The role of word choice in the earnings press release by French listed companies

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Abstract

This paper examines the narrative form of the quarterly earnings press release by French listed companies. We focus on the linguistic style in this financial publication, especially the degree of optimism. We start by analyzing whether the tone of an earnings press release can be an indicator of the firm's future performance. We then study the reaction of French capital markets to the tone of the press release. The empirical results show a positive relationship between the tone and future performance. We also observe that cumulative abnormal returns are positively related to the degree of optimism. These findings thus suggest that the degree of optimism may be an indicator of future performance. Furthermore, French capital markets react positively to the degree of optimism, even after firm size and the variation in sales are controlled for. Last, investors are more sensitive to the pessimistic degree than the optimistic degree in a financial announcement.

Keywords: tone, quarterly earnings press release, future performance, capital markets reaction

1. Introduction

Previous research has generally indicated two objectives of voluntary disclosure: the first is incremental information to improve transparency and reduce the negative effects generated by asymmetric information, and the second is impression management to influence the opinions of investors, improve corporate image and even defend the professional reputations of managers. These two objectives, especially the second, can be reflected by both the presentation (readability, thematic and rhetorical characteristics, etc.) and the content of the information.

Previous empirical research on financial communication has generally focused on information content, with the empirical studies on information presentation being very limited. However, the form of information plays a significant role in perception and understanding (Morris *et al.*, 2005). One important factor in the preparation of financial publications is the word choice, which can determine the tone of the message (optimistic/pessimistic) and transmit soft information beyond the linguistic content. In this research, we focus on the presentation of information, and more specifically on the tone of the quarterly earnings press release and its influence on French capital markets.

In the first step, we analyze the relationship between the tone of the press release and the firm's future performance. The effectiveness of an financial announcement depends on both the information content and presentation (Davis *et al.*, 2007). Given the importance of linguistic style, it is possible, even probable, that a manager will carefully choose a style to subtly communicate discreet information about the firm's future performance to investors.

In the second step, we test the reaction of French capital markets to soft information; that is, to the information subtly transmitted by the tone of the quarterly earnings press release. We attempt to determine whether investors are influenced by certain soft information, such as the degree of optimism. If the answer is positive, then the question becomes: how are they influenced by soft information that only appears between the lines? An event study is carried

out to measure the reaction of French financial markets to the tone of the quarterly announcement. We use Diction 5 software to measure the tone in order to assess the degree of optimism.

The empirical results demonstrate a positive relationship between the degree of optimism expressed in the quarterly press release and the firm's future performance. In other words, the linguistic style can reveal additional information about future performance in an indirect way. Moreover, we prove that the degree of optimism is positively related to cumulative abnormal returns. French financial markets therefore reward quarterly earnings press releases that are written from a more favorable angle. These results confirm that the presentation of information, in addition to its content, is a non-negligible factor in understanding the reactions of information users.

This research differs from the existing studies in several ways: first, previous research has generally studied linguistic style with methods based on the judgments of individual researchers. In our study, Diction 5 software is used to assess the tone of the quarterly press release. This method allows us to more objectively analyze the degree of optimism contained in each financial announcement. With this software, we can increase the sample size, minimize the risk of subjectivity, and complement the results of previous studies.

Second, the previous research on financial disclosure is generally based on classical financial theory, which assumes market efficiency and the perfect rationality of investors. For the construction of our research hypotheses, we introduce *behavioral finance*, which assumes that investors do not behave in a completely rational way. In addition, we use *prospect theory*, which describes how humans decide among several risky alternatives.

Third, most linguistic studies in this field choose to examine the environmental report, the President's message, or the annual report. We instead select the quarterly earnings press release, which has a closer connection with the economic activities of a firm. To our knowledge, this study is the first to analyze the tone of these press releases and their impact on the French financial markets.

Overall, this research aims to improve our understanding of the role played by linguistic style in financial communications. The interest of this study lies in how the financial publication is written, and not what is written. The results show that investors make more appropriate forecasts when they take soft information into account. Given the reaction of capital markets to tone, listed companies should place greater emphasis on linguistic style in the preparation of financial publications. Furthermore, the results also suggest that financial authorities could develop more detailed guidelines to monitor the presentation of financial information in order to protect investors from subtle attempts at manipulation.

The remainder of the paper is organized as follows: Section 2 highlights the French regulations on quarterly financial publication. Section 3 reviews the prior research on the tone of financial announcements and then develops hypotheses. Section 4 outlines the sample selection and the measurement of all variables. Section 5 presents the empirical analysis and results. The conclusion is provided in Section 6.

2. Quarterly financial publications in France

2.1. French regulations on quarterly financial publications

Compared with the diversity of annual and interim reports, the quarterly financial publication is characterized by simplicity and narrow focus. It provides shareholders and potential investors with the latest information on important economic events within a short window (3 months). In fact, the quarterly publication has played an increasingly important role in managing the investor relationship (Kross and Kim, 2000; Lo and Lys, 2001; Collins *et al.*, 2005; *etc.*). As the study of Francis *et al.* (2002) shows, the average number of words in a quarterly earnings press release was 517 in 1980, and over 2,400 in 1999.

Given its importance, specific rules have been developed for the quarterly financial publication. In France, the AMF[1] and the "Monetary and Financial Code" require that all listed companies publish quarterly financial information within 45 days of the end of the first and third quarters of the year. Furthermore, the quarterly financial release should be

[1] ***AMF**: Autorité des Marchés Financiers designates the French Financial Markets Authority*

transferred to the AMF at the moment of publication and should include the following information:

(1) a description of important events and operations that have taken place during the period, and an explanation of their impact on the financial position of the company;

(2) the quarterly sales. This amount must be specified as follows: for a given year, the first quarter sales must be specified along with the first quarter sales of the previous year (two columns). For the third quarter sales, however, the first, second and third quarter sales plus the cumulative value must be specified along with the same figures for the previous year (eight columns).

(3) a general description of the financial position and results concerning (a) major activities like launching a new product and (b) key external factors that may have significantly affected the company's activity, such as changes in oil prices or the competitive environment, etc.

According to the Transparency Directive, the release of quarterly financial information is only required for the first and third quarters of a year. In addition, the publication of quarterly results is not mandatory. In other words, listed companies have no obligation to publish their quarterly results or intermediate balances.

2.2. Earnings press release

The document analyzed in this lexical research is the quarterly earnings press release. Generally speaking, a press release is a short document sent to the media and journalists that communicates various important events of a company for a given quarter. In the original sense, a press release is used to inspire journalists to write an article about the company. The content of this type of publication can be partly or completely picked up by journalists in writing their own article.

Traditionally, the financial press release is distributed to the financial press, financial analysts and institutional investors, by fax or mail. The Internet technologies have given a new

dimension to the press release. Today, information users throughout the world can find online financial press releases, either directly on the company website or through a range of online databases, such as Factiva. The destination of the earnings press release has therefore greatly expanded, from professionals to the general public. In this sense, the term "press release" has lost its original meaning because the focus of the transmitted information is no longer the press. Given their importance, the AMF requires all listed companies to transmit any press releases at the moment of their publication. The AMF keeps these press releases in its online communication bank in order to expand public access to information.

In linguistic research on financial publication, the environmental report is one of the most studied materials due to its predominantly verbal content (Jones and Shoemaker, 1994). The President's message is also widely analyzed because of its importance in investment decisions (Jones, 1988; Fisher and Hu, 1989). Furthermore, some studies have chosen to study the annual report because it provides an overview of the company.

In comparison with these communication vehicles, the quarterly earnings press release presents several advantages for a linguistic study. First, it contains not only the quantitative content such as quarterly sales, but also narrative and descriptive content such as management’s comments on firm performance. Second, interpretations of accounting results are not subject to independent audits. Issuers of information thus have more freedom in the preparation of a press release and, most particularly, in terms of linguistic style. Third, the earnings press release, which focuses on the important events of a given quarter, provides recently updated information and thus is relevant for formulating investment decisions. Moreover, the financial press release was initially designed for use by professionals in financial markets. However, as mentioned earlier, the development of online publications and the AMF General Regulations have expanded the information target. Individual investors can also check the quarterly earnings press release on the company website or websites like "Business Wire" or "PRNewswire." In light of these practices, it is therefore appropriate to conduct linguistic research to analyze the reactions of financial markets by studying the quarterly earnings press release.

3. Literature review and hypothesis development

3.1. Tone of the quarterly earnings press release and the firm's future performance

Compared with outsiders, managers hold more private information, especially when it comes to delicate events which can strongly affect the firm's future performance (such as an important contract under way, the threat of new competition, the relationship with financial institutions, *etc*.). This private information allows managers to form more accurate forecasts on the firm's future performance. In preparing the financial announcement, managers may thus adopt the linguistic style to reflect such information. Encouraged by personal knowledge of future opportunities, managers might choose a more optimistic style in a press release. In contrast, a more moderate, even pessimistic, style can be adopted when managers foresee difficulties or threats for future operations. In other words, an optimistic (or pessimistic) linguistic style may function as an indicator of favorable (or unfavorable) future performance, signaled by managers in the financial announcement. As a result, we should find a positive relationship between the degree of optimism expressed in the press release and the future performance of the company.

The above arguments are based on the assumption that m managers semi-consciously, or even unconsciously, adopt certain linguistic styles in the preparation of financial announcements. In cases where managers consciously choose a communication strategy in order to influence investors' opinions and the market reaction, the relationship between the degree of optimism and the firm's future performance is more complex.

Why do managers attempt to influence investors' opinions? Indeed, if investors overestimate company performance, they may suffer a significant loss and therefore generate negative opinions about the company. This may damage the company's image and the manager's professional reputation, especially his or her credibility for the provision of information. In contrast, when a company is undervalued, the cost of capital becomes higher. Managers therefore need a communication tool in order to maintain the image of the company, control the financial cost, and protect their professional reputation. The quarterly earnings press release is one of the tools to achieve these goals. As Davis *et al.* (2007) indicated in their empirical research, the tone of an earnings press release contains certain value-relevant

information. Managers choose a relatively optimistic (or pessimistic) linguistic style in order to communicate a favorable (or unfavorable) signal to investors concerning the firm's future performance. It is therefore possible that impression management is adopted by the managers to adjust investors' forecasts. In other words, the degree of optimism of financial announcements could be a good indicator of the future performance. The first hypothesis can be formulated as follows:

> ***Hypothesis 1: There is a positive relationship between the degree of optimism expressed in the quarterly earnings press release and the future performance of the company.***

It should be noted that the hypothesis above is based on managers' good intentions in terms of communication policy. This assumes that managers adopt a certain linguistic style with the aim of communicating honestly to investors, ensuring that they receive correct and accurate information. However, it is also possible that some managers manipulate the linguistic style to draw personal benefits. This would be a manipulation of information that tends to mislead investors and distort the correct functioning of the financial market.

We should also mention that the tone can be affected by many factors: the actual operating results can have an impact on the choice of tone, future growth opportunities or threats can also affect the degree of optimism, and even the manager's personality may be reflected in the tone of the announcement. We therefore can't simply treat a rather positive tone as an attempt at information manipulation (Henry, 2008).

3.2. Tone of the quarterly earnings press release and the reaction of financial markets

Merkl-Davies and Brennan (2007) classify previous studies on the reaction of financial markets to the publication of information into two main categories. The first does not consider the sensitivity and personality of an information user. This type of research is based on the assumption of strong or semi-strong market efficiency. It assumes that market participants are fully rational and react properly and almost instantly to the newly released information. The market price is determined by sophisticated investors who can properly analyze the

implications of accounting data (Hand, 1990). The second type of study is based on behavioral finance. These findings suggest that individuals do not formulate investment decisions in a completely rational way, but instead do so semi-rationally. Individual investors may also have an impact on the stock market valuation. Moreover, even professional participants in the financial market, such as financial analysts, are sensitive to the form of financial publications (Mullainathan and Shleife, 2005). Our research belongs to this second category and we introduce prospect theory, like the research of Henry (2008), to study how investors are affected by the linguistic style of quarterly announcements. It is therefore an analysis of the relationship between the degree of optimism and cumulative abnormal returns (CAR).

Prospect theory describes how individuals formulate their decisions among several risky alternatives. It helps to better understand the preferences of investors as they choose among investment projects. The experimental research conducted by Tversky and Kahneman (1981) shows that individual decisions are influenced by the words chosen to describe risky alternatives. Contradictory attitudes toward risks are observed when the choice described by "lives saved" is replaced by the choice described by "lives lost", even though the substance of the two choices is identical. The conclusion is that the format plays an important role in understanding the information and making related decisions. The study of Bazerman (2002) finds a similar result and shows that the investment decision can be changed when positive terms (such as job gains) are replaced by negative terms (job losses).

In the field of financial communications, various studies have found that the tone of financial communications may have an influence on the reaction of financial markets. For example, the movement of financial markets is strongly influenced by the language use of the CNBC commentators (Morris *et al.*, 2005). The tone of the Wall Street Journal's comments also significantly influences the valuation of stock price and trading volumes (Tetlock, 2007). Moreover, the tone or metaphorical style used in a financial publication may have an impact on an investor's forecast, even though the commentators provide no reliable arguments (Morris *et al.*, 2005). Even professionals, such as financial analysts, who are supposed to be more rational because of their knowledge and experience, are influenced by the presentation of information (Sedor, 2002).

Henry (2008) introduces prospect theory to analyze the relationship between the tone of the financial announcement and the reaction of the capital markets. She demonstrates empirically that the CAR is positively related to the more positive presentation. She concludes that discourses containing more positive terms lead investors to develop more positive forecasts of the firm's future performance. The empirical results obtained by Davis *et al.* (2007) also show that the CAR is positively related to the degree of optimism but negatively related to the degree of pessimism.

By drawing on prospect theory and previous studies, we expect a positive relationship between the degree of optimism of a quarterly announcement and the reaction of the financial markets.

Hypothesis 2: There is a positive relationship between the degree of optimism expressed in the quarterly earnings press release and the cumulative abnormal returns.

The tone of the information may affect the ability of investors to assess the veracity of information (Davis *et al.*, 2007). However, we should mention that the power of tone is not unlimited. In other words, an extremely optimistic tone could have little influence on the variation in CAR. As an example, the research of Frost (1997) shows that financial markets ignore the positive information issued by UK companies with financial problems. In addition, the credibility of managers with respect to financial reporting differs (Wilson, 1985). It is likely that investors form their own opinions about a manager's credibility in communications. If investors assume that the tone of a financial announcement is a manipulation tool used by managers, they will naturally doubt the credibility of the announcement and anticipate the possibility of impression management. The research of Hutton *et al.* (2003) shows that the subjective part of a financial announcement, accompanied by the manager's forecasts, has no impact on the financial markets unless the substance of the information is verifiable. In addition, the research of Henry (2008) shows that the effect of the tone on the market reaction is concave. Financial markets thus prefer a more favorable tone, but this is not without limit.

4. Research design

4.1. Sample and data selection

In this study, we collect the quarterly earnings press releases of French listed companies belonging to the SBF 250 index. We keep only the companies whose accounts are closed in December. Due to differences in the disclosure regulations, 28 companies in the financial sector have been dropped. We then consult the firms' websites and download the quarterly financial press releases from 2006 to 2008. This sample is also supplemented by the Factiva database. Accounting and financial information was extracted from the "Thomson ONE Banker," "Worldscope" and "Datastream" databases. In summary, the sample includes 465 firm-year observations and is an unbalanced panel because of missing data in some financial years.

We use only the quarterly press releases in English because Diction 5 is designed for the analysis of English. To our knowledge, there is currently no software to assess the degree of optimism in French texts. In addition, the proportion of foreign investors, especially Anglo-American institutional investors, has increased dramatically over the past decade in French capital markets. French listed companies therefore need to strengthen their financial publications in English in order to reduce the information asymmetry between domestic and foreign shareholders, improve relationships with non-resident investors, expand their international influence, and attract new capital.

For each earnings release in our sample, we eliminated all numerical tables, figures, images. In addition, insignificant information, such as page numbers or company addresses and telephone numbers, was manually removed. We therefore kept only the text for processing with Diction 5. According to the AMF regulations and French law, French listed companies are not obliged to publish quarterly earnings press releases in English. The documents in our sample are therefore all voluntarily provided, which allows us to use voluntary disclosure theories to develop research hypotheses.

4.2. Measurement of the degree of optimism

In previous linguistic research, there is no consensus about the effectiveness of different methods for studying and analyzing language (Pennebaker *et al.*, 2003). Some researchers believe that language is inherently contextual. It is therefore preferable to carry on a linguistic study by analyzing large text units, such as sentences or paragraphs, and by putting the language into a global context (Gottschalk and Gleser, 1969). Others argue that people tend to read the contents and are unable to monitor the verbal choices when paying attention to the text (Hart, 2001). It is therefore relevant to carry out a linguistic study based on word frequency. Furthermore, it is possible to facilitate linguistic studies by using computer software.

Our study is based on word frequency. Diction 5 software is introduced in order to access the tone of a quarterly earnings press release. In fact, Diction 5 has been widely used in previous lexical research. It is designed to measure the subtle influence of linguistic style by counting the frequency of words. This program includes thousands of words and can analyze 35 features of a text based on linguistic theories. To evaluate the tone of a text, Diction 5 has developed three categories of words that indicate an increase in optimism, and three categories of words that represent a decrease in optimism. It should be noted that no words are duplicated across these six categories.

<u>Three categories indicate an increase in optimism:</u>

- ***Praise***

"*Affirmations of some person, group, or abstract entity. Included are terms isolating important social qualities (dear, delightful, witty), physical qualities (mighty, handsome, beautiful), intellectual qualities (shrewd, bright, vigilant, reasonable), entrepreneurial qualities (successful, conscientious, renowned), and moral qualities (faithful, good, noble). All terms in this dictionary are adjectives.*"

- ***Satisfaction***

"*Terms associated with positive affective states (cheerful, passionate, happiness), with moments of undiminished joy (thanks, smile, welcome) and pleasurable diversion*

(excited, fun, lucky), or with moments of triumph (celebrating, pride, auspicious). Also included are words of nurturance: healing, encourage, secure, relieved."

- ***Inspiration***

"Abstract virtues deserving of universal respect. Most of the terms in this dictionary are nouns isolating desirable moral qualities (faith, honesty, self-sacrifice, virtue) as well as attractive personal qualities (courage, dedication, wisdom, mercy). Social and political ideals are also included: patriotism, success, education, justice."

Three categories indicate a decrease in optimism:

- ***Blame***

"Terms designating social inappropriateness (mean, naive, sloppy, stupid) as well as downright evil (fascist, blood-thirsty, repugnant, malicious) compose this dictionary. In addition, adjectives describing unfortunate circumstances (bankrupt, rash, morbid, embarrassing) or unplanned vicissitudes (weary, nervous, painful, detrimental) are included. The dictionary also contains outright denigrations: cruel, illegitimate, offensive, miserly."

- ***Hardship***

"This dictionary contains natural disasters (earthquake, starvation, tornado, pollution), hostile actions (killers, bankruptcy, enemies, vices) and censurable human behavior (infidelity, despots, betrayal). It also includes unsavory political outcomes (injustice, slavery, exploitation, rebellion) as well as normal human fears (grief, unemployment, died, apprehension) and in capacities (error, cop-outs, weakness)."

- ***Denial***

"A dictionary consisting of standard negative contractions (aren't, shouldn't, don't), negative functions words (nor, not, nay), and terms designating nullsets (nothing, nobody, none)."

For each press release, we first totaled the percentages of words belonging to the category of increased optimism ("Praise", "Satisfaction" and "Inspiration"), represented by the variable

Opt. We then totaled the percentages of words belonging to the category of decreased optimism ("Blame", "Hardship" and "Denial"), represented by the variable ***Pes***. Finally, we calculated the net tone of the text by using the following formula:

$$\textbf{\textit{Tone}} = \textbf{net degree of optimism} = \frac{Opt - Pes}{Opt + Pes}$$

Ops **= increase in optimism** = Praise + Satisfaction + Inspiration

Pes **= decrease in optimism** = Blame + Hardship + Denial

As an instrument for assessing the tone of a text, Diction 5 presents some advantages, but also certain limitations. It performs lexical analysis based on linguistic theories and mathematical calculation. Therefore, it can provide a relatively objective outcome by reducing the potential bias caused by the subjective judgments of researchers and it facilitates comparisons between studies. In addition, this software allows the efficient study of a large number of documents. However, a major limitation of Diction5 is that it analyzes a text by counting the frequency of words, without taking into account the context. This limitation has been criticized by those researchers who argue that language is inherently contextual. However, Hart (2001) indicates that human memory is relatively short while reading. It is therefore difficult for readers to monitor details, analyze logic, and understand context simultaneously. Although the analysis based on word frequency method seems to be very basic and simple, it works well and can provide useful guidance.

As Henry (2008) points out, the issues of synonymy and polysemy should be considered when using the word frequency method. Diction 5 has addressed synonymy by using a thesaurus-based approach (a list of words with similar meanings). As mentioned above, the quarterly earnings press release emphasizes the important financial and accounting elements. This means the context of an earnings press release is relatively simple and narrow. For example, the word “net” may indicate “internet” or “clear” or “remaining,” etc. But in the earnings press release, it is generally used in accounting terms, such as “net sales” or “net result.” As a result, this feature of the quarterly earnings press release reduces the problem of polysemy to a considerable extent.

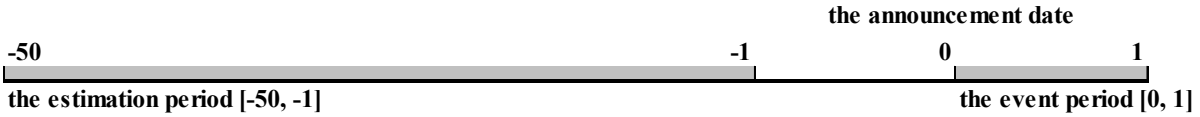
4.3. Measurement of market reaction

To assess the market reaction, we use the event study method to compute the cumulative abnormal returns (***CAR***).

$$\mathbf{CAR}_{it} = \sum_{t=1}^{t} \mathbf{AR}_{it}$$

where AR represents the abnormal return of firm i at time t

The event period used in this research is a 2-day window from day 0 to t+1 when day 0 is the announcement date. We didn't include the -1 day in our event window, although previous studies have, because information users cannot analyze the soft information contained in an announcement before the publication day. The estimation period covers the 50 days prior to the event period. We restrict the estimation period to 50 days in order to avoid the impact of the last quarterly publication. Indeed, it is important that the estimation period does not contain any other events. The estimation and event windows are represented in the following figure:



4.4. Measurement of financial and accounting variables

Several financial and accounting variables are introduced into the regression model to test our hypotheses. They are respectively the future performance of the company, company size, debt level, growth opportunities, profit level, and the variation of sales. These variables are commonly used by researchers in this field.

- Future firm performance is primarily measured by the return on assets (***ROA***) of the next semester. Moreover, the average ***ROA***s of the following two semesters (***MROA2***) is calculated to present the long-term performance.

- The growth opportunity is the market-to-book ratio, which is computed as the market capitalization divided by the book value of equity.
- Firm size is measured by the natural logarithm of market capitalization.
- Financial leverage is the ratio of long-term debt to total assets.
- Profit is the ratio of operating income to sales.
- The change of sales (***CS***) is calculated by the following formula: ((Sales $_{t+1}$ – Sales $_{t}$) / Sales $_{t}$), where t is the period when the press release is published.

5. Empirical results

5.1. Descriptive statistics

Table 1 presents the descriptive statistical results. On average, a quarterly earnings press release includes 1047 words and 6756 characters. The average degree of optimism (***Tone***) is 0.574. According to the formula, the value 1 indicates a completely optimistic tone while a value of -1 indicates a completely pessimistic tone. The relatively high value of the variable ***Tone*** is consistent with previous studies that suggest an optimistic trend in the drafting of financial reports (Hildebrandt and Snyder, 1981; Rutherford, 2005). Furthermore, it is similar to the result reported by the study of Henry (2008), which indicated an average of 0.568 based on a sample of firms in the telecommunications and information services sectors.

5.2. Tone & future performance

5.2.1. Univariate analysis and correlation analysis

Univariate analysis provides a number of preliminary indications about the tone and future performance (Table 2). We first classify the 418 press releases according to their level of optimism (***Tone***), and then we isolate the 140 most optimistic press releases into group 1 and the 140 least optimistic press releases into group 0. Last, we perform the t-test to compare the performance between these two groups.

Table 1 - Descriptive statistics

Variable	Mean	Median	Std.Dev.	Min.	Max.
Tone	0,574	0,709	0,426	-1,000	1,000
Opt	2,380	2,090	1,485	0,000	7,568
Pes	0,553	0,400	0,644	0,000	4,316
Praise	0,665	0,552	0,525	0,000	3,000
Satisfaction	0,570	0,268	0,867	0,000	5,454
Inspiration	1,144	1,040	0,783	0,000	4,566
Blame	0,172	0,050	0,299	0,000	1,954
Hardship	0,166	0,026	0,304	0,000	2,410
Denial	0,214	0,050	0,409	0,000	4,216
Words	1047	656	1012	33	7221
Characters	6756	4092	6603	170	45057
ROA	6,111	5,395	8,585	-47,204	89,038
MROA2	5,864	5,245	8,583	-47,204	68,960
Profit	-14,216	8,097	329,483	-6102,148	49,739
Leverage	0,640	0,639	0,325	0,076	3,616
MB	2,757	1,983	4,811	-2,039	77,607
CAR	0,003	0,002	0,044	-0,263	0,236
Ln Cap	21,232	21,147	1,617	17,187	25,333
CS	0,107	0,081	0,123	-0,251	0,566

Note:

Tone *= net degree of optimism = (Opt-Pes)/(Opt+Pes)*

Opt *= increase in optimism = number of optimistic words/total words= Praise + Satisfaction + Inspiration*

Pes *= decrease in optimism = number of pessimistic words/total words= Blame + Hardship + Denial*

ROA *= return on assets of the next semester*

MROA2 *= average ROAs of the following two semesters*

MROA3 *= average ROAs of the following three semesters*

Words *= total number of words in an earnings press release*

Characters *= total number of characters in an earnings press release*

MB *= growth opportunity = market-to-book ratio*

Ln Cap *= natural logarithm of market capitalization*

Leverage*= ratio of long-term debt to total assets*

Profit*= ratio of operating income to sales*

CAR*= cumulative abnormal return*

CS *= change of sales = ((Sales t+1 – Sales t) / Sales t), where t is the period when the press release is published.*

Table 2 - Univariate analysis - tone & performance

	Group 0	Group 1	Difference	*t*	
ROA	4,636	7,224	**2,588**	*-2,203*	**
MROA2	3,986	7,253	**3,267**	*-2,798*	***
Profit	-61,560	9,290	**70,850**	*-1,477*	
Leverage	0,668	0,613	**-0,055**	*1,364*	
MB	2,955	2,961	**0,005**	*-0,008*	
Ln Cap	21,188	20,803	**-0,385**	*1,966*	*
Words	1470,164	575,421	**-894,743**	*7,519*	***
Characters	9609,086	3670,686	**-5938,400**	*7,626*	***

Table 3 - Correlation analysis - tone & performance

	ROA	***Tone***	***Profit***	***Leverage***	***MB***
Tone	0,148 ***				
Profit	0,329 ***	0,168 ***			
Leverage	0,174 ***	-0,022	0,115 **		
MB	0,097 **	-0,074	0,008	-0,005	
Ln Cap	0,086 *	-0,095 *	0,062	0,064	0,105 **

Note:

** Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level*

Group 1: the 140 most optimistic press releases

Group 0: the 140 least optimistic press releases

Tone *= net degree of optimism = (Opt-Pes)/(Opt+Pes)*

Opt *= increase of optimism = number of optimistic words/total words= Praise + Satisfaction + Inspiration*

Pes *= decrease of optimism = number of pessimistic words/total words= Blame + Hardship + Denial*

ROA *= return on assets of the next semester*

MROA2*=average ROAs of the following two semesters*

Words *=total number of words in an earnings press release*

Characters *= total number of characters in an earnings press release*

MB *= growth opportunity = market-to-book ratio*

Ln Cap *= natural logarithm of market capitalization*

Leverage *= ratio of long-term debt to total assets*

Profit *= ratio of operating income to sales*

The results show that the ***ROA*** (return on assets of the next semester) of group 1 is higher than that of group 2 (difference: 2.588 **). We find similar results when we replace the ***ROA*** by the ***MROA2,*** which represents the average ***ROA***s of the next two semesters. These results suggest that there is a positive link between the future performance and the level of optimism.

Moreover, the total number of words and word size (character per word) are lower in group 1. It seems that the more optimistic group tends to use shorter and simpler words in the financial communication.

The results of the correlation analysis are presented in Table 3. We find that the degree of optimism of a press release is positively related to the future performance but negatively related to the firm size. In addition, ***ROA*** is positively associated with growth opportunities, financial leverage, firm size and the profit.

5.2.2. Regression analysis

Our first hypothesis tests whether the degree of optimism can be an indicator of future performance. In other words, we attempt to find out if there is a significant relationship between tone and future performance. Based on existing studies (Core *et al.*, 1999; Bowen *et al.*, 2008), we build the regression model and control the factors that may have an impact on the future performance. They are respectively the firm size (***LnCap***), the financial leverage (***Leverage***), the operating profit margin (***Profit***) and the growth opportunities (***MB***).

$$\textit{Future performance} = f(\textit{Tone, Profit, MB, LnCap, Leverage})$$

Since this empirical research has cross-sectional data, it is necessary to test the hypotheses by the panel regression model. Before performing a panel regression, we do the Hausman test to choose between the fixed effects model and the random effects model.

Table 4 - Panel regression – tone & performance

	Dependent variable : ROA			Dependent variable : MROA2		
	model 1			model 2		
Variable	Coeff.	*z*		Coeff.	*z*	
(intercept)	**4,1765**	*4,9600*	***	**4,2198**	*5,0000*	***
Tone	**3,2034**	*3,2900*	***	**2,7951**	*3,4000*	***
R^2	*within = 0,0228*			*within = 0,0198*		
	between = 0,0421			*between = 0,0773*		
	overall = 0,0219			*overall = 0,0358*		
	model 3			model 4		
Variable	Coeff.	*z*		Coeff.	*t*	
(intercept)	**-8,6134**	*-1,2100*		**-81,7690**	*-5,7700*	***
Tone	**2,7495**	*2,9500*	***	**1,6395**	*1,9600*	*
Profit	**0,0070**	*5,8500*	***	**0,0041**	*3,9200*	***
Leverage	**3,2017**	*2,0300*	**	**1,7284**	*0,8900*	
MB	**0,0761**	*0,8900*		**-0,0222**	*-0,2700*	
LnCap	**0,5189**	*1,5500*		**4,0597**	*6,1100*	***
R^2	*within = 0,1003*			*within = 0,1713*		
	between = 0,1662			*between = 0,0230*		
	overall = 0,1461			*overall = 0,0439*		
	model 5			model 6		
Variable	Coeff.	*z*		Coeff.	*t*	
(intercept)	**-8,5318**	*-1,2000*		**-83,4004**	*-5,8400*	***
Tone	**2,9578**	*2,1400*	**	**2,3443**	*2,0400*	**
Tone²	**-0,3311**	*-0,2100*		**-1,1992**	*-0,9000*	
Profit	**0,0070**	*5,8400*	***	**0,0041**	*3,9400*	***
Leverage	**3,1828**	*2,0200*	**	**1,7495**	*0,9100*	
MB	**0,0782**	*0,9100*		**-0,0153**	*-0,1900*	
LnCap	**0,5178**	*1,5500*		**4,1459**	*6,1800*	***
R^2	*within = 0,1007*			*within = 0,1734*		
	between = 0,1648			*between = 0,0224*		
	overall = 0,1460			*overall = 0,0435*		
	model 7			model 8		
Variable	Coeff.	*z*		Coeff.	*z*	
(intercept)	**6,5964**	*6,3500*	***	**6,3052**	*6,3600*	***
Opt	**0,2040**	*0,6900*		**0,1565**	*0,6200*	
Pes	**-1,9608**	*-2,9700*	***	**-1,5747**	*-2,8500*	***
R^2	*within = 0,0191*			*within = 0,0146*		
	between = 0,0509			*between = 0,0760*		
	overall = 0,0238			*overall = 0,0326*		

Table 4 - Panel regression – tone & performance (continued)

	Dependent variable : ROA			Dependent variable : MROA2		
	model 9			model 10		
Variable	Coeff.	*z*		Coeff.	*t*	
(intercept)	6,5867	*6,3000*	***	6,5556	*8,0800*	***
Praise	-0,3668	*-0,4500*		0,5074	*0,7200*	
Satisfaction	0,2985	*0,5400*		-0,2384	*-0,4500*	
Inspiration	0,5058	*0,9300*		-0,1121	*-0,2300*	
Blame	-0,1302	*-0,0900*		-0,2117	*-0,1600*	
Hardship	-6,0644	*-4,4500*	***	-3,7889	*-2,9000*	***
Denial	-0,0686	*-0,0700*		-0,3364	*-0,3900*	
R^2	*within = 0,0371*			*within = 0,0318*		
	between = 0,1157			*between = 0,1645*		
	overall = 0,0663			*overall = 0,0862*		
	model 11			model 12		
Variable	Coeff.	*z*		Coeff.	*z*	
(intercept)	-6,4072	*-0,9100*		-15,2556	*-2,1800*	
Opt	0,2167	*0,7600*		0,2092	*0,8700*	
Pes	-1,3920	*-2,1800*	**	-1,0808	*-2,0200*	
Profit	0,0069	*5,6500*	***	0,0062	*6,0000*	
Leverage	3,3285	*2,1200*	**	2,2732	*1,5700*	
MB	0,0799	*0,9300*		0,1023	*1,3800*	
LnCap	0,4961	*1,4900*		0,9290	*2,8300*	
R^2	*within = 0,0898*			*within = 0,0932*		
	between = 0,1743			*between = 0,2328*		
	overall = 0,1473			*overall = 0,2058*		
	model 13			model 14		
Variable	Coeff.	*z*		Coeff.	*t*	
(intercept)	-6,5613	*-0,9200*		-81,7614	*-5,5300*	***
Praise	-0,2313	*-0,2900*		0,3998	*0,6100*	
Satisfaction	0,2982	*0,5600*		0,1103	*0,2200*	
Inspiration	0,4296	*0,8100*		-0,0311	*-0,0700*	
Blame	-0,5443	*-0,3900*		-0,0632	*-0,0500*	
Hardship	-3,5390	*-2,4900*	**	-1,0418	*-0,8000*	
Denial	-0,4849	*-0,5000*		-0,2238	*-0,2800*	
Profit	0,0061	*4,7000*	***	0,0039	*3,4900*	***
Leverage	3,2871	*2,0800*	**	2,0925	*1,0700*	
MB	0,0756	*0,8700*		-0,0084	*-0,1000*	
LnCap	0,5070	*1,5100*		4,0884	*5,9500*	***
R^2	*within = 0,0958*			*within = 0,1647*		
	between = 0,1845			*between = 0,0217*		
	overall = 0,1562			*overall = 0,0424*		

Table 4 - Panel regression – tone & performance (continued)

Note:

** Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level*

Tone *= net degree of optimism = (Opt-Pes)/(Opt+Pes)*

Opt *= increase of optimism = number of optimistic words/total words = Praise + Satisfaction + Inspiration*

Pes*= decrease of optimism = number of pessimistic words/total words = Blame + Hardship + Denial*

ROA *= return on assets of the next semester*

MROA2 *= average ROAs of the following two semesters*

MB *= growth opportunity = market-to-book ratio*

Ln Cap *= natural logarithm of market capitalization*

Leverage *= ratio of long-term debt to total assets*

Profit *= ratio of operating income to sales*

Table 4 presents the results of the panel regression using future performance as the dependent variable. When the degree of optimism is the only predictor, the coefficient of the variable ***Tone*** is positive and significant at 1% (model 1). We observe similar results when ***ROA*** is replaced by ***MROA*** in model 2.

We then introduce four control variables, the operating profit margin (***Profit***), the firm size (***LnCap***), the financial leverage (***Leverage***) and growth opportunities (***MB***) in models 3 and 4. The coefficient of the variable ***Tone*** keeps its positive and significant sign. These findings are consistent with the research of Davis *et al.* (2007), which indicates that managers provide discreet information on future performance by changing the tone of the press release. In addition to purely financial and accounting information, analysis of the tone of a financial announcement may improve the accuracy of earning forecasts.

By comparing the z values of the variable ***Tone*** in models 3 and 4, we observe that the link between the tone and future performance becomes weaker over time. In fact, the coefficient of the variable ***Tone*** remains positive but no longer significant when future performance is measured by the average ROAs of the next three semesters (results not reported).

We observe a positive relationship between financial leverage and the future performance in model 3. However, this relationship is no longer significant in model 4, which uses a longer study period. Furthermore, the variable ***LnCap*** is only positively related to variable ***MROA2***. In addition, we observe that the coefficients of the variable ***Profit*** are positive and significant and these results are consistent with the study of Davis *et al.* (2007). We do not observe any significant relationship between growth opportunities and future performance.

In a second step, we add a new variable ***Tone²*** to more precisely examine the relationship between the degree of optimism and the future performance. Indeed, the degree of optimism may be a business climate indicator. However, an extremely optimistic tone may also reflect a sort of information manipulation. As a result, the credibility of such soft information, indicated subtly by the tone, should be taken into account. It is possible that the relationship between the degree of optimism and future performance is concave. In other words, beyond a certain level, the credibility of information on the future performance is undermined. In models 5 and 6, we observe that the coefficients of ***Tone*** and ***Tone²*** have opposite signs. This result suggests the possibility of a concave relationship. However, the coefficient of the variable ***Tone²*** is not statistically significant.

In models 7 to10, we replace the overall level of optimism by its components in order to have a more detailed observation. In models 7 and 8, the variable ***Tone*** is divided into two parts: ***Opt*** represents an increase in optimism and ***Pes*** reflects a decrease in optimism (or pessimism increased). As we expected, future performance is positively associated with ***Opt*** while negatively associated with ***Pes***. However, only the coefficient of ***Pes*** is significant at 1%. Compared with the increase in optimism, the increase in pessimism has a stronger significance in the explanation of future performance.

In models 9 and 10, we further refine the analysis by using the six categories of words that constitute the optimistic score, according to Diction 5. The three categories related to an increase in optimism are respectively ***Praise, Satisfaction, Inspiration***, while the three categories related to a decrease in optimism are respectively ***Blame, Hardship, Denial***. Our results show that the ***Hardship*** category is negatively related to future performance and it is the only variable that is significant at 1%. According to Diction 5, ***Hardship*** contains the

words that describe natural disasters, hostile actions, censurable human behavior and normal human fears. This category is closely associated with tough circumstances or uncertainty or fear about the business future. In models 11 and 13, the coefficients of ***Pes*** and ***Hardship*** keep a negative and significant sign even after controlling for financial and accounting variables.

In summary, we can confirm our first hypothesis: the tone of a quarterly earnings press release can be considered as an indicator of the future performance. The managers discreetly reveal potential opportunities or threats through the linguistic style. It is therefore possible for investors to have an additional source of information if they learn to read between the lines.

5.3. Tone & reaction of French capital markets

5.3.1. Univariate analysis and correlation analysis

We first perform univariate analysis (Table 5) in order to observe the relationship between the tone of the earnings announcement and the CAR. The 385[2] financial press releases are first classified according to their degree of optimism. The 140 most optimistic press releases are placed in group 1, while the 140 least optimistic are placed in group 0.

T-tests are then performed to compare the level of CARs between the two groups. For the event window [0,1], the average CAR of the most optimistic group (1) is higher than that of the least optimistic group (0). There is a difference of 0.012, which is significant at 5%. When taking different event periods, we observe similar results. These findings suggest that financial markets react positively to the degree of optimism.

The correlations between the variables are provided in Table 6. By observing this table, we note that the variable ***Tone*** is positively related to ***CAR*** over the period [0,1]. This result confirms the preliminary analyses. In addition, ***Tone*** is positively related to ***Opt*** but negatively related to ***Pes***; however, only the negative relationship is significant. It seems that financial markets are more sensitive to a pessimistic tone and we will refine these findings by regression analysis.

[2] Due to missing data, a further 23 press releases in the sample were removed.

Table 5 - Univariate analysis - tone & CAR

	Group 0	Group 1	Difference	*t*	
CAR [-1,0]	-0,002	0,001	**0,003**	*-0,773*	
CAR [0]	-0,002	0,003	**0,005**	*-1,454*	
CAR [0,1]	-0,005	0,007	**0,012**	*-2,317*	**
CAR [1,1]	-0,005	0,005	**0,010**	*-1,826*	*
CAR [0,5]	-0,018	-0,004	**0,014**	*-1,751*	*
CAR [5,5]	-0,020	-0,011	**0,010**	*-1,026*	

Table 6: Correlation analysis - tone & CAR

	CAR	Tone	Opt	Pes	CS	Ln Cap
Tone	0,100 *					
Opt	0,031	0,547 ***				
Pes	-0,103 **	-0,729 ***	-0,152 ***			
CS	0,062	0,046	-0,074	-0,074		
Ln Cap	-0,072	-0,112 **	0,007	0,114 **	-0,115 **	

Note:

** Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level*

Group 1: the 140 most optimistic press releases

Group 0: the 140 least optimistic press releases

***Tone** = net degree of optimism = (Opt-Pes)/(Opt+Pes)*

***Opt** = increase in optimism = number of optimistic words/total words= Praise + Satisfaction + Inspiration*

***Pes**= decrease in optimism = number of pessimistic words/total words= Blame + Hardship + Denial*

***Ln Cap** = natural logarithm of market capitalization*

***CAR** = cumulative abnormal return*

***CS** = change of sales = ((Sales t+1 – Sales t) / Sales t), where t is the period when the press release is published.*

Table 7 - Panel regression – tone & CAR

	model a			model b		
	Coeff.	*z*		**Coeff.**	*z*	
(intercept)	-0,0034	*-0,9000*		0,0278	*0,9000*	
Tone	0,0104	*1,9600*	*	0,0095	*1,7800*	*
Lncap				-0,0015	*-1,0900*	
CS				0,0185	*1,0100*	
R²	*within = 0,0144*			*within = 0,0142*		
	between = 0,0014			*between = 0,0265*		
	overall = 0,0099			*overall = 0,0163*		

	model c			model d		
	Coeff.	*z*		**Coeff.**	*z*	
(intercept)	0,0353	*1,1600*		0,0354	*1,1300*	
Opt	0,0007	*0,4200*				
Pes	-0,0062	*-1,7300*	*			
Praise				-0,0002	*-0,0400*	
Satisfaction				0,0012	*0,4600*	
Inspiration				0,0020	*0,6200*	
Blame				-0,0164	*-2,1100*	**
Hardship				-0,0085	*-1,0800*	
Denial				0,0004	*0,0700*	
Lncap	-0,0015	*-1,0900*		-0,0015	*-1,0800*	
CS	0,0182	*0,9800*		0,0126	*0,6700*	
R²	*within = 0,0193*			*within = 0,0308*		
	between = 0,0254			*between = 0,0540*		
	overall = 0,0172			*overall = 0,0255*		

	model e	
	Coeff.	*z*
(intercept)	-0,0039	*-0,9700*
Tone	0,0075	*0,8500*
Tone²	0,0041	*0,4000*
R²	*within = 0,0133*	
	between = 0,0041	
	overall = 0,0103	

Table 7 - Panel regression – tone & CAR (continued)

	model f			model g		
	Coeff.	**z**		**Coeff.**	***z***	
(intercept)	*-0,0005*	-0,070	***(intercept)***	0,0082	*2,3100*	**
Opt	*0,0016*	0,350	***Pes***	-0,0132	*-1,7000*	*
Opt²	*-0,0001*	-0,160	***Pes²***	0,0023	*0,8800*	
	within = 0,0020			*within = 0,0178*		
	between = 0,0009			*between = 0,0039*		
	overall = 0,0010			*overall = 0,0126*		

	model h		
N=385	**Coeff.**	***z***	
(intercept)	0,0302	*0,9900*	
Tone*CS	0,0493	*2,1600*	**
Lncap	-0,0015	*-1,0300*	
R²	*within = 0,0057*		
	between = 0,0532		
	overall = 0,0172		

Note:

** Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level*

Tone *= net degree of optimism = (Opt-Pes)/(Opt+Pes)*

Opt *= increase in optimism = number of optimistic words/total words= Praise + Satisfaction + Inspiration*

Pes*= decrease in optimism = number of pessimistic words/total words= Blame + Hardship + Denial*

Ln Cap *= natural logarithm of market capitalization*

CAR *= cumulative abnormal return*

CS *= change of sales = ((Sales t+1 – Sales t) / Sales t), where t is the period when the press release is published.*

5.3.2. Regression analysis

Based on the correlation analysis, we perform panel regressions to examine the market reaction to the tone of the press release, and the results are presented in Table 7.

When the degree of optimism is the only predictor of ***CAR***, the coefficient is positive and significant at the 10% level (model a, Table 7). Then we introduce two control variables (firm size and change of sales) into model b. The coefficient of the variable ***Tone*** keeps a positive and significant sign. This means that financial markets react positively to optimistic tone, even after controlling the firm size and the variation of sales. This result is also consistent with previous studies (Demers and Vega, 2010; Henry, 2008) that indicate a positive relationship between CAR and the degree of optimism. We can therefore validate the second hypothesis.

Investors naturally appreciate good news disseminated through the company in which they invest. An increase in sales can be perceived by markets as a positive signal and may positively impact the ***CAR***. In model b, we observe a positive link between ***CAR*** and ***CS***; however, it is not statistically validated by the panel regression model. As Gajewski and Quéré (2001) indicate in their research, investors may ignore the sales number in a financial announcement.

In order to have a more precise analysis, we decompose the variable ***Tone*** into two parts: increase in optimism (***Opt***) and decrease in optimism (***Pes***). This classification can be further refined into a total of six categories as defined by Diction 5. Model c shows that the ***CAR*** is positively related to ***Opt*** but negatively related to ***Pes.*** However, only the coefficient of the variable ***Pes*** is significant. It seems that investors react more significantly to the pessimistic tone of a discourse. This result confirms prospect theory, which indicates that individuals are more sensitive to negative terms in a discourse.

In model d where ***Tone*** is refined by six components, the only significant variable is ***Blame,*** which describes social inappropriateness (mean, naive, sloppy, stupid) as well as *unfortunate*

circumstances (bankrupt, rash, morbid, embarrassing) or unplanned vicissitudes (weary, nervous, painful, detrimental). These elements provide some useful indications for managers in the preparation of financial documents. Indeed, so as not to provoke a strongly negative reaction of investors, companies should avoid using the terms belonging to the ***Blame*** category.

Henry (2008) indicates that the effect of tone on the market reaction is not without limit. In fact, the relationship between tone and CAR should be concave. We therefore introduce a variable ***Tone²*** into model e to test this concavity, but the results are not significant. When we replace the variable ***Tone*** by ***Opt*** and ***Pes***, we also observe that the coefficients of ***Opt*** and ***Pes*** are opposite to the coefficient of ***Opt²*** and ***Pes²***. Once again, these results are not statistically validated (models f and g).

Previous studies generally indicate that hard information, such as financial results, has more influence on investors' decisions. Our results have now shown that soft information, such as tone, can also impact the market reaction. To study how the interaction between soft and hard information affects investors' perceptions, a variable ***Tone*CS*** is created to combine the impact of ***Tone*** and ***CS*** (model h). We observe that the coefficient of ***Tone*CS*** is positive and significant at the 5% level. In addition, the z value of ***Tone*CS*** is higher than the z value of either ***Tone*** or ***CS*** in model b. These findings suggest that good financial performance associated with a more optimistic tone may lead investors to have a more favorable forecast.

6. Conclusion

The quarterly financial announcement is an important communication tool for listed companies. It allows managers to disseminate not only the financial and accounting information, but also comments and predictions on their business performance. Therefore, this financial document is twofold, first informational, to increase the transparency of information, and second, promotional, to improve the company image. Given its value, the quarterly press release is one of the most studied information releasing tools in the area of financial reporting. However, most of the existing studies focus primarily on the financial content of the press

release by examining its determinants and its influence on capital markets. Few studies have focused on the presentation of the information. Yet, the form of a discourse can have a significant impact on the way we perceive information (Chung and Pennebaker, 2007; Mehrabian, 2007). As prospect theory points out, an individual's judgment is affected by not only the content of information, but also how the information is presented.

In this research, we focus on the linguistic style of the quarterly earnings press release. In the first step, we test whether the degree of optimism could be used as an indicator of the future performance. In the second step, we examine how French financial markets react to the degree of optimism. To answer these research questions, we examine a total of 418 quarterly earnings press releases using Diction 5 software. The panel regressions show a positive link between the degree of optimism and future performance. This result is consistent with the research of Davis *et al.* (2007), which proves that managers use linguistic style as a communication tool to release subtle information. The tone of a financial publication can be therefore treated as an indicator of future value.

In addition, we observe that the degree of optimism is positively associated with the cumulative abnormal returns. This result confirms prospect theory, suggesting that individuals are sensitive to not only the content of information, but also the presentation. A financial publication written in a more optimistic style may lead investors to form more favorable expectations and makes the stocks more attractive in financial markets. Moreover, the findings highlight an asymmetric variation of market reaction to tone. It seems that investors are more sensitive to a more pessimistic tone and less reactive to a more optimistic tone.

This research has some limitations. The quantitative measure for the tone is based on word frequency and ignores the linguistic context. Although this method allows us to keep a relatively large sample, it cannot detect all the subtlety and complexity of the language. In addition, due to the unavailability of data on French companies, we can't introduce certain important variables, such as the quarterly earnings surprise, to explain the variation in cumulative abnormal returns. Furthermore, due to the subtlety of language, we cannot ensure that the French version of the quarterly earnings press release is identical to its English

version. However, there is no software for carrying out tone analyses in French, and using Diction 5 to analysis the English version seems to be a good alternative.

Despite these limitations, this study highlights the importance of linguistic style for financial information releases. As information disseminators, managers should recognize that shareholders are influenced not only by the hard information expressed in numerical terms, but also by the soft information expressed subtly between the lines. For information receivers, it is important to realize that the tone may be an additional information source to build more accurate financial estimates.

Future research could more deeply explore managers' intentions in the choice of linguistic style. Interviews with financial communication directors would be a good complement to our methodology. In addition, research on the readability and its impact on the financial market would bring additional knowledge in this area.

References

Bazerman, M. H., 2002. *Judgment in managerial decision making* (Wiley).

Bowen, R. M., S. Rajgopal, and M. Venkatachalam, 2008. Accounting discretion, corporate governance, and firm performance, *Contemporary Accounting Research* 25, 310-405.

Chung, C., and J. Pennebaker, 2007. *The Psychological Functions of Function Words* (Psychology Press, New York).

Collins, D., O. Li, and H. Xie, 2005. What drives the increased informativeness of earnings announcements over time? *Working Paper,* University of Iowa, Notre Dame University and University of Illinois.

Core, J., R. Holthausen, and D. Larcker, 1999. Corporate governance, chief executive officer compensation and firm performance, *Journal of Financial Economics* 51, 371-406.

Davis, A. K., J. Piger, and L. M. Sedor, 2007. Beyond the numbers: Managers' use of optimistic and pessimistic tone in earnings press releases, *Working Paper*.

Demers, E. A., and C. Vega, 2010. Soft information in earnings announcements: news or noise? *Working Paper*.

Fisher, F. A., and M. Y. Hu, 1989. Does the CEO's letter to the shareholders have predictive value? *Business Forum* 14, 22–24.

Francis, J., K. Schipper, and L. Vincent, 2002b. Expanded disclosures and the increased usefulness of earnings announcements, *Accounting Review* 77, 515-546.

Frost, C. A., 1997. Disclosure policy choices of UK firms receiving modified audit reports, *Journal of Accounting and Economics* 23, 163-187.

Gajewski, J.-F., and B. Quéré, 2001. The information content of earnings and turnover annoucements in France, *The European Accounting Review* 10, 679-704.

Gottschalk, L. A., and G. C. Gleser, 1969. *The Measurement of Psychological States through the Content Analysis of Verbal Behavior* (Berkeley, University of California Press, Los Angeles).

Hand, J., 1990. A test of the extended functional fixation hypothesis, *Accounting Review* 65, 764-780.

Hart, R. P., 2001. *Redeveloping DICTION: Theoretical considerations* (Ablex, New York).

Henry, E., 2008. Are investors influenced by how earnings press releases are written?, *Journal of Business Communication* 45, 365-407.

Hildebrandt, H. W., and R. D. Snyder, 1981. The Pollyanna hypothesis in business writing, *Journal of Business Communication* 18, 5-15.

Hutton, A., G. Miller, and D. Skinner, 2003. The role of supplementary statements with management earnings forecasts, *Journal of Accounting Research* 41, 867-890.

Jones, M. J., 1988. A longitudinal study of the readability of the chairman's narratives in the corporate reports of a UK company, *Accounting and Business Research* 18, 297-306.

Jones, M. J., and P. A. Shoemaker, 1994. Accounting narratives: A review of empirical studies of content and readability, *Journal of Accounting Literature* 13, 142-184.

Kross, W., and M. Kim, 2000. Differences between market responses to earnings announcements in the 1990s vs.1960s, *Working Paper,* Purdue University.

Lo, K., and T. Lys, 2001. Bridging the gap between value relevance and information content, *Working Paper,* University of British Columbia and Northwestern University.

Mehrabian, A., 2007. *Nonverbal communication* (Transaction Publishers, Edison).

Merkl-Davies, D. M., and N. M. Brennan, 2007. Discretionary Disclosure Strategies in Corporate Narratives: Incremental Information or Impression Management? *Journal of Accounting Literature* 26, 116-194.

Morris, M. W., O. J. Sheldon, D. R. Ames, and M. J. Young, 2005. Metaphor in stock market commentary: Consequences and preconditions of agentic descriptions of price trends, *Working Paper,* Columbia University, Cornell University, University of California at Los Angeles.

Mullainathan, S., and A. Shleife, 2005. Persuasion in finance, *Working Paper,* National Bureau of Economic Research.

Pennebaker, J. W., M. R. Mehl, and K. G. Niederhoffer, 2003. Psychological aspects of natural language use: Our words, our selves, *Annual Review of Psychology* 54, 547-577.

Rutherford, B., 2005. Genre analysis of corporate annual report narratives, *Journal of Business Communication* 42, 349-378.

Sedor, L., 2002. An explanation for unintentional optimism in analysts' earnings forecasts, *Accounting Review* 77, 731-753.

Tetlock, P. C., 2007. Giving content to investor sentiment: the role of media in the stock market, *Journal of Finance* 62, 1139-1168.

Tversky, A., and D. Kahneman, 1981. The framing of decisions and the psychology of choice, *Science* 211, 453-458.

Wilson, R., 1985. *Reputations in Games and Markets* (Cambridge University Press, Cambridge).