverage) is the debt ratio calculated by dividing total liabilities by total assets (in t-1), **AUDIT** is a dummy variable equal to 1 if the company is audited by at least one Big Four auditor, and 0 otherwise, **OwC** is the percentage of shares held by the owners, **IND** (industry) is a dummy variable that takes the value of 1 if the company belongs to the industrial sector and the value of 0 if it belongs to other sectors. **AGE** is the natural logarithm (Ln) of the number of years from the firm's creation date to its prospectus date, and **SIZE** is the natural logarithm (Ln) of total assets (expressed in thousand euros), “_cons” denotes the intercept (constant term) of the regression model, representing the baseline level of IPO underpricing when all explanatory variables are zero.

qualitative forward-looking information especially when it relates to an optimistic tone. Therefore, the regression coefficient of the *certainty* variable is positive and significant at the 1% level, suggesting that *certainty* increases IPO underpricing. As demonstrated by descriptive statistics on qualitative forward-looking information, 72% of IPO companies tend to disclose qualitative forward-looking information with an *uncertainty* tone (versus 21% with a certainty tone, and the mean of *certainty* variable is -29.2). Therefore, qualitative FLD (soft information) with an uncertainty tone increases IPO underpricing.

Considering the secondary explanatory variables (VRT, LEV, AUDIT, OwC), the estimated coefficient of the variable “VRT” is negative and significant at the 1% level for both models 1 and 2. The magnitude of earnings variability has a negative effect on IPO underpricing. In contrast, we find a positive and significant relation between the debt variable (LEV) and IPO underpricing, suggesting that IPOs with a high debt ratio are more likely to be exposed to underpricing.

The estimated coefficient of the Auditor Reputation variable (AUDIT) is negative and significant at the 1% level only for Model 2, suggesting that an auditor with a good reputation reduces IPO underpricing. However, the

Table 7. Interaction Effects Between Quantitative and Qualitative FLD in Explaining IPO Underpricing (Model 3)

Independent variables		Dependent variable RIA		
		<i>Coefficient</i>	<i>Z</i>	<i>P-value</i>
FIN_IP		0.204***	4.10	0.000
Optimism_Net		-0.061***	-11.15	0.000
Certainty_Net		0.082***	11.62	0.000
FIN_IP*Optimism_Net		0.007***	4.97	0.000
FIN_IP*Certainty_Net		0.003***	2.82	0.000
_cons		0.550***	2.36	0.000
Number of observations	209			
Chi2			571.66***	
Prob> chi2			0.000	

The significance levels are: * = 10%, ** = 5% and *** = 1%.

FIN_IP is the score of quantitative financial forward-looking disclosure level, **Optimism_Net** is the score of qualitative forward-looking disclosure reflecting an attitude of optimism, **Certainty_Net** is the score of the level of qualitative forward-looking disclosure reflecting an attitude of certainty, “_cons” denotes the intercept (constant term) of the regression model, representing the baseline level of IPO underpricing when all explanatory variables are zero.

regression coefficient of ownership concentration “OwC” for both models 1 and 2 is positive and significant (at the 1% level). These results prove that a high percentage of shares held by owners increases IPO underpricing.

Regarding control variables (IND, Age, and Size), the regression results of the two models show a negative and highly significant association at the 1% level for the industry classification variable (IND). IPO companies from the industry sector led to lower underpricing. The estimated coefficient of the Size variable is negative and significant (at least at 10% level) for only Model 1. In contrast, we find no significant relation between “Age” and IPO underpricing for both Model 1 and Model 2.

5.4 Complementarity Between Quantitative and Qualitative FLD in IPO Underpricing

In this section, we estimate regression Model 3 to examine the relationship between quantitative and qualitative forward-looking information in explaining IPO underpricing (hypothesis H2): a substitution or complementarity relationship. The empirical results of regression Model 3 are reported in [Table 7](#).

[Table 7](#) presents the results of regression Model 3 for examining the interaction effects between quantitative FLD (*FIN-IP* variable) and qualitative FLD (“Optimism_Net” and “Certainty_Net”) variables. The results show a significant complementarity effect (at the 1% level) between the “Optimism_Net” variable and the “FIN-IP” variable with an estimated coefficient of 0.007 (z-value = 4.97). Qualitative FLD with an optimistic tone and quantitative FLD have a complementary effect on the level of IPO underpricing. Similarly, the estimated coefficient of the interaction between “FIN-IP” and “Certainty_Net” is positive and significant at the 1% level. A complementary effect on IPO underpricing is, hence, approved between the quantitative FLD (FIN-IP variable) and the qualitative FLD (soft information) with a certainty tone.

Table 8. Results of Multivariate Analysis of the Association Between Risk Disclosure and IPO Underpricing (Model 4)

Independent variables		Dependent variable RIA	
	Coefficient	Z	P-value
Risk_IP	-0.136***	-8.78	0.000
Stgy_IP	-0.098***	-8.62	0.000
VRT	-0.144***	-4.12	0.000
LEV	1.484***	3.59	0.000
OwC	0.057***	7.39	0.000
IND	-3.042***	-10.31	0.000
AGE	0.425***	3.67	0.000
SIZE	-0.092	-1.28	0.200
_cons	1.658**	2.01	0.044
Number of observations	209		
Chi2		442.56***	
Prob> chi2	0.000		

The significance levels are: * = 10%, ** = 5% and *** = 1%.

Risk_IP is the score of risk information disclosure level, **Stgy_IP** is the score of the level of future strategy information disclosure, **VRT** is the coefficient of variation of operating income in years t-3, t-2, and t-1, **LEV** (leverage) is the debt ratio calculated by dividing total liabilities by total assets (in t-1), **OwC** is the percentage of shares held by the owners, **IND** (industry) is a dummy variable that takes the value of 1 if the company belongs to the industrial sector and the value of 0 if it belongs to other sectors, **AGE** is the natural logarithm (Ln) of the number of years from the firm's creation date to its prospectus date, and **SIZE** is the natural logarithm (Ln) of total assets (expressed in thousand euros), “_cons” denotes the intercept (constant term) of the regression model, representing the baseline level of IPO underpricing when all explanatory variables are zero.

5.5 Risk Factors Disclosure and IPO Underpricing

For testing the third hypothesis (Model 4), we analyzed the relationship between IPO underpricing and the extent of risk factors and strategy disclosures (Risk-IP and Stgy-IP). The results reported in [Table 8](#) showed a significant negative association (at the 1% level) between IPO underpricing and the level of risk information (Risk-IP). IPO firms that disclose risk factors are less exposed to IPO underpricing. Similarly, the estimated coefficient of the *Strategy* variable (Stgy-IP) is negative and significant at the 1% level, suggesting that disclosure of information about the firm's future strategy significantly reduces IPO underpricing.

Considering the secondary explanatory variables, the results showed a negative and significant association (at the 1% level) between IPO underpricing and earnings variability (VRT). In contrast, the results showed a positive and significant association between debt ratio (LEV) and IPO underpricing. In addition, the estimated coefficient of ownership concentration variable “OwC” was positive and significant at the 1% level, suggesting a positive association between the percentage of shares held by owners and underpricing. Concerning control variables, the estimated coefficient of the industry classification variable (IND) was negative and significant at the 1% level. Therefore, the results for the secondary explanatory variables for regression Model 3 are consistent with the results of regression models 1 and 2.

6. Summary and Conclusion

To qualify as “relevant”, accounting information should be useful to investors and have predictive information content that is reflected in stock prices. For the specific case of FLD, most previous studies have focused on examining the usefulness of quantitative information (hard information), while few studies have analyzed the relevance of qualitative accounting information (soft information). From our review of the literature, we found that most previous studies have examined primarily the relevance of quantitative (or numerical) forward-looking information. However, very few studies have examined the effect of qualitative (or narrative) forward-looking information, which constitutes about 60% of the content of the IPO prospectus.

The main objective of this study was to analyze the information content of quantitative (hard) and qualitative (soft) forward-looking information by assessing the effect of their announcement on IPO underpricing. In a sample of 209 companies listed on Euronext Paris during the period 2006–2015, we confirmed a positive relationship between quantitative FLD (or management earnings forecasts) and IPO underpricing, proving that the disclosure of management earnings forecasts increases IPO underpricing. In contrast, this study showed that the level of qualitative FLD significantly reduces IPO underpricing. Similarly, the market response to soft information is greater than that to hard information. These results are consistent with the findings of Demers and Vega (2011), which confirm that the market reacts more to qualitative information to the extent that quantitative information provides an imprecise measure for stock valuation. Furthermore, the market is more sensitive to qualitative FLD when it is more verifiable through a simultaneous disclosure of quantitative information. This same result has been confirmed by Davis et al. (2012) and Engelberg (2008).

Moreover, the stock market reacts to the communication of qualitative forward-looking information especially when it relates to information reflecting an optimistic tone. This result is in line with the study of Yekini et al. (2015), which demonstrated that the “Positiveness” (or optimism) inherent in narrative disclosures in annual reports is significantly associated with abnormal returns around the earnings announcement date. An optimistic tone significantly affects stock prices. Demers and Vega (2011) proved that the *net optimism* of FLD significantly affects the cumulative abnormal returns. The two fundamental aspects that affect price responsiveness to the optimistic attitude are (i) the informativeness of hard information and (ii) the credibility of the optimism. Similarly, Qi et al. (2023) found that a more positive tone is associated with higher underpricing, suggesting that overly optimistic language may lead investors to perceive greater uncertainty, prompting them to demand higher initial returns. In contrast, Li et al. (2023) proved that the more positive the FLD tone, the worse the stock liquidity, assuming that the optimistic tone of FLD may be the result of management manipulation.

As demonstrated by the descriptive statistics for qualitative forward-looking information, firms tend to disclose such information using a tone of uncertainty. Specifically, 72% of the sentences containing forward-looking disclosures are characterized by an uncertainty tone, while only 21% are associated with a certainty tone. This is also reflected in the negative mean value of the *Certainty_Net* variable, which is equal to -29.2 .

Therefore, the tone of uncertainty in qualitative FLD increases stock undervaluation. This result is consistent with the findings of Demers and Vega (2011), which showed that the market reacts more to *soft* information with a higher level of certainty.

The results of the multivariate analysis showed that IPOs with a relatively high debt ratio are more susceptible to the undervaluation of their securities. This result was also proved by Gounopoulos (2011), who showed, on a sample of 208 companies introduced in the Athens stock exchange, that the variable debt ratio significantly increases the undervaluation of the securities at the 1% threshold, hence, the validation of hypothesis H1 according to which quantitative and qualitative prospective information have an explanatory power for IPO underpricing. Furthermore, a highly significant complementarity relationship was shown between the numerical FLD and the narrative FLD (measured by the two variables “optimism-net” and “certainty-net”). These variables complement each other in explaining the abnormal initial return. These results are inconsistent with the Brockman and Cicon (2013) study that confirmed a substitution relationship between optimistic and quantitative information. This substitution relationship could be explained by the fact that the publication of a large volume of numerical information is likely to improve the informational content and relevance of narrative prospective information. The analysis of the results of the regressions confirms hypothesis H2, which suggests a complementary relationship between quantitative and qualitative prospective information.

Analysis of the association between risk disclosure and IPO underpricing showed that risk disclosure significantly reduces the phenomenon of underpricing of newly introduced firms. Hence, hypothesis H3 is confirmed. This result seems obvious to us insofar as the disclosure of a large volume of information on risks reflects the company's transparency. Similarly, it should be noted that this information includes a large volume of information on the countermeasures that the company plans to take to prevent the risks described. On the other hand, Bozzolan and Ipino (2007) showed a positive relationship between risk factor disclosure and stock undervaluation, while pointing out that the number and extent of risk factor disclosure are considered an observable measure of ex-ante uncertainty and, therefore, positively associated with undervaluation. A recent contribution by Xia et al. (2024) found that initial IPO returns negatively correlate with the semantic novelty and content richness of risk disclosures. Consistent with this recent evidence, our study confirms a highly significant negative association between

risk disclosure and IPO underpricing. Similarly, our findings show that disclosing information about the company's future strategy tends to reduce short-term IPO underpricing.

7. Contributions and Implications

To our knowledge, these are the first empirical results to show that, on the Euronext market, qualitative FLD in IPO prospectuses contain relevant information to which the market reacts significantly. The relevance of this information would be accentuated when it is accompanied by quantified estimates of the company's results. This finding is, therefore, the main factor explaining the large volume of published narrative information contained in IPO prospectuses.

The major contribution of this research is its focus on a specific type of information published by the company during its IPO, the qualitative (narrative) forward-looking information that constitutes a mandatory disclosure, the extent and tone of which remain dependent on the discretionary assessment of managers. Likewise, this study makes important research contributions dedicated to the quality of forward-looking information by studying the complementarity between quantitative and qualitative forward-looking information in explaining the short-term stock market performance of IPOs.

This study provides a relevant empirical basis for researchers on corporate disclosure. The results highlight the need to rethink the main role of FLD, particularly that of the narrative type describing the company's future strategy and risks it might face. The findings of this study also have serious implications for regulators and investors as well as managers of issuing companies. The emphasis on forward-looking narrative disclosure encourages regulators to strengthen company reporting standards and mechanisms to reduce standardized disclosures without informative value. Then, such information allows investors to better assess the firm's value. Our results challenge the claims of recent studies which state that narrative forward-looking information constitutes uninformative and ambiguous cheap talk. The results of this research are also relevant for managers who will be encouraged to give increased priority to establishing an appropriate qualitative FLD policy. Managers will hence review governance mechanisms as well as FLD strategy (nature, extent, and tone).

Like all studies, this paper has some limitations. First, we use a content analysis approach with hand-collected data, which requires time and hard work. Therefore, this research focuses only on the IPOs listed on Euronext Paris. Research on the FLD topic may be extended by analyzing different contexts within a comparative perspective. Second, our empirical investigation is restricted to analyzing the association between FLD and IPO underpricing. Future research might investigate the impact of FLD, particularly soft information, on the cost of capital and analysts' earnings forecasts. Despite the limitations of this paper, the empirical findings provide

relevant insights about prospective mechanisms required to mitigate information asymmetry problems and ensure the smooth functioning of the stock market.

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Appendices

Appendix A. Keywords Prospecting – Forecasting

Prospecting – Forecasting		
Accelerate In order to Ambition Next year Current year Anticipate Wait Attitude Future Have faith Well-placed Well positioned Coming soon Goal Search for Shall Trust Confidence Convince Believe Remain + Future or conditional verbs ... + Future years ...	Desire Must Consider Hope Estimate Possible Possibility Except Hurry Horizon Probable Improbable Intention Objective Perspective Persuade Plan Precipitate Predict Forecast Expect Forward-looking	Prevent Next Projection Project Propose Renew Repeat Will be May Should Would Wish Subsequent Next Assume Trying to make Aim Vision Want

Appendix B. Keywords Optimism/Certainty

Optimism	Pessimism	Certainty	Uncertainty
Huge Considerable Imposing Powerful Beautiful Extremely Formidable Reasonable Conscientious Awareness Reputed Recognized Faithful Good Opportune Conducive Auspicious Encourage Guarantee Insure Relieve Mitigate Remedy Trust Confidence Honesty Sincerity Integrity Merit Advantage Success	Bankruptcy Crisis Careless Morbid Inconvenience Difficult Harmful Disadvantage Prejudicial Damage Severe Illegitimate Unjustified Illogical Weakness Error Fault Rush Embarrassing Infidelity Don't Aren't Shouldn't Must not Neither Nor Nay Nothing Nobody None No + The different forms of negation	To be (is, am, will, shall) To do Have Must Each Fully Completely Absolutely At least Very good Always Inevitably Consistently Mandatory Systematically Regularly Constantly Unconditional Consummate Unreserved Finish Accomplish Achieve Totally Everybody Anyone Fully Ideal Complete Obvious Of course + repetition of key words (more than 3 times).	Allegedly Perhaps Could Would May be Possibly Almost Quasi Approximate Close to Imprecise Somewhere About Baffled Hesitate Dilemma Guess Assume Think Appears Seems Suppose + quantitative terms (the majority, the minority, many, some, a percentage of...) + the use of different forms of self-reference (including I, I'd, I'll, I'm, I've, me, mine, my, myself).

Appendix C. Definition and Measurement of Variables

Variables	Acronym	Indicator
<i>Dependent variable</i>		
Level of underpricing	UP_{it}	Underpricing is calculated as the difference between the closing stock price on the first trading day ($P_{i,1}$) and the offer price ($P_{i,0}$) as set out in the IPO prospectus. The <i>IPO Opening Price</i> is provided by Euronext and is also available in the IPO prospectus. That is, underpricing (UP_{it}) is calculated as follows: $UP_{it} = \left[\frac{P_{i,1}}{P_{i,0}} - 1 \right] \times 100$
<i>Key independent variables</i>		
Quantitative financial forward-looking disclosure	Fin_IP	Score of quantitative financial forward-looking disclosure level (measured as described in subsection 4.3).
Overall narrative disclosure level	Narr_IP	Score of the level of overall narrative disclosure (measured as described in subsection 4.2).
Qualitative forward-looking disclosure reflecting a certainty tone	Certainty_Net	Score of the level of qualitative forward-looking disclosure reflecting an attitude of certainty (measured as described in subsection 4.2).
Qualitative forward-looking disclosure reflecting an attitude of optimism	Optimism_Net	Score of qualitative forward-looking disclosure reflecting an attitude of optimism (measured as described in subsection 4.2).
Risk disclosure level	Risk_IP	Score of the level of risk information disclosure (measured as described in subsection 4.2).
Future strategy disclosure level	Stgy_IP	Score of the level of future strategy information disclosure (measured as described in subsection 4.2).
<i>Secondary independent variables</i>		
Earnings variability	VRT	The coefficient of variation of operating income in years t-3, t-2, and t-1.
Leverage	LEV	The debt ratio is calculated by dividing total liabilities by total assets (in t-1).
Ownership concentration	OwC	The percentage of shares held by the owners.
Auditor reputation	AUDIT	A dummy variable is equal to 1 if the company is audited by at least one <i>Big Four auditor</i> , and 0 otherwise.
<i>Control variables</i>		
Firm size	SIZE	The natural logarithm (Ln) of total assets (expressed in thousand euros).
Industry classification	IND	A dummy variable equal to 1 if the firm operates in the industrial or manufacturing sectors according to the Euronext Industry Classification Benchmark (ICB), and 0 otherwise (e.g., services, technology, or other sectors).
Company age	AGE	AGE is the natural logarithm (Ln) of the number of years from the firm's creation date to its prospectus date.

Appendix D. Spearman Correlation Matrix

	UPr	Narr_IP	Risk_IP	Stgy_IP	FIN_IP	Optimism_Net	Certainty_Net	VRT	LEV	AUDIT	OwC	IND	Age	SIZE
UPr	1.000													
Narr_IP	-0.147** (0.033)	1.000												
Risk_IP	-0.133* (0.055)	0.864*** (0.000)	1.000											
Stgy_IP	-0.122* (0.077)	0.756*** (0.000)	0.358*** (0.000)	1.000										
FIN_IP	0.028 (0.648)	0.161** (0.020)	0.119* (0.086)	0.142** (0.040)	1.000									
Optimism_Net	0.028 (0.680)	0.081 (0.242)	-0.191*** (0.005)	0.406*** (0.000)	0.093 (0.179)	1.000								
Certainty_Net	0.141** (0.041)	-0.789*** (0.000)	-0.801*** (0.000)	-0.446*** (0.000)	-0.071 (0.305)	0.221*** (0.001)	1.000							
VRT	0.040 (0.557)	-0.176*** (0.010)	-0.200*** (0.003)	-0.077 (0.266)	0.238*** (0.000)	0.203*** (0.003)	0.242*** (0.000)	1.000						
LEV	0.075 (0.276)	0.064 (0.354)	0.101 (0.143)	-0.008 (0.898)	-0.031 (0.352)	0.049 (0.480)	-0.121* (0.081)	-0.000 (0.991)	1.000					
AUDIT	-0.051 0.464	0.326*** (0.000)	0.327*** (0.000)	0.171** (0.013)	0.197*** (0.004)	-0.158** (0.022)	-0.283*** (0.000)	-0.171** (0.013)	-0.035 (0.611)	1.000				
OwC	0.062 (0.368)	0.068 (0.322)	0.080 (0.245)	0.015 (0.819)	0.144** (0.037)	0.111 (0.107)	0.020 (0.765)	0.336*** (0.000)	0.077 (0.265)	-0.075 (0.278)	1.000			
IND	-0.052 (0.452)	-0.279*** (0.000)	-0.315*** (0.000)	-0.134* (0.052)	-0.073 (0.292)	0.110 (0.112)	0.333*** (0.000)	0.194*** (0.004)	-0.140** (0.043)	-0.264*** (0.000)	-0.123* (0.075)	1.000		
Age	0.010 (0.452)	-0.034 (0.616)	-0.029 (0.674)	-0.020 (0.774)	0.061 (0.380)	0.039 (0.570)	0.054 (0.432)	0.185** (0.007)	0.082 (0.235)	0.017 (0.805)	0.106 (0.124)	-0.073 (0.292)	1.000	
SIZE	-0.059 (0.393)	0.152** (0.028)	0.102 (0.141)	0.156** (0.024)	0.232*** (0.000)	-0.081 (0.240)	-0.152** (0.028)	0.387*** (0.000)	-0.108 (0.119)	0.121* (0.080)	0.071 (0.303)	-0.202*** (0.003)	0.214*** (0.001)	1.000

***, ** and * respectively represent significance at 1%, 5% and 10% level.

Appendix E. VIF and Tolerance Values

Model 1			Model 2			Model 3		
<i>Variables</i>	<i>VIF</i>	<i>1/VIF</i>	<i>Variables</i>	<i>VIF</i>	<i>1/VIF</i>	<i>Variables</i>	<i>VIF</i>	<i>1/VIF</i>
FIN_IP	1.25	0.797	FIN_IP	1.25	0.799	Risk_IP	1.27	0.787
Narr_IP	1.27	0.784	Optimism_Net	1.14	0.878	Stgy_IP	1.24	0.809
VRT	1.61	0.621	Certainty_Net	1.37	0.731	VRT	1.52	0.658
LEV	1.11	0.897	VRT	1.65	0.605	LEV	1.12	0.904
AUDIT	1.25	0.801	LEV	1.14	0.877	OwC	1.15	0.866
OwC	1.20	0.829	AUDIT	1.25	0.801	IND	1.26	0.791
IND	1.31	0.761	OwC	1.20	0.833	AGE	1.13	0.884
AGE	1.12	0.889	IND	1.32	0.755	SIZE	1.59	0.627
SIZE	1.64	0.609	AGE	1.13	0.883			
			SIZE	1.77	0.566			
<i>Average VIF</i>	1.31			1.32			1.28	