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Do auditors react to market behaviour?

¿Reaccionan los auditores al comportamiento del mercado?

Os auditores reagem ao comportamento do mercado?

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Abstract

Purpose: The purpose of the study is to determine whether auditors react to market information – stock price volatility and market value fluctuations – and to what extent this has an effect on their propensity to issue a modified opinion or include emphasis of matter paragraphs in their audit reports.

Methodology: The empirical tests were based on estimates of logistic regression with data from 338 non-financial companies listed in the B3 [Brazilian Stock Exchange] during the period 2009-2020 and obtained directly from the Securities and Exchange Commission (CVM) and the database of the Economatica platform.

Results: The results revealed that the entities which recorded greater volatility in stock returns, were more likely to include changes of opinion and emphasis of matter paragraphs in their audit reports. This suggests that the auditor regards this market risk as a sign of an audit risk for the entity that will lead to stricter judgments and even act as kind of self-protection. However, no link was found between market value fluctuations or emphasis of matter paragraphs, which contradicted the expectation that the greater the losses in market values, the greater the probability of the auditor's opinion being modified.

Research Contributions: The empirical evidence fills a gap in the literature in this area. What is usually examined is the effects of the content on the marketing audit report, whereas this study concentrates on exploring an inverse relationship – the effect of information in the market on operational audits. In addition, the findings help to obtain a better understanding of the work of the auditors and provide valuable assistance to professionals and regulators in the area.

Keywords: auditor's report; auditor's opinion; market value; volatility; risk.

Resumen

Objetivo: El estudio tuvo como objetivo verificar si los auditores reaccionan a la información del mercado (volatilidad de los rendimientos de las acciones y variación del valor de mercado) que impactan la propensión a emitir una opinión modificada o la incorporación de párrafos de énfasis en el informe de auditoría.

Metodología: Las pruebas empíricas se basaron en la estimación de regresiones Logit, con datos de 2009 a 2020 de 338 empresas no financieras listadas en B3, obtenidos directamente del sitio web de la CVM y de la base de datos Economatica.

Resultados: Los resultados de la prueba revelaron que las empresas que registran una mayor volatilidad en los rendimientos de las acciones tienen más probabilidades de recibir informes de auditoría con opinión modificada y con párrafos de énfasis, lo que sugiere que el auditor percibe esta medida de riesgo de mercado como una indicación del riesgo de auditoría en relación con la empresa, lo que redundará en un mayor rigor en sus juicios, incluso como una forma de autoprotección. Por otro lado, no se encontró asociación entre la variación del valor de mercado y las opiniones de auditoría modificadas o párrafos de énfasis, contrariamente a las expectativas de que a mayores pérdidas en el valor de mercado, mayor probabilidad de emitir una opinión modificada por parte de los auditores.

Contribuciones del Estudio: La evidencia empírica llena un vacío en la literatura sobre el tema, que generalmente explora los efectos del contenido del informe de auditoría en el mercado, mientras que este estudio se centra en explorar la relación inversa: el impacto de la información del mercado en el trabajo de auditoría. Además, los hallazgos contribuyen a una mejor comprensión del trabajo de los auditores, sirviendo como subsidios para los profesionales en el campo y los reguladores.

Palabras clave: informe de auditoría; opinión de auditoría; valor comercial; volatilidad; riesgo.

Resumo

Objetivo: O estudo teve por objetivo verificar se os auditores reagem às informações do mercado – volatilidade do retorno das ações e variação do valor de mercado – impactando a propensão à emissão de opinião modificada ou incorporação de parágrafos de ênfase no relatório de auditoria.

Metodologia: Os testes empíricos tiveram por base a estimação de regressões Logit, com dados de 2009 a 2020 de 338 empresas não financeiras listadas na B3, obtidos diretamente no site da CVM e na base de dados da Economatica.

Resultados: Os resultados dos testes revelaram que entidades que registram maior volatilidade do retorno das ações possuem maior probabilidade de receber relatórios de auditoria com modificação de opinião e com parágrafos de ênfase, sugerindo que o auditor percebe essa medida de risco do mercado como um indício de risco de auditoria em relação à entidade, resultando em maior rigor em seus julgamentos, até como forma de autoproteção. Por outro lado, não foi constatada associação entre a variação no valor de mercado e as opiniões modificadas de auditoria ou parágrafos de ênfase, contrariando as expectativas de que quanto maiores as perdas no valor de mercado maior seria a probabilidade de emissão de opinião modificada por parte dos auditores.

Contribuições do Estudo: As evidências empíricas suprem um gap da literatura sobre o tema, que geralmente explora os efeitos do conteúdo do relatório de auditoria no mercado, enquanto este estudo se concentra em explorar a relação inversa – o impacto das informações do mercado nos trabalhos de auditoria. Adicionalmente, os achados contribuem para a melhor compreensão sobre o trabalho dos auditores, servindo de subsídios para os profissionais da área e os reguladores.

Palavras-chave: Relatório de auditoria; Opinião de auditoria; Valor de mercado; Volatilidade; risco.

1. Introduction

In light of the fact that auditors play a key role in capital market operations and the contribution they make, through the limited assurance engagement of financial statements, to creating a climate of confidence and trust (Newman, Patterson & Smith, 2005; Ojo, 2008), it is natural to expect that the contents of the auditor's report would have a strong influence on the decision-making of the investors. This explains the need to undertake a series of studies that

seek to determine the extent of the influence of the auditor's report, in particular with regard to how the modification of an opinion can affect the pattern of share prices in the market, (for example: Al-Thuneibat, Khamees & Al-Fayoumi, 2008; Alves Júnior & Galdi, 2020; Carvalho, Carvalho, Dantas & Medeiros, 2019; Ianniello & Galloppo, 2015; Lee & Lee, 2010; Lennox, Schmidt & Thompson, 2019; and Souza & Nardi, 2018), with the added proviso that there is no uniformity with regard to the empirical evidence in the literature, concerning these effects.

Nonetheless, it can be presumed that the auditors will exert their professional judgment with greater rigor if the audited entity is the object of a negative market assessment, which characterizes the way the decision-making of the investors affects the professional behaviour of the auditors. This second perspective is consistent with the expectation that the auditors will check the historical background of the client, examine the conditions of the financial sector in which he/she operates, assess the position of the company in relation to the market and determine if there are any possible motivational factors that might increase the risk of significant distortions in the balance sheets (Johnstone, Gramling & Rittenberg, 2014). But the lack of empirical evidence to support this view has given rise to a second research question: has the auditors' reaction to market information about their business clients increased the likelihood of the expression of a modified opinion or the inclusion of emphasis of matter paragraphs?

Thus, in view of this, the aim of this study is to determine if auditors react to information about the market – stock price volatility and market value fluctuations – and if this has an effect on their tendency to express a modified opinion or include emphasis of matter paragraphs in the auditor's report. It is based on the assumption that auditors regard stock price volatility and the abnormal reduction in a company's shareholding equity, as signs of audit risk. As a result, they seek to protect themselves and are more thorough in reaching decisions during the auditing process, which will certainly be reflected in a greater likelihood that the auditing report will include a modified opinion or emphasis of matter paragraphs.

In an attempt to achieve this objective, which was prompted by a study carried out by Carvalho et al. (2019), regression models were estimated by making use of annual and historical accounting data of the day-to-day share price fluctuations, which were adjusted through the distribution of benefits by the 338 companies listed in the B3 Stock Exchange in the period 2010-2020. The empirical tests will be concentrated on determining if the entities that recorded most volatility in stock returns or market losses are more likely to have reports with a modified opinion and emphasis of matter paragraphs. This suggests that the auditor regards these market metrics as a sign of an audit risk in relation to the entity, which will result in his/her judgments being more thorough, and even act as a kind of self-protection.

As well as filling a gap in the literature, which usually examines the effects of the content of the auditing report on the market (while this study is concerned with exploring an inverse relationship – the effect of marketing information on audit work), the empirical findings can lead to a better understanding of how auditing is carried out and provide valuable assistance to professionals in the field, as well as to the regulators themselves. The study should be a useful contribution to the current state of the national literature on auditing, mainly because it evaluates if auditors are effectively following behavioural trends in the market with regard to their clients and showing signs of sticking to the requirements of the regulators that they should conduct a comprehensive analysis of audit risks.

2. A Review of the Literature and Research Hypotheses

The separation of the managers from the owners/investors of entities involves an inherent conflict of interest, since the manager can give priority to his/her personal interests and cease to pursue the required objectives of the owner (Bronstein, 2020; Bushman & Smith, 2001). This situation explains the importance of giving assurance to the balance sheets prepared by auditors. From this standpoint, the purpose of the work of auditors is i) to protect the investor by reducing the information asymmetry that can be found in its relationship with the controller, ii) to testify to the reliability of the information and iii) to assist in the development of capital markets that are characterised by confidence and trustworthiness (Dantas, Barreto & Carvalho, 2017; Murcia, Borba & Schiehl, 2008; Santos & Grateron, 2003).

In light of this, the reaction of the markets to the substance of the auditing reports and the standard of the auditing in itself, has been the subject of various research studies. Some authors have obtained inconclusive results or failed to find evidence of this effect (Al-Thuneibat et al., 2008; Batista, Pereira, Silva & Iamoniana, 2010; Lennox et al., 2019; Souza & Nardi, 2018), while others have confirmed such a relationship (Alves Júnior & Galdi, 2020; Carvalho et al., 2019; Gomez-Guillamón, 2003; He, Sidhu & Taylor, 2019; Ianniello & Galloppo, 2015; Lee & Lee, 2010). However, although the results have not been uniform, the fact that there have been repeated studies on the effects of the content of the auditing reports on the decisions made by investors, is indicative of the significance that this matter has had on accounting literature.

Conversely, if one follows the regulatory guidelines (NBC TA 200 and 315), it is natural to expect that the auditor will identify a greater auditing risk when the audited entity is undergoing financial difficulties or has a poor image in the market. As a result, following what is stated by Miranda (2021), the auditor must react to a greater audit risk by taking measures such as the reduction of the materiality threshold. Another way of protecting himself from this risk is to be more thorough in the professional judgments that are an inherent part of auditing. By acting in this way, the auditor is seeking to preserve his/her reputation and mitigate the risks inherent in auditing and as a result, have a better chance of detecting discrepancies in financial statements. Thus, the auditing reports will be issued with a modification of opinion on account of the stricter standards applied when the auditing is being carried out (Johnstone et al., 2014). This rests on the assumption that entities experiencing financial difficulties or needing to improve their market image, can more easily be incited to allow financial distortions with a view to signalling a better performance for investors and other interested financial parties.

In view of this, it is reasonable to assume that the work of auditors might be influenced if it becomes clear that the market is adopting a negative stance towards the entity client. It should be pointed out that among the types of market information that the auditor must take into account in his/her analyses, stress should be laid on the volatility of stock returns and the reduction, in itself, of the market value of companies. Stock market volatility is a key variable in the allocation of shares, investment decisions and risk assessment, since it reflects the widespread perception of market risk for the entity (Maciel & Balilini, 2017). The high dispersion of expected returns across asset classes might suggest a degree of uncertainty among investors with regard to the effective financial (or economic) viability of the entity or even about the very sustainability of the business. It can be inferred that a similar situation might arise when a significant reduction in the value of a company is determined which suggests that the investors do not believe in its future capacity to ensure economic benefits.

In situations of this kind, it is natural for the auditor to determine that these factors are drivers of auditing risks and hence they carry out their work in a more thorough manner by reducing the materiality and increasing the chance of finding distortions and a report being issued with a modification of opinion. The adoption of stricter criteria with regard to the nature and extent of audit procedures and professional judgments, can be explained both by these signs of greater auditing risk and by a mechanism for the preservation of the auditors' own reputation. This can be attributed to the fact that the entities with greater stock return volatility or greater reduction of market value are more subject to the scrutiny of investors, which increases the likelihood of questions being raised about the auditors by regulators and market players.

Thus, there is a growing body of evidence about the effects of audit reports on the behaviour of investors (Alves Júnior & Galdi, 2020; Carvalho et al., 2019; Gomez-Guillamón, 2003; He, Sidhu & Taylor, 2019; Ianniello & Galloppo, 2015; and Lee & Lee, 2010), together with the statements of Johnstone et al. (2014) (and the NBC TA 200 and 315 guidelines that lay down that auditors should be aware there is a greater audit risk when the entity is undergoing financial difficulties or has a poor image in the market). In light of this, the following research hypotheses have been formulated and will be tested empirically:

- H₁:** In the capital markets of Brazil, the greater (or lower) the volatility of stock returns, the greater (or lower) the likelihood of an audit report being subsequently issued with a modified opinion.
- H₂:** In the capital markets of Brazil, the positive (or negative) variation margin for the market value of companies reduces (or increases) the likelihood of a report being subsequently issued with a modified opinion.

Another kind of effect that can take place with regard to the appearance of the emphasis of matter paragraphs, is that they must be included in the audit report whenever that auditor deems it necessary to draw the attention of the users to some point that he/she believes is important for the understanding of the financial statements (NBC TA 706). The use of this kind of communication presupposes that the auditor does not have a modified opinion with regard to the event or, in other words, agrees with the disclosure drawn up by the administration of the entity.

Nonetheless, the possibility can be entertained that the auditor uses emphasis of matter paragraphs as a self-protection device against future questions about his work in cases of risk assessment over the financial difficulties or closure of a business. Thus, even without modifying the opinion about the statements, the auditor would employ emphasis of matter paragraphs to highlight particular features that could be used in the future, to explain possible questions from the regulators or investors in the event of the company experiencing financial difficulties or closure in the future.

This awareness that the emphasis of matter paragraphs can be viewed as as a kind of “substitution” for a modification of opinion on the part of the investors, has already been documented in the literature (Carvalho et al, 2019; Ianniello & Galloppo, 2015; Souza & Nardi, 2018). For this reason, it can be assumed that since the investors are attributing perceptions of greater risk to the entity – greater volatility of stock returns or a significant reduction in the market value of companies – the auditors can make use of emphasis of matter paragraphs as a device to protect their reputations if negative events in the future are confirmed. Thus, **H₁** and **H₂**, can be supplemented by the following formulated hypotheses:

H₃: In the capital markets of Brazil, the greater (or lower) the volatility of stock returns, the greater (or lower) the likelihood of the audit report being subsequently issued with emphasis of matter paragraphs.

H₄: In the capital markets of Brazil, the positive (or negative) variation margin for the market value of companies reduces (or increases) the likelihood of the audit report being subsequently issued with emphasis of matter paragraphs.

3. Methodological Procedures

The empirical tests that were carried out with the aim of assessing the reaction of the auditors to market information and the way these affected the probability of a modified opinion or the incorporation of an emphasis of matter paragraph, were based on assumptions described in Figure 1, with special attention being paid to the timeframe of the events.

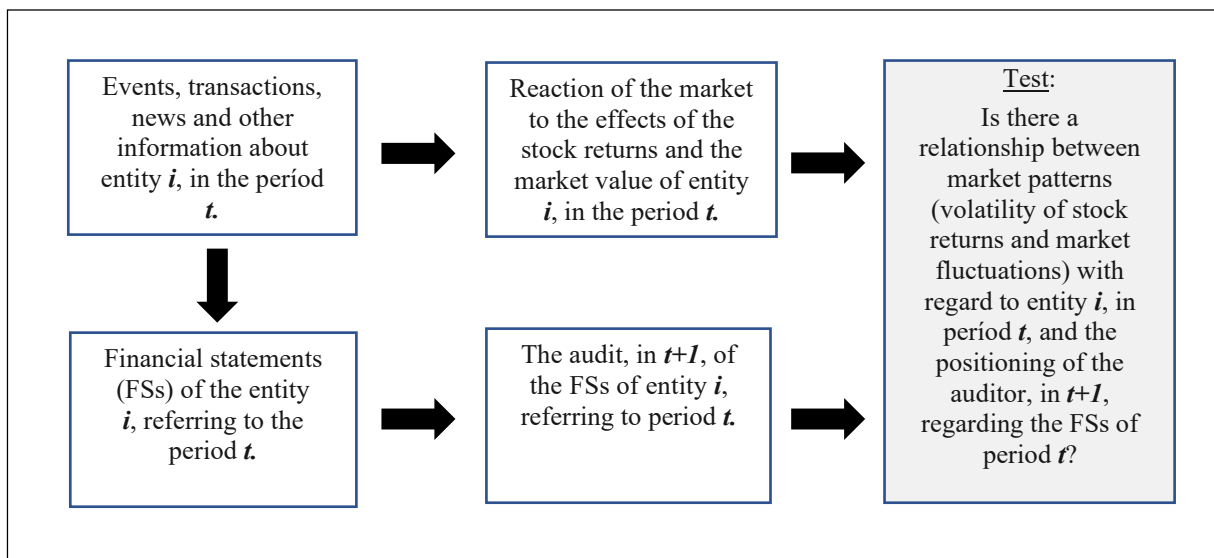


Figure 1 Relationship between market patterns and the content of the audit report.

Source: research data.

3.1 Sample and Data Sources

Empirical tests were carried out that relied on annual and historical financial data of the daily stock market quotes, which were adjusted according to the distribution of the dividends of 338 non-financial companies listed in the B3 Stock Exchange in the period 2009-2020. The market information was obtained from Economática, while the source of the audit reports and financial information was the electronic site of the Securities and Exchange Commission [SEC].

The entities that form the sample bring together the following: the manufacturing sector of industrial goods, communications, cyclical consumption, non-cyclical consumption, basic raw materials, petrol, gas and fuel, healthcare, information technology and public utilities, and these were divided into seven types of corporate governance sectors – New Market (NM), Level 1 (L1), Level 2 (L2), Bovespa Mais [*the Bovespa is the Stock Exchange located in São Paulo] and Balcão Tradicional [Traditional Branch](MB).

The tests encompassed the predictive parameters of the Logistic Regression Model for testing the impact of market information in terms of a modified opinion or the incorporation of emphasis of matter paragraphs – Subsections 3.2 and 3.3, respectively.

3.2 Models for Testing a Modification of Opinion

The research hypotheses (H_1 and H_2) were tested by means of the (3.1) and (3.2) models which estimated the effects of the volatility of stock returns and the modification of the auditor's opinion respectively. These models were devised by Carvalho et al., (2019), who investigated whether an audit report with a modified opinion can affect share prices.

$$MOD_{i,t+1} = \beta_0 + \beta_1 VOL_{i,t} + \beta_2 ROA_{i,t} + \beta_3 GOV_{i,t} + \beta_4 ALAV_{i,t} + \beta_5 B4_{i,t} + \beta_6 TAM_{i,t} + \varepsilon_{i,t} \quad (3.1)$$

$$MOD_{i,t+1} = \beta_0 + \beta_1 \Delta VME_{i,t} + \beta_2 ROA_{i,t} + \beta_3 GOV_{i,t} + \beta_4 ALAV_{i,t} + \beta_5 B4_{i,t} + \beta_6 TAM_{i,t} + \varepsilon_{i,t} \quad (3.2)$$

Where:

$MOD_{i,t+1}$: dummy variable which takes Value 1 if, in the period $t+1$, company i had received an audit report with a modified opinion about the DFs of the period t . If this is not the case, it takes the value of 0.

$VOL_{i,t}$: volatility of the stock returns of Company i , in the period t , obtained through the annualized standard deviation of daily stock returns (continuous). The data were only included for shares with the minimum liquidity requirements of less than 100 days of business per year. The data were only ignored when there were days with no business transactions.

$\Delta VME_{i,t}$: variability (proportional) in the market value of company i , in the period t , with regard to the period $t-1$.

$ROA_{i,t}$: return on assets of company i , in the period t , calculated by the relation between net profit and total assets.

$GOV_{i,t}$: dummy variable which takes a value equal to 1 if the company i , in the period t , is listed in the levels of corporate governance of B3. If this is not the case, it takes the value as 0.

$ALAV_{i,t}$: degree of leverage/indebtedness of company i , in the period t , measured by the relation between total liabilities and total assets.

$B4_{i,t}$: dummy variable which takes the value of 1 if company i , in the period t , has been audited by one of the *big four* accounting firms (PWC, KPMG, E&Y or Deloitte) and 0, if this is not the case.

$TAM_{i,t}$: characterises the size of company i , in the period t , measured by the natural logarithm of total assets.

When testing the H_1 and H_2 hypotheses, the variables of interest are VOL and ΔVME , for those which expect positive and negative relations respectively, with the dependent variable (MOD). This means that the increase in the volatility of stock returns and the reduction in the market value of the companies makes independent auditors subsequently more willing to issue a report with a modified opinion.

In addition to variables of interest, control variables were incorporated to determine the effects of the following - level of profitability (ROA), the governance structure (GOV), the degree of leverage ($ALAV$) and the size (TAM) of the audited entities, together with whether the auditor is one of the *big four* ($B4$) accounting firms - or the likelihood that the auditors will issue an opinion with a modified opinion. (MOD).

In the case of the ROA , according to Santos (2015), a negative relationship is expected with the dependent variable, which suggests that the greater (or lower) the capacity to make a profit, the lower (or greater) will be the chance that the auditor will issue a modified opinion. This expectation arises from the premise that the better (or worse) performance of the entity reduces (or increases) the incentives of the administration to allow material misstatements in balance sheets and hence mitigate audit risk.

The second control variable (GOV) is justified by the desirability of controlling the effects of the corporate governance structure in the willingness of auditors to issue a modified opinion. It rests on the assumption that corporate governance mitigates the conflicts between

the principal, agents and other interested parties by aligning the interests of the parties concerned and maximising the value for the controlling and non-controlling shareholders (Marques, 2016), and thus results in more trustworthy financial information. Hence, in line with the findings of Marques, Louzada, Amaral and Souza (2018), it can be expected that companies with differentiated levels of governance are less likely to have a modified opinion by constituting a negative relationship between the *GOV* and *MOD* variables.

With regard to the leverage (*ALAV*), Krishnan and Krishnan (1996) state that the degree of indebtedness is a significant variable for explaining why a modified opinion should occur in auditing. Evidence supporting this view was confirmed by Hope and Langli (2010), when showing that leverage influences the modification of opinions for reasons of continuity. Thus, it can be anticipated that there will be a positive link between this control variable and a propensity to issue a report with a modified opinion (*MOD*).

Although in the case of the *B4* variable, there is at first an expectation that the *big four* accounting forms would be likely to issue a modified opinion, (on account of their reputation for greater financial and capital independence), there is evidence in the Brazilian market provided by Damascena and Paulo (2013) that smaller-sized firms issue more opinions with provisos and emphasis of matter paragraphs than the *big four*, even among those that audit most of the entities. This means a negative link can be expected between *B4* and *MOD*.

Finally, Li, Song and Wong (2008) have assessed the effect of the size (*TAM*) of the entities on the opinion of auditors in the Chinese market and noted that its variable affects the probability of a modified opinion being issued, or in other words, the greater (or lower) the entity audited, the lower (or greater) the likelihood of obtaining a modified opinion (*MOD*). This negative relationship was confirmed by Cao, Leng, Feroz and Davalos (2015), who stated that larger-sized and more prominent companies are likely to be given an opinion without provisos about their financial statements. For this reason, it can be expected that the *TAM* will have a negative link with the dependent variable (*MOD*).

3.3 Models for Testing Emphasis of Matter Paragraphs

An emphasis of matter paragraph can enable the auditors to give an advanced warning to the investors of possible risks about the entity, with a view to protecting their reputation. Although the distinct purpose of these paragraphs is to modify an opinion, since the auditor has not communicated distortions found in the financial statements, empirical evidence has shown that they can allow the auditor to draw attention to risks and thus operate as a kind of protection (Carvalho et al., 2019; Damascena & Paulo, 2013; Ianniello & Galloppo, 2015; Souza & Nardi, 2018). When testing the H_3 and H_4 hypotheses, the (3.3) and (3.4) models are employed, and these are equivalent to those used for testing the H_1 and H_2 , hypotheses by altering the dependent variable *MOD* to *ENF*.

$$ENF_{i,t+1} = \beta_0 + \beta_1 VOL_{i,t} + \beta_2 ROA_{i,t} + \beta_3 GOV_{i,t} + \beta_4 ALAV_{i,t} + \beta_5 B4_{i,t} + \beta_6 TAM_{i,t} + \varepsilon_{i,t} \quad (3.3)$$

$$ENF_{i,t+1} = \beta_0 + \beta_1 \Delta VME_{i,t} + \beta_2 ROA_{i,t} + \beta_3 GOV_{i,t} + \beta_4 ALAV_{i,t} + \beta_5 B4_{i,t} + \beta_6 TAM_{i,t} + \varepsilon_{i,t} \quad (3.4)$$

Where:

$ENF_{i,t+1}$: *dummy variable*, which takes the value 1, if the company *i*, in the period *t+1*, has been given an audit report with an emphasis of matter paragraph about the DFs in the period *t*. If this is not the case, take 0 as the value.

In a way that is also equivalent to the tests for the H_1 and H_2 hypotheses, the corroboration of the H_3 and H_4 hypotheses depends on the confirmation of the positive signal for the *VOL* variable in the (3.3) model and negative for the ΔVME variable in the (3.4) model,

respectively. This would provide evidence that the incorporation of emphasis of matter paragraphs in the audit report would be influenced by the greater volatility of stock returns and by the reduction of the market value of the entities.

With regard to the control values (*ROA*, *GOV*, *ALAV*, *B4* and *TAM*) the same signals highlighted for the (3.1) and (3.2) models can be expected.

4. Presentation and Analysis of Results

As a preliminary step before measuring the variables, the audit reports were examined of the financial statements during the period 2009-2020 for the 338 companies that comprise the sample, in an attempt to determine the types of opinion and the presence of emphasis matter paragraphs (Table 1).

Table 1
General statistics of the audit reports of the sample

Description	Number	Percentage
Total number of audit reports	3.584	100.00%
Financial statements audited by the <i>big four</i>	2.484	69.31%
Financial statements of companies with levels of governance	1.930	53.85%
An unqualified opinion	3.280	91.52%
With provisos	211	5.89%
A disclaimer of opinion	83	2.32%
An adverse opinion	10	0.28%
Reports containing an emphasis of material paragraph	1.805	50.36%
Reports with a modification of opinion	304	8.48%
Modification of opinion by the <i>big four</i>	98	32.34%
Modification of opinion by the <i>big four</i> in a company with corporate governance	49	50.00%

Source: research data.

As can be seen, there is a predominance of audited financial statements by the *big four* (69.31%), which confirms evidence of market concentration (Dantas, Chaves, Sousa & Silva, 2012). In addition, more than half of the statements examined are entities classified in the governance sectors of the B3. The reports with a modification of opinion represent 8.48% of the total, and are thus less than a third of reports issued by the *big four* and a half referred to entities listed in the levels of governance of the B3. With regard to the incorporation of emphasis of matter paragraphs, this occurred in more than half of the reports that were examined.

4.1 Descriptive Statistics and Correlation Matrix

The first stage of the empirical tests involved measuring the (3.1 to 3.4) models, the descriptive statistics of which are highlighted in Table 2.

Table 2*Descriptive statistics of model variables (3.1) a (3.4)*

Painel A: variáveis categóricas					
	<i>MOD</i>	<i>ENF</i>	<i>GOV</i>	<i>B4</i>	
Valor 0	3.280	1.779	1.654	1.100	
Valor 1	304	1.805	1.930	2.484	
% Valor 1	8,48%	50,36%	53,85%	69,31%	
Painel B: variáveis contínuas					
	<i>VOL</i>	ΔVME	<i>ROA</i>	<i>ALAV</i>	<i>TAM</i>
Média	0,0345	0,2261	-6,9445	3,1015	21,0973
Mediana	0,0270	0,0468	0,0271	0,6242	21,3259
Desvio padrão	0,0275	1,0815	399,5671	95,3066	2,3540
Máximo	0,5105	30,6344	76,9124	5501,0263	27,6184
Mínimo	0,0085	-0,9499	-23298,6	-34,1544	8,5172

Which: *MOD* indicates an audit report with a modified opinion about the DFs; *ENF* reveals an audit report with an emphasis of matter paragraph about the DFs; *VOL* is the volatility of the stock returns of Company; ΔVME is the variability (proportional) in the market value of company; *ROA* is the return on assets of company; *GOV* indicates if the company is listed in the levels of corporate governance of B3; *ALAV* is the degree of leverage of company; *B4* reveals if company has been audited by one of the *big four*; *TAM* characterises the size of company.

Source: *research data.*

As well as handling the categorical variables in a dataset, the descriptive statistics revealed the presence of extreme values in the continuous variables, including the variables of interest, *VOL* and ΔVME , and the control variables *ROA* and *ALAV*, which are representative of profitability ratios and leverage.

Since the purpose of this research project is to assess the reaction of auditors to negative market perceptions of the financial information of the entities (and this can be largely achieved in limit-situations – negative variations accentuated by market values or extreme volatility in stock returns), it would not be appropriate to ignore the *outliers* obtained by means of statistical processing. In any event, for reasons of security, non-parametric tests were carried out through the winsorization of continuous variables to 5%, which showed results consistent with a database that avoided handling the *outliers*. In view of this, henceforth the estimates shown will be concentrated in a complete database without handling the extreme values.

Following this, a matrix was created of the correlation between the variables of the model (Table 3), with a view to locating the first evidence of the significant relations and assessing the risk of multicollinearity.

Table 3
Pearson's correlation matrix between model variables

	<i>MOD</i>	<i>ENF</i>	<i>VOL</i>	Δ <i>VME</i>	<i>ROA</i>	<i>GOV</i>	<i>ALAV</i>	<i>B4</i>	<i>TAM</i>
<i>MOD</i>	1,000								
<i>ENF</i>	0,078	1,000							
<i>VOL</i>	0,157	0,136	1,000						
Δ <i>VME</i>	-0,007	0,031	0,070	1,000					
<i>ROA</i>	0,003	-0,018	-0,039	0,007	1,000				
<i>GOV</i>	-0,142	0,011	-0,184	-0,047	-0,016	1,000			
<i>ALAV</i>	-0,003	0,014	0,082	0,010	-0,988	0,009	1,000		
<i>B4</i>	-0,244	-0,090	-0,285	-0,059	0,028	0,295	-0,034	1,000	
<i>TAM</i>	-0,100	0,020	-0,289	-0,039	0,089	0,215	-0,094	0,393	1,000

Which: *MOD* indicates an audit report with a modified opinion about the DFs; *ENF* reveals an audit report with an emphasis of matter paragraph about the DFs; *VOL* is the volatility of the stock returns of Company; Δ *VME* is the variability (proportional) in the market value of company; *ROA* is the return on assets of company; *GOV* indicates if the company is listed in the levels of corporate governance of B3; *ALAV* is the degree of leverage of company; *B4* reveals if company has been audited by one of the *big four*; *TAM* characterises the size of company.

Source: research data.

The bivariate data analyses initially provided evidence that *VOL* has a positive relationship with the dependent variables of the (3.1) and (3.3) models – *MOD* and *ENF*, respectively. These are the first signs that the perception of market risk concerning entity, might increase the likelihood that the auditor will issue a report with a modified opinion or with emphasis of matter paragraphs, in line with the H_1 and H_3 hypotheses.

In the case of the second variable of interest (Δ *VME*), the results show a negative link with the modification of opinion (*MOD*) and positive when there are emphasis of matter paragraphs (*EMP*). The indications obtained are, in principle, compatible with the provisions in the H_2 hypothesis and contrary to what is expected in H_4 , which predicts a negative relationship between the variation in the market value and the propensity of the auditor to issue reports with a modified opinion and emphasis of matter paragraphs, respectively. As well as the lack of consistency in the pointers, it is worth drawing attention to the fact that if the indication is in accordance with what is anticipated, the correlation coefficient is only -0.007, which suggests the predicted risks estimated in the logistics model for this relationship are not statistically significant.

With regard to the correlations between the dependent variables (*MOD* and *ENF*), and the control variables, the results are inconclusive, with conflicting signals, depending on the dependent variable being considered. The exception is the *B4* variable which recorded a negative signal in the two cases, which shows that the auditing carried out by the *big four* is less likely to issue a report with a modified opinion or with emphasis of matter paragraphs.

It should be stressed that notwithstanding the evidence that bivariate relationships provide the first signs of the expected relationships, these expectations can only be corroborated when the multivariate analysis has been confirmed by means of tests for the estimated regression models. At the same time, it should be noted that the pure and simple correlation does not take into account the concurrent effects of other independent variables.

Finally, the criterion recommended by Gujarati and Porter (2011) was adopted when assessing the risk of multicollinearity to ensure there would be no risk of the correlation between the independent variables being greater than 0.8, as this would undermine the robustness of the coefficients and the standard error of the regression. The tests revealed that there was a correlation higher than 0.8 between the two variables that were shown (*ALAV* and

ROA). The Variance Inflation Factor (VIF) Test was carried out to mitigate this risk and a statistic of 1.0105 was obtained, which averted the risk of multicollinearity, (this risk becomes evident when the statistic is close to 10).

4.2 Impact of the Volatility of Stock Returns and Market Value Variation on the Modification of Opinions in Auditing

Estimates were made for the (3.1) and 3.2) models to test the H_1 and H_2 hypotheses respectively and the results were displayed in Table 4. For the purposes of analysing the sensitivity of the results, estimates are made with the methods of the *pooled* regression model and the fixed effects of a period, by means of the SUR (PCSE) method, which forms robust parameters even in the presence of autocorrelation and heteroscedasticity in the residues.

Table 4

Estimation of audit report determinants with modification of opinion

Variables	Models tested:			
	Model (3.1)		Model (3.2)	
	<i>Pooled</i>	EF Period	<i>Pooled</i>	EF Period
C	0,2629*** (0,0013)	0,2558*** (0,0029)	0,3477*** (0,0000)	0,3462*** (0,0000)
VOL	0,7797** (0,0361)	0,8574** (0,0321)		
ΔVME			-0,0059 (0,2832)	-0,0058 (0,3094)
ROA	0,0001 (0,6497)	0,0001 (0,6728)	7,6401 (0,5952)	6,9101 (0,6251)
GOV	-0,0534*** (0,0001)	-0,0517*** (0,0001)	-0,0327*** (0,0052)	-0,0327*** (0,0043)
$ALAV$	0,0002 (0,7509)	0,0001 (0,8104)	0,0009 (0,2721)	0,0009 (0,2712)
$B4$	-0,1004*** (0,0000)	-0,0997*** (0,0000)	-0,1191*** (0,0000)	-0,1156*** (0,0000)
TAM	-0,0048 (0,1821)	-0,0047 (0,2115)	-0,0074** (0,0418)	-0,0074** (0,0430)
Nº empresas	181	181	185	185
Nº observações	1.583	1.583	1.694	1.694
Período	2009/2020	2009/2020	2010/2020	2010/2020
R ²	0,0771	0,0813	0,0669	0,0722
R ² ajustado	0,0736	0,0713	0,0636	0,0634
F-Estatística	21,9403	8,1469	20,1647	8,1575
F (p-valor)	0,0000	0,0000	0,0000	0,0000

Which: *MOD* indicates an audit report with a modified opinion about the DFs; *VOL* is the volatility of the stock returns of Company; ΔVME is the variability (proportional) in the market value of company; *ROA* is the return on assets of company; *GOV* indicates if the company is listed in the levels of corporate governance of B3; *ALAV* is the degree of leverage of company; *B4* reveals if company has been audited by one of the *big four*; *TAM* characterises the size of company.

Significance levels: *** 1%; ** 5%; * 10%. P-values in parentheses.

Source: research data.

The results show a positive and significant relationship between *MOD* and *VOL*, or in other words, the greater the volatility of the stock returns, the greater the likelihood of the auditor subsequently issuing a report with a modified opinion. This suggests that the independent auditors are attentive to market information, especially regarding the perception of risk interpreted as higher price volatility. The underlying assumption is that when auditors are aware that the market is assigning a greater risk to an entity, they operate in a more thorough way with a view to reducing the audit risk and thus affect the chance of the report having a modified opinion, which corroborates the H_1 hypothesis. The combination of this empirical evidence with the findings of Carvalho et al. (2019), who argued that the modified auditing opinion affects the volatility of stock returns after their disclosure, demonstrates a kind of cross effect: the modification of opinion increases the market risk after the disclosure; and the greater the perception of market risk, makes it more likely the auditor will modify his/her opinion. This kind of cross-relationship can be found in other phenomena which records accounting and market information, as in studies about the return-on-investment relationship (Kothari, 2001).

With regard to the second variable of interest, the results of the (3.2) model demonstrated that there was no relationship between the variation of the market value of companies (*ΔVME*) and the subsequent issuing of an audit report with a modified opinion (*MOD*). Thus, it has not been confirmed from the predictions of H_2 that the auditor would react to negative variations in the market value of entities and that this would increase the likelihood of a modified opinion being issued about the financial statements. This evidence remains compatible with the findings of Carvalho et al. (2019), which explored the inverse relationship – the effect of a modified audit on the market value of companies – and the authors established that there was a lack of any link between these variables, although they are in distinct temporal dimensions.

With regard to the control variables, the tests found there was a negative relationship between the entity client who was listed in the differentiated corporate governance levels (*GOV*) and the modification of opinion (*MOD*) in the two models, which suggests that the entities that belong to the levels of corporate governance in the B3 Stock Exchange, provide more trustworthy information for the shareholders and that this reduces the likelihood of a modified opinion being issued by the auditor. These results are in line with the findings of Alexandre and Lopes Junior (2018); moreover, Marques et al. (2018). Marques, Santos, Souza, Amaral, Souza and Louzada (2015) also obtained results that were compatible in so far as the entities that belong to one of the levels of governance (and are audited by the *big four*) have little prospect of experiencing a modification of opinion. This supports the view that a good structure of corporate governance improves the quality of the information disclosed and reduces the likelihood of a modified audit opinion.

Similar results are found with regard to the *big four* (*B4*) variable that see a negative link with the dependent variable (*MOD*) for the two models, and underpin the evidence obtained from previous studies, such as those of Marques et al. (2015), Marques et al. (2018) and Bertoldi, Orth and Lerner (2019). One possible line of interpretation is that the large auditing forms seek to maintain their prestige in the market by selecting their audited clients, choosing big and financially more healthy entities and showing a reluctance to accept any entities that are experiencing financial difficulties. This policy gives them greater incentives to issue financial statements with material discrepancies and means that these entities are less likely to be given reports with a modified opinion (Pontes, Dantas & Nunes, 2020). This result corroborates the findings of Damascena, Paulo and Cavalcante (2011) that it is less common to find audit reports with a modified opinion when they are issued by the *big four*.

With regard to the size variable (*TAM*) of the audited entity, the results show there is a negative link with the propensity only to issue an audit report with a modified opinion in the model (3.2). This means that the greater (or smaller) the entity, the smaller (or larger) the likelihood that the auditor will issue a modified opinion, which supports the evidence highlighted by Li et al., (2008). One of the assumptions is that larger clients have less chance of being given a modified auditing opinion, owing to their greater importance in the portfolio of the auditing firm.

In the case of the *ROA* and *ALAV* variables, no significant links were found with the modification of the opinion of the auditors, in contrast with the findings of Pereira, Machado, Pinheiro and Dutra (2019), Pimentel and Durso (2018), Sant'Ana and Sant'Ana (2021) and Segura and Molina (2001). It was expected that both the variables would show a negative relationship with the *MOD* variable because it would be reasonable to imagine that companies with a greater equity return or that had less indebtedness, would have fewer incentives to issue statements that were materially distorted, and this might reduce the likelihood of entities being given reports with a modified opinion.

4.3 Impact of the Volatility of Stock Returns and Variations in Market Values on the Issuing of Emphasis of Matter Paragraphs

After the analysis of the factors that determine the modification of an audit opinion, the next stage involves examining the impact of the volatility of stock returns and variations in the market value of entities on the issuing of emphasis of matter paragraphs – the test of the H_3 and H_4 hypotheses. This required estimating the (3.3 and 3.4) models, by adopting the same estimation criteria as that employed for the modification of opinion. The results are displayed in Table 5.

Table 5

Estimation of determinants of issue of emphasis paragraphs in audit reports.

Variables	Models tested:			
	$ENF_{i,t+1} = \beta_0 + \beta_1 VOL_{i,t} + \beta_2 ROA_{i,t} + \beta_3 GOV_{i,t} + \beta_4 ALAV_{i,t} + \beta_5 B4_{i,t} + \beta_6 TAM_{i,t} + \varepsilon_{i,t}$ (3.3)		$ENF_{i,t+1} = \beta_0 + \beta_1 \Delta VME_{i,t} + \beta_2 ROA_{i,t} + \beta_3 GOV_{i,t} + \beta_4 ALAV_{i,t} + \beta_5 B4_{i,t} + \beta_6 TAM_{i,t} + \varepsilon_{i,t}$ (3.4)	
	Model (3.3)		Model (3.4)	
	<i>Pooled</i>	EF Period	<i>Pooled</i>	EF Period
<i>C</i>	0,4218** (0,0182)	0,4454*** (0,0001)	0,6051*** (0,0000)	0,5350*** (0,0000)
<i>VOL</i>	2,4344*** (0,0055)	1,8904*** (0,0031)		
ΔVME			0,0099 (0,5930)	0,0253** (0,0192)
<i>ROA</i>	-0,0001 (0,3927)	-0,0001 (0,9421)	-1,4601 (0,4637)	-1,4801 (0,9335)
<i>GOV</i>	0,0796** (0,0267)	0,0699** (0,0101)	0,0840*** (0,0013)	0,0963*** (0,0002)
<i>ALAV</i>	-0,0005 (0,6397)	-0,0008 (0,3482)	0,0001 (0,9106)	-0,0002 (0,8109)
<i>B4</i>	-0,0903** (0,0247)	-0,1528*** (0,0000)	-0,1201*** (0,0012)	-0,1731*** (0,0000)
<i>TAM</i>	0,0022 (0,7409)	0,0044 (0,3882)	-0,0017 (0,7510)	0,0028 (0,5410)

Nº empresas	181	181	185	185
Nº observações	1.583	1.583	1.694	1.694
Período	2009/2020	2009/2020	2010/2020	2010/2020
R ²	0,0247	0,2363	0,0127	0,2103
R ² ajustado	0,0210	0,2280	0,0091	0,2027
F-Estatística	6,6508	28,4902	3,6064	27,9063
F (p-valor)	0,0000	0,0000	0,0015	0,0000

Which: *ENF* reveals an audit report with an emphasis of matter paragraph about the DFs; *VOL* is the volatility of the stock returns of Company; ΔVME is the variability (proportional) in the market value of company; *ROA* is the return on assets of company; *GOV* indicates if the company is listed in the levels of corporate governance of B3; *ALAV* is the degree of leverage of company; *B4* reveals if company has been audited by one of the *big four*; *TAM* characterises the size of company.

Significance levels: *** 1%; ** 5%; * 10%. P-values in parentheses.

Source: research data.

On the question of the variables of interest (*VOL* and ΔVME), the results obtained through the estimates of the models which issue emphasis of matter paragraphs (*ENF*), are practically the same as those attained through the modification of opinion (*MOD*). It was noted that there was a positive link between the volatility of stock returns and the issuing of emphasis of matter paragraphs which confirm H_3 . This suggests that even though on normative grounds the emphasis should not be used to provide information about problems in the financial statements, it can be a useful way to allow the auditor to alert the market about key information if he/she wishes to be protected from future questions. As regards the variation in the market value of shares, no link has been recorded with the emphasis of matter paragraphs and this is a way of rejecting the H_4 hypothesis.

This evidence confirms the attitudes that were noted towards the modification of opinion – the importance of the volatility of stock returns and the fact that there is a lack of significance in the variation in the market value of companies to explain what is contained in the audit report. Again, these results are compatible with the findings of Carvalho et al., (2019), who despite testing an inverse relationship, found the results were not conclusive for estimating the effects of the disclosure of the emphasis of matter paragraph on the behaviour of the market.

As regards the control variables, the estimates of the (3.3) and (3.4) models showed results consistent with the (3.1) and (3.2) models, except for the *GOV* and *TAM* variables. A negative link was noted for the *GOV* variable, with a record of emphasis of matter paragraphs. Although the market reacted negatively to this emphasis, in accordance with the evidence provided by Carvalho et al. (2019), it was not designed to communicate discrepancies found in the financial statements, but rather to allow the auditor to draw attention to any information considered to be relevant. In this way, the auditor can issue emphasis of matter paragraphs to companies that have good levels of governance, with the aim of highlighting any key data that is suited to interpreting the statements and explaining this positive relationship, which is contrary to the findings of Alexandre et. al (2018).

There is another divergent factor in the models employed to test how the modification of opinion occurred in the size variable of the entities (*TAM*). While the (3.2) model had a negative link with the modification of opinion, (which was consistent with the view that the greater the importance of the client, the less likely the auditor would be to issue a modified opinion about the financial statements), in the estimates of the (3.3) and (3.4) models, no significant links were found with the paragraphs of emphasis.

5. Conclusion

The aim of this study was to determine whether auditors react to market information – in particular, the volatility of stock returns and variations in the market value of companies – and influence their course of action by making it more likely that they will issue a report with a modified opinion or the incorporation of emphasis of matter paragraphs.

The results of the empirical tests provided evidence that an auditor reacts negatively to risk perception in the financial market and that this is brought about by a willingness to modify the opinion of financial statements or include emphasis of matter paragraphs. This suggests that the auditors probably take account of the assessment the market makes of how companies carry out their operations and are stricter and more thorough in their judgments of entities deemed to be at greater risk by the market. However, on the question of the potential impact of variations in the market value of companies on the nature of the auditor's opinion and the incorporation of emphasis of matter paragraphs, the results of the tests showed that there was no significant statistical relationship between the variables. This is evidence that the negative fluctuations in share prices by themselves are not sufficient to influence the behaviour of the auditor, contrary to the expectation that the greater the losses in market value, the stricter and more thorough will be the activities of the auditor in terms of procedures, assessments and professional judgments.

The empirical evidence obtained makes a research contribution to the literature, particularly with regard to the importance attached by the author to information emerging from the market. It should be noted that although there have been a wide range of research studies on the impact of the opinion of the auditor, this study examines this relationship in reverse – or in other words, as regards how market patterns have an effect on the task of auditing, including the type of opinions expressed about financial statements.

Concerning the statute of limitations, it is worth mentioning that the sample only covers non-financial companies listed in the Brazilian capital market, which imposes constraints on the kind of inferences that can be made about the findings of this type of entity. As well as seeking to broaden the scope of the entity or object of this study, to discover further evidence about the reaction of the auditors to the behaviour of the market, there is a need for further research to explore a number of distinct features. These include the following: whether there is a difference in this reaction between the big four firms and those of a smaller size; if the auditors react to market risks not only by what the audit reports contain but also in terms of a compensation agreement; and if the market information influences the notice of a contract termination agreement with auditors, among other factors.

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