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Identification of auditor's report qualifications: an empirical analysis for Slovenia

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An auditor's report qualifies a company's financial statements if the management's representation of the company's financial affairs is not in accordance with nationally generally accepted accounting pronouncements. The present research studies the qualification of auditors' reports in relation to the circumstances in the company's economic situation that lead to the qualification. Qualifications have been analysed on a sample of 293 large Slovenian companies. The results reveal that companies with qualified auditors' reports have high indebtedness, low liquidity, low efficiency and poor profitability in comparison with companies with unqualified auditors' reports. From a statistical viewpoint, a logistic model can distinguish between companies that received a qualified auditor's report and companies that received an unqualified auditor's report on a sample of Slovenian large companies.

Keywords: auditing; auditor's report; qualified report; identification; audit model; Slovenia

JEL classification: M41, G00, C25, G30

1. Introduction

Management represents a company's financial position and its achievements in the company's financial statements (in accordance with nationally generally accepted accounting principles). The auditor (note: a certified auditor) examines the company's financial statements and prepares the auditor's report. The auditor asserts whether the company's financial statement representation is true and fair in accordance with the nationally accepted accounting framework. Therefore, for many years, the information contained in the auditor's report has been of interest to the public, various financial statements users (practitioners, i.e. investors, lenders, other creditors, etc), and academia. The financial crisis from 2009 onwards additionally increased (political) interest in the information contained in auditors' reports and exposed these reports to various criticisms (i.e. the inadequacy of the auditor's assurance, auditing procedures, and so on).

Nevertheless, there does not exist (at least to the best of our knowledge) many previous empirical studies of auditors' reports or of auditors' opinions in European countries. In Europe, there are only a few empirical studies that reveal data about the auditor's report information (for a large population of companies in a country) (see, for

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example, Farrugia & Baldacchino, 2005; Keasey, Watson, & Wynarczyk, 1988; Laitinen & Laitinen, 1998; Pasiouras, Gaganis, & Zopounidis, 2007; Spathis, Doumpos, & Zopounidis, 2003). For countries in the south-eastern region of Europe (except for Greece), to the best of our knowledge, no such empirical study exists. For Slovenia, there is no (publicly available) information on auditor's report information because no previous study has been conducted to analyse auditor's report information in Slovenia.

The auditor's report and the information it contains have been in the limelight in Slovenia recently because of various business failures of companies that had audited financial statements. Therefore, in Slovenia, the public (especially the media) has been consistent in their belief and their demand that qualified auditors' reports (especially when containing a qualified auditor's opinion about the company's financial statements) should be regarded as a warning signal of business failure (i.e. bankruptcy) and/or other irregularities that appear when conducting business (i.e. business fraud). The public and other users of the auditor's report and/or financial statements need to identify untrue and unfair financial statements. It is not known whether identification of the qualification of an auditor's report is possible with the use of various company ratios from the financial statements of Slovenian companies. The existence of increased interest (demand) and the absence of previous studies on auditor's report information in Slovenia motivated us to consider the Slovenian case.

The general purpose of the present study is to analyse the qualified auditors' reports of Slovenian companies and to show the circumstances in the company's economic situation that led to the qualification of auditor's reports. The sample data include listed and unlisted companies. In previous empirical studies, several statistical models were developed to explain the qualifications in auditors' reports (see, for example, Bell & Tabor, 1991; Gaganis, Pasiouras, & Doumpos, 2007; Krishnan & Krishnan, 1996; Spathis et al., 2003). The object of this study is to develop a statistical logistic model that considers various company accounting ratios to explain the qualifications in auditors' reports of Slovenian companies. Company's accounting ratios are limited to those that are publicly available and accessible through various financial databases. The logistic model provides the likelihood of a qualifying auditor's report for a company with given accounting ratios. The statistical model developed can be used to assess the extent to which the qualification of auditors' reports could be expected based on publicly available data from the company's financial statements (compare, for example, with Dupoch, Holthausen, & Leftwich, 1987). Furthermore, the developed statistical model can be used by auditors as a tool to aid them in determining the scope of the audit for existing clients, in peer reviews, as a decision aid when predicting what report other auditors would issue in similar circumstances, etc (Bell, 1997; Laitinen & Laitinen, 1998). Additionally, the developed statistical model can be used by the regulator and auditing supervision agency/organisation when conducting auditing supervision and by anyone else, i.e. lenders, in their ad hoc analysis of the auditee. Agencies that publish company's financial data can use the model to add a new variable to their existing company's publicly available data (i.e. a variable that shows the probability that a company receives an auditor's report that is qualified). And lastly, academia/researchers can use the model results as a new variable in their studies (i.e. as a proxy for audit quality).

The remainder of the paper is organised as follows. Section 2 briefly introduces reasons for the usage of the auditor's report identification model. Section 3 presents sample data, and Section 4 presents the variable selection. The results and an analysis of results are provided in Section 5, including a discussion of the results. Section 6 summarises our research findings.

2. Reasons for usage of auditor's report identification model

As previously stated, the object of this study is to develop a statistical logistic model to explain the qualifications in auditors' reports. Various authors (see, for example, Laitinen & Laitinen, 1998; Gaganis et al., 2007; Spathis et al., 2003) give presentations of previous research in the field of auditors' reports qualification using various statistical approaches/techniques (note: Carson et al., 2013 give presentation of previous research in the field of auditors going concern opinion qualification). There has long been an interest from practitioners (i.e. investors, lenders, other creditors and other various financial statement users), the public and the academic community in the existence of an auditor's report identification model (see, for example, Dupoch et al., 1987; Keasey et al., 1988; Krishnan & Krishnan, 1996; Laitinen & Laitinen, 1998; etc). An objective of this study is to find an answer to an empirical question (therefore, there is no need to present hypothesis development). The aforementioned interest has increased in recent years for various reasons (i.e. the ongoing financial crisis from 2009 onwards, the existence of an array of novel methodological approaches, and so on). Various statistical approaches (i.e. different regression modelling techniques) have been used to identify the companies that should receive a qualified auditor's report or opinion according to their reported financial statements' other disclosures (see, for example, Gaganis et al., 2007; Keasey et al., 1988; Laitinen & Laitinen, 1998; Spathis et al., 2003). These researchers used various variables, i.e. financial and non-financial variables, non-market and market variables, publicly available and unavailable data for the variable calculation, and so on.

The first reason for the development of the auditor's report identification model includes the auditors' growing burdens: the enormous amount of data to be processed, the scope of the audit work, time and cost constraints, etc. The second reason for model development includes the auditors' need for tools that can objectively guarantee the data about the company being audited (Bazerman, Loewenstein, & Moore, 2002; Koskivaara, 2004). An empirical model with the ability to identify the qualified auditor's report can be used to assess the extent to which qualification could be expected on publicly available data (Dupoch et al., 1987). The output of this identification model can be used in planning specific auditing procedures that can be applied to achieve an acceptable level of audit risk (Bell & Tabor, 1991; for more on the usefulness of the developed model, see Bell, 1997). Furthermore, the developed model can be used by auditors as a tool to aid them in the review of their audit work or the work of their peers when evaluating potential clients, as a defence in law suits, and so on (Laitinen & Laitinen, 1998).

As stated, auditors can use an auditor's report identification model as a supplementary auditing tool (i.e. to adjust audit risk and audit sampling) and as a monitoring tool. Furthermore, the model can be used by a regulator and auditing supervision agency/organisation as a supplementary 'surveillance' tool when conducting auditing supervision. The model can be used by anyone else, i.e. lenders, in their ad hoc analysis of auditees. Agencies that publish company's financial data can use the model to add new variables to their publicly available data (i.e. variables that show the probability that a company receives an auditor's report that is qualified). And lastly, academia/researchers can use the model results as a new variable in their studies (i.e. as a proxy for audit quality).

3. Sample data

Slovene legal pronouncements require all limited companies to have their annual financial statements, with the various accompanying disclosures to these statements, audited (see Article 57/1 of the Companies Act, CA-1, in Slovene: ZGD-1). In accordance with the Companies Act (CA-1), the company must appoint an auditor (note: a certified auditor) to conduct an audit of the company's financial statements.[1] The appointed auditor must prepare an auditor's report on the company's financial statements. In the auditor's report, the auditor expresses an opinion regarding the accuracy and fairness of the company's presented financial statements (i.e. is the company's financial representation true and fair?). In the present study, if an auditor assures in the auditor's report that the financial representation of a company's financial statements is true and fair, the auditor's report is classified as unqualified. The auditor's report is otherwise classified as qualified.[2]

Sample data were retrieved from a database of Slovenian companies. Sample data (including auditors' reports) were hand-collected from the annual reports of companies (published in 2010, for the year 2009) that have their headquarters in Slovenia and that can be defined as large.[3] These are data on a select group of companies, which do not represent a group of companies and are large companies. Furthermore, these data are on companies that, in accordance with Article 58 of the Companies act (CA-1), filed their annual report and an auditor's report on their company's financial statements. According to the criteria of Paragraph 5 from Article 55 of the CA-1, there were 295 large companies in Slovenia on 31 December 2009. Out of the 295 companies, two companies did not have an annual report that could be put at our disposal. In total, the sample comprised of 293 large companies. The results of the hand-collected data from the annual reports in this sample of 293 examined companies show that there are 281 companies that have an unqualified auditor's report, while the remaining 12 companies have a qualified auditor's report.[4] An auditor's report is qualified if the auditor's opinion of the company's financial statements is qualified. Out of the 12 examined companies with a qualified auditor's report, one company had an adverse auditor's opinion, while the remaining 11 companies had a qualified auditor's opinion. The auditor's opinions were qualified because of the non-compliance of the company's financial statements with the pronouncements that are in force in Slovenia (Slovene Accounting Standards or International Financial Reporting Standards, endorsed by the EU). The reasons for the qualification of the auditors' opinions were as follows (note: the following reasons are interrelated): at least seven times, assets were not properly recognised or valued; at least once, revenues and expenses were not properly recognised; at least once, a change in an accounting policy was not properly disclosed; and at least three times, the auditor could not retrieve enough evidence (i.e. limitation in the scope of the auditor's work).

The number of qualified auditor's reports in the sample was 12 out of 293 auditor's reports. Because our data were from the auditor's reports for companies for a research period of one year (2009), these 12 qualifications concerned 12 companies. Nevertheless, the data reveal that in Slovenia, the apportionment of unqualified auditors' reports within all auditors' reports is large (95.5%). This finding is surprising at first, but various other studies reveal that a large apportionment of unqualified auditors' reports within all auditors' reports is not unusual. For example, in their study, Laitinen and Laitinen (1998) reveal that in Finland (for the year 1997) out of over 7000 companies, 94% had an unqualified auditor's report. In the United Kingdom in the research period between 1974 and 1975, 92% of 3000 companies had unqualified auditor's reports

(Farrugia & Baldacchino, 2005). In a later research period between 2000 and 2001 (from April to April), over 99% of 392 companies had unqualified auditor's reports (Farrugia & Baldacchino, 2005). In France, in the research period between 1986 and 1995, over 95% of 8484 companies had unqualified auditor's reports (Farrugia & Baldacchino, 2005). The low apportionment of qualified auditor's reports within all auditors' reports was noticed in various other (non-European) countries, i.e. Australia, Singapore, the USA, and so on (Farrugia & Baldacchino, 2005). Several reasons exist for the large apportionment of unqualified auditors' reports within all auditors' reports (see, i.e., for more details, Laitinen & Laitinen, 1998).

First, auditors may not be adequately competent to identify risks, and therefore the company's auditor's report is not qualified. Secondly, auditors may not be completely independent because the auditor may possibly consider the effects of a qualification on his or her business (i.e. the possible loss of clients because of qualifications, and so on). Thirdly, the auditor may additionally not be completely independent because of his or her possible consideration of the effects of a qualification on the prosperity of the audited company's business.[5] Additionally, a possible explanation for the large apportionment of unqualified auditors' reports within all auditors' reports could be that companies' financial representations are generally true and fair, and there is no need for report qualification.

4. Methodology and variable selection

The list of explanatory variables (the majority of these are accounting ratios) is provided in Table 1.[6] These variables are used to identify the auditor's report qualifications. The majority of variables from the list are used in financial statement analysis (see, for

Table 1. List of variables.

	Name of variables
Y	Dependent variable: 1 if auditor's report is qualified, 0 otherwise
X_1	Debt ratio
X_2	Debt to equity ratio
X_3	Long-term financing to long-term assets ratio
X_4	Quick ratio
X_5	Liquidity ratio
X_6	Current ratio
X_7	Short-term business receivables to short-term business liabilities ratio
X_8	Inventory turnover ratio
X_9	Trade receivables turnover ratio
X_{10}	Cash turnover
X_{11}	Operating efficiency ratio
X_{12}	Total assets turnover
X_{13}	Working capital turnover
X_{14}	Current liabilities turnover
X_{15}	Capital employed turnover
X_{16}	Short-term assets rate
X_{17}	Cash assets rate
X_{18}	Return on assets rate
X_{19}	Total assets
X_{20}	Auditor's report time lag (in days)

Source: Boynton & Johnson, 2006; Brigham & Ehrhardt, 2005; Keasey et al., 1988; Laitinen & Laitinen, 1998; Wild et al., 2003; etc.).

example, Boynton & Johnson, 2006; Brigham & Ehrhardt, 2005; Wild, Subramanyam, & Halsey, 2003; etc.). In financial statement analysis, it is conjectured that accounting ratios reveal the financial characteristics of the company. Furthermore, two additional variables are added to the set of accounting ratios. The first variable is an absolute measure of the company's size, where the company's assets are used as a size measure (cf. Keasey et al., 1988; Laitinen & Laitinen, 1998). The second variable is a time lag variable, where the days between the date of the annual closing of the company's financial statements and the date of the signed auditor's report is measured (i.e. compare Laitinen & Laitinen, 1998). All variables from the list are variables for which data can be retrieved from the companies' annual financial statements and the auditors' reports (i.e. because the sample data includes non-listed companies, market variables are not used in this study). The aim of the list of explanatory variables is to enable the identification of the auditor's report qualification.

We follow the approach of many applications in various studies from the previous research and use a logit model (see, for example, Bell & Tabor, 1991; Gaganis et al., 2007; Laitinen & Laitinen, 1998; Pasiouras et al., 2007; among others). There are several reasons for this choice. First, constructing a model to identify an auditor's report is a binary classification problem. Second, the interpretation of logit models' results is relatively easy. Because the transformation is based on the sigmoid logistic regression, the outcome of the model can be interpreted as the probability that the company's auditor's report will be qualified. Third, the logit model has been widely used in various studies (cf., for example, Charitou, Neophytou, & Charalambous, 2004; Ireland, 2003; Maddala, 1991; etc.). Fourth, the logit model has proved to be relatively robust in comparison with various other techniques (cf. for example, Gaganis et al., 2007; Hansen, McDonald, & Stice, 1992; Pasiouras et al., 2007). Lastly, the logit model is widely available for use in various software packages. To all these reasons two more can be added. In comparison with other statistical approaches/techniques, the logit model has the characteristic of simplicity in its usage. Furthermore, validation is possible when the logit model is used. The maximum likelihood method is used to estimate the parameters of the models.

Over 1 million models (1,048,575) were modelled during the iterative process of combining explanatory variables from the list of 20 variables. During this process, every model's results were recorded. Akaike's information criterion (AIC) is used as a selection measure between all competing models. AIC imposes a penalty for adding variables to the model (Gujarati, 2003). The model with the lowest AIC value is preferred. In Table 2, the results are shown for the three models with the lowest AIC value.

Table 2. Results for selected logistic regression models.

Model abbreviation[†]	Number of variables	Akaike's information criterion	Nagelkere's determination coefficient R_N^2	Overall accuracy
Intercept	–	102.1881	–	0.5000
Model_1	8	72.4242	0.4993	0.9625
Model_2	7	72.6653	0.4766	0.9590
Model_3	6	72.7746	0.4551	0.9590

Note: [†]Variables included in the model and parameter values are presented in Table 4.
Source: Own calculation.

As seen in Table 2, the highest value of Nagelkere's determination coefficient (R_N^2) among all presented models is for *Model_1*, with an observed value of 0.499, which means that 49.9% of the dependent variable's variability is explained by the eight variables included in the model. A higher value for the determination coefficient is expected in a model with more variables and vice versa.[7] Given the nature of this research, the value of the determination coefficient is unusually higher than expected in research in the field (Gujarati, 2003; Tabachnick & Fidell, 2001).

5. The identification of qualified auditors' reports

The univariate results in Table 3 present the quartiles of 20 explanatory variables for the group of companies with unqualified auditors' reports and the group of companies with qualified auditors' reports. Quartiles are used instead of means and variances because of the non-normality observed in the sample data. Kruskal-Wallis statistics are used to show statistically significant differences between the group of companies with unqualified auditors' reports and the group of companies with qualified auditors' reports. There are statistically significant differences between the group of companies with unqualified auditor's reports and the group of companies with qualified auditors' reports in X_1, X_2, X_3, X_6, X_9, X_{13}, X_{14} and X_{18} (at the risk level 0.01) and X_5 and X_{11} (at the risk level 0.05). Thus, the companies with qualified auditors' reports have lower debt financing rates, higher indebtness and a worse financial structure than companies with unqualified auditors' reports. The companies with qualified auditors' reports have worse liquidity and efficiency, including negative working capital turnover, a worse trade to receivables ratio and a worse current liabilities turnover, than companies with an unqualified auditor's report. Furthermore, companies with qualified auditors' reports have worse profitability than companies with an unqualified auditor's report. In general, the qualification of an auditor's report is virtually linked to high indebtedness, low liquidity, low efficiency and poor profitability.

A logit model was used to develop the auditor's report identification model. The results for the parameters of three models with the lowest AIC value are provided in Table 4. The estimated parameters cannot be meaningfully interpreted, therefore the odds ratio is calculated. The odds ratio represents the odds of variable X_i to the odds of another variable X_j, $j = 1, \ldots n$, $j \neq i$, where both variables are in the model. The odds ratio can be interpreted in the following way. In the case of *Model_1* the long-term financing to long-term assets ratio (X_3) has a value of 0.06, which means that a company that increases the value of its long-term financing to long-term assets ratio for one unit, ceteris paribus, would have 0.06 times the odds (that is, 0.94 times lower odds) of receiving a qualified auditor's report rather than an unqualified auditor's report. The statistically significant variables are marked in Table 4.

Table 5 shows the performance results. The results show that the overall performance of the developed model is adequate. Identification of unqualified auditors' reports is successful. However, identification of qualified auditors' reports is possible, but not all qualified auditors' reports can be identified with the developed model because values for the false positive rate are lower than expected. All of the performance results were validated using the bootstrap method (n=10,000). The results of this internal validation method are not significantly different in regard to results based on the development sample (see the results in brackets in Table 5). As anticipated, the value of Nagelkere's determination coefficient is lower but not substantially lower.

Table 3. Quartiles of explanatory variables.[†]

	Companies with unqualified auditors' reports (281)			Companies with qualified auditors' reports (12)			Kruskal-Wallis test		
	First quartile	Median	Third quartile	First quartile	Median	Third quartile	χ^2	Stat. sig.	
X_1	0.3938	0.5402	0.7199	0.6500	0.7467	0.8414	7.9712	0.0048	*
X_2	0.7618	1.4579	3.0061	2.6490	4.8761	8.1834	9.5880	0.0020	*
X_3	0.8439	1.0176	1.3767	0.4242	0.6679	0.8920	14.1056	0.0002	*
X_4	0.0427	0.1591	0.3968	0.0218	0.0984	0.2081	2.5669	0.1091	
X_5	0.5433	0.8049	1.1761	0.4662	0.6378	0.7123	5.2727	0.0217	**
X_6	0.8621	1.1495	1.5606	0.5883	0.7121	0.9144	12.2746	0.0005	*
X_7	0.6425	1.0037	1.3643	0.7355	0.9854	1.9023	0.4009	0.5266	
X_8	4.6000	8.6600	21.7250	6.1400	11.2150	25.2200	0.8278	0.3629	
X_9	3.2701	4.7760	7.9323	2.3966	2.8132	4.7814	7.3833	0.0066	*
X_{10}	7.3392	17.2359	53.7435	6.4848	19.6536	32.4450	0.0001	0.9917	
X_{11}	1.0022	1.0267	1.0563	0.9035	0.9861	1.0361	5.1852	0.0228	**
X_{12}	0.6827	0.9645	1.5273	0.6392	0.8088	1.4705	0.7385	0.3901	
X_{13}	−6.3943	4.1002	14.0080	−14.1498	−4.7771	−3.1472	7.9418	0.0048	*
X_{14}	1.8765	2.9085	4.4547	1.1915	1.6650	2.3081	9.7177	0.0018	*
X_{15}	1.3216	2.6774	5.7394	2.2947	4.5884	6.7941	1.8129	0.1782	
X_{16}	0.2884	0.4437	0.6808	0.3189	0.4432	0.6107	0.0804	0.7768	
X_{17}	0.0171	0.0602	0.1273	0.0090	0.0551	0.1495	0.1587	0.6904	
X_{18}	−0.0085	0.0158	0.0562	−0.1185	−0.0253	0.0023	9.6961	0.0018	*
X_{19}	31,827,066	54,227,193	122,532,674	39,293,828	43,219,975	55,733,803	0.7565	0.3844	
X_{20}	85	110	153	94	140	169	1.3109	0.2522	

Notes: [†]A description of the explanatory variables is provided in Table 1.
*Significant at 0.01.
**Significant at 0.05.
Source: Own calculation.

Table 4. Logistic regression results.[†]

	Model_1			Model_2			Model_3		
	Param. est.		Odds ratio	Param. est.		Odds ratio	Param. est.		Odds ratio
X_3	−2.7343	*	0.0649	−2.6895	**	0.0679	−3.5049	**	0.0301
X_6	−6.0364	**	0.0024	−6.2668	**	0.0019	−3.7378	**	0.0238
X_7	1.5418	**	4.6728	1.3696	**	3.9337	1.1998	***	3.3195
X_9	−0.5992	**	0.5492	−0.6058	*	0.5456	−0.6374	*	0.5287
X_{11}	−7.6464		0.0005	–	–	–	–		–
X_{16}	4.5962	***	99.1049	4.0299		56.2538	–		–
X_{19}	0.0000	***	1.0000	0.0000	***	1.0000	0.0000	**	1.0000
X_{20}	−0.0144	**	0.9857	−0.0142	**	0.9859	−0.0124		0.9877
β_0	13.6413	*	840,124.36	6.8497	*	943.5506	7.2700	*	1,436.5666

Notes: [†]Variables X_1, X_2, X_4, X_5, X_8, X_{10}, X_{12}, X_{13}, X_{14}, X_{15}, X_{17} and X_{18} are not shown (that is, these variables are not included in the selected models). A description of explanatory variables is provided in Table 1.
*Significant at 0.01.
**Significant at 0.05.
***Significant at 0.10.
Source: Own calculation.

Table 5. Logistic regression performance results.

	Model_1	Model_2	Model_3
Nagelkere's det. coef. R_N^2 *	0.4993 (0.4253)	0.4766 (0.4044)	0.4551 (0.3846)
Overall accuracy	0.9625	0.9590	0.9590
True positive rate [†]	0.3333	0.2500	0.1667
False positive rate [‡]	0.0107	0.0107	0.0071
c-index *	0.9469 (0.9388)	0.9440 (0.9374)	0.9392 (0.9326)

Notes: [†]The true positive rate presents the correct classification of companies with qualified auditors' reports among the companies with qualified auditors' reports.
[‡]The false positive rate presents the incorrect classification of companies with a qualified auditor's report among the companies with an unqualified auditor's report.
*The results in brackets are the results of internal validation using the bootstrap method (n=10.000).
Source: Own calculation.

6. Conclusion

The aim of the present study was to analyse the qualified auditor's reports of Slovenian companies and to show the circumstances in the company's economic situation that led to the qualification. A statistical logistic model was developed that considers various company ratios (the majority of these are accounting ratios) to explain the qualification of the auditors' reports. The univariate analysis results show that companies with qualified auditors' reports have high indebtedness, low liquidity, low efficiency and poor profitability in comparison with companies with unqualified auditors' reports. This situation can be conjectured to be because the majority of the qualifications in the auditors' reports are linked to inappropriate valuation or recognition of assets, revenues and expenses. From a statistical viewpoint, a logistic model can distinguish between companies that received a qualified auditor's report and those that received an unqualified auditor's report. Analysis of the selected variables does not provide clear evidence of a stronger association between any individually used company's ratio and the identified auditor's report in the sample of companies studied. This can be explained as the lack of correlation between an individual company's accounting ratio and the identified auditor's report. However, a combination of the various companies' ratios indicates that

there is a difference between the companies' ratios for the companies that receive a qualified auditor's report and those that receive an unqualified auditor's report.

These study results reveal that an efficient statistical model to explain qualification of auditors' reports can be constructed for Slovenian (large) companies. The same was previously noted by Laitinen and Laitinen (1998). The developed logistic model presented in this study can, in practice, be used by auditors, regulators, auditing supervision agencies/organisations, agencies that publish company's financial data, academia and anyone else in the ways discussed in the introduction chapter.

Nevertheless, it must be added that (overall) auditing is more a subjective than an objective process. Therefore, an auditor's report is, to some degree, the result of a subjective process where different auditors adopt different risks (e.g. auditors have different preferences regarding misclassifications and/or misclassification costs). An auditing approach using statistical models when conducting an audit can serve as a basis for making necessary decisions on various measures (parameters) during the audit.

The present research represents the first research that studies auditor's report qualification on a sample of large Slovenian companies. The present data did not include any bankrupt companies. A possible course for further research could be a study of auditors' reports regarding Slovenian bankrupt and non-bankrupt companies. The sample of large Slovenian companies used is not a small sample but, because of the nature of the phenomena in the study's research interest, there exists a small frequency problem. The sample used here of examined auditor's reports and company's financial data is limited to only one year (2009). Regarding these sample characteristics, there is an increased risk that the study results are inconclusive (it is possible results are biased). Additionally, further research could study auditors' reports of Slovenian companies in comparison with companies from other countries in the south-eastern region of Europe. Furthermore, the use of novel methodological approaches in the development of an auditor's report qualification model remains an unexplored course of research. An additional unexplored avenue is the possible usage of various other non-financial variables and audit firm/engagement/partner related variables (i.e. audit engagement hours, audit costs, audit fee, and so on). Lastly, because of the possible existence of subjective decision-making by auditors, a possible course of further research is the possible qualitative determinants of an auditor's subjective decision-making process.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes

1. In accordance with the Companies Act (CA-1) and the Auditing Act (AA-2, in Slovene: ZRev-2), an auditor that is appointed to conduct an audit must examine the annual report, the company's financial statements and the administration of the company to the extent required by generally accepted auditing standards. These standards are in accordance with the Slovene Auditing Act (AA-2) International Standards on Auditing (ISA).
2. In the present study, the auditor's report is not classified as qualified when it includes additional auditors' remarks or supplementary information aside from the auditor's assurance that the financial representation of the company's financial statements is true and fair (i.e. additional emphasis of matter paragraphs, explanatory paragraphs or other matter paragraphs in accordance with ISA). Mareque, López-Corrales, and Fiestras (2015) give more in detail pronouncements regarding auditor's report and auditor's opinion for Spain. An auditor's report and auditor's opinion in Slovenia are the same as the auditor's report and auditor's opinion in Spain.

3. In accordance with Article 55 of the Companies Act (CA-1), large companies fulfil at least two criteria out of the following: (1) they have over 250 employees; (2) they have over €8.8 million in net turnover from sales in the financial year; and/or (3) they have assets of at least €17.5 million. The companies that are large according to other (qualitative) measures from Article 55 of the CA-1 (banks, insurance companies, etc) but not according to quantitative criteria defined by Paragraph 5 of Article 55 of the CA-1 are not regarded as large in this study. The data on the companies were acquired from the *GVIN.com* database.
4. The sample of 293 examined companies is not a small sample but while, of these, only 12 companies have a qualified auditor's report, there is a small frequency problem of phenomena in study's research interest. Therefore, the chance that significant differences create a false positive is increased. Furthermore, because of the small frequency problem, the chance that important differences will be missed is increased. Additionally, a sample of 293 examined auditor's reports and company's financial data is limited to only one year (adding more years would require additional study of possible auditor's report/opinion persistency). Regarding all these sample characteristics, there is an increased risk that the study results are inconclusive.
5. There are various reasons for the large apportionment of unqualified auditor's reports within all auditors' reports. Various factors can influence the auditor's decision to qualify the auditor's report. For example, the research results for Slovenian organisations show that managers use various management approaches and the usage of these is subject to various influences (for more details, see Potocan, Nedelko, & Mulej, 2012). It can be conjectured that auditors (as managers of an audit) use various analytical and management approaches during the audit.
6. In the first step, a list of 50 different possible explanatory variables was prepared. A strategy that combines expert knowledge and evidence from previously used explanatory variables found in the various studies with an empirical background (see, for example, Gaganis et al., 2007; Keasey et al., 1988; Laitinen & Laitinen, 1998; Spathis et al., 2003; etc.) was undertaken. The objective of this study is to construct a prediction model using publicly available accounting ratios (these ratios can be computed with the use of company's disclosed financial data). There are many reasons why 50 variables are too numerous (i.e. the impracticability of the developed model, the burdensome task of collecting data on variables, the possible problem of multicollinearity and/or multiple correlation, etc.). Therefore, in the second step, the list of 50 possible variables was reduced to 20 variables using Spearman's rank correlation coefficient. One variable from the pair of variables, which were correlated (i.e. having a value equal or more than 0.5), was omitted from the list.
7. The overall highest value of Nagelkere's determination coefficient (R^2_N) among all developed models is 0.518, which means that 51.8% of the dependant variable's variability is explained by 15 variables included in the model.

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