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„The impact of the COVID-19 pandemic on audit reports  
of Austrian companies listed on the Vienna Stock  
Exchange“

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## **List of abbreviations**

|             |  |
|-------------|--|
| AFRAC.....  | Austrian Financial Reporting and Auditing Committee  |
| ALRKAMs.... | Accounting-Level-Risk Key Audit Matters              |
| ELRKAMs.... | Entity-Level-Risk Key Audit Matters                  |
| IAASB.....  | International Auditing and Assurance Standards Board |
| IASB.....   | International Accounting Standards Board             |
| IFRS.....   | International Financial Reporting Standards          |
| ISA.....    | International Standards of Auditing                  |
| KAMs.....   | Key Audit Matters                                    |
| VIF.....    | Variance Inflation Factor                            |

## 1 Introduction

The COVID-19 Pandemic has been affecting the economic and private life of billions of people since its beginning in 2020 and has led to a world economic crisis. In times of a financial crisis in the financial sector reliable financial statements are essential for decision making. Thereby, a high quality of audits and the value of information content in audit reports has to be ensured.

For investors to trust the correctness of published annual financial statements, adequate reporting by auditors on risks of going concern issues is particularly important.<sup>1</sup> In line with that, Guiral et al. (2014) find that “*qualified going concern audit reports are interpreted as a primary warning signal*”.<sup>2</sup>

Due to recent crisis in history, like the world financial crisis in 2008-2009, literature has discussed the reporting accuracy of auditors.<sup>3</sup> Additionally, there is a discussion, if audit reports provide useful information to the market. Kaplan et al. (2020) show that audit report disclosure of financially distressed public offering firms leads to a significant reduction in information uncertainty.<sup>4</sup> Contrary, Bessell et al. (2003) indicate that modified audit reports for financial stressed companies “*do not appear to significantly enhance either perceptions of risk or decision making*”.<sup>5</sup> Further, “*going concern audit reports are useful for firm valuation purposes*”.<sup>6</sup>

The International Auditing and Assurance Standard Board (IAASB) reacted to the demand for more informative audit reports by setting the International Standard of Auditing<sup>7</sup> ISA 701 – Communicating Audit Matters in the Independent Auditor’s Report. ISA 701 requires the inclusion of key audit matters (KAMs) in the independent auditor’s reports for companies for periods ending on or after December 15th, 2016.

It is of interest, if the COVID-19 crisis is reflected in recent audit reports of listed companies. Due to the unpredictable nature of the COVID-19 pandemic and the

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<sup>1</sup> Kaplan, Taylor, Williams (2020), p 145.

<sup>2</sup> Guiral, Ruiz, Choi (2014), p 44.

<sup>3</sup> Sikka (2009), p 868, Carson et al. (2019), p 2415 and Carson et al. (2013), p 366.

<sup>4</sup> Kaplan, Taylor, Williams (2020), p 125.

<sup>5</sup> Bessell, Anandarajan, Umar (2002), p 261.

<sup>6</sup> Carlson, Glezen, Benefield (1998), p 25.

<sup>7</sup> IAASB (2018)

subsequent economic restrictions, the extent of the impact of COVID-19 on the financial performance of companies might influence auditors' behavior.

Auditors might refer to the crisis with a going concern modified opinion, with an emphasis of matter paragraph for going concern or for COVID-19, or with KAMs that are adapted to the riskier environment caused by the crisis.

This raises the following research questions:

*R. 1: Does the COVID 19 pandemic affect the auditor's opinion?*

*R. 2: What is the relationship between the COVID 19 pandemic and the number and content of KAMs in audit reports?*

*R. 3: What are the determinants of the number and content of KAMs in audit reports?*

The research questions are answered with a descriptive analysis and by testing hypotheses with a linear regression obtained by the panel data method. The observed sample consists of Austrian listed companies on the Vienna Stock Exchange, for which financial information is collected for the period 2017 – 2020 from the publicly available financial statements. Information about the audit opinion and the number and content of KAMs is obtained manually by reading the audit reports.

The thesis is structured as follows: After the introduction the current regulatory environment is discussed briefly by concentrating on the going concern basis of accounting and audit reports in Austria. In the third section the literature review and the hypotheses are presented. Further, the sample selection and the empirical models are introduced. Finally, the results of the study are presented in section six and discussed in section seven.

## 2 Current regulatory environment

### 2.1 The going concern basis of accounting

Since 2005, listed companies have to report in line with the International Financial Reporting Standards<sup>8</sup> (IFRS).<sup>9</sup> Thereby the going concern principle constitutes the basis for the preparation of financial statements (IAS 1.25). It is a general assumption that an entity will be able to remain in business for a certain period of time. As the going concern principle affects the work of both management and auditor, the different responsibilities of them are introduced.

Under IFRS, by preparing financial reports, management must give an assessment of an entity's ability to continue as a going concern. Identified material uncertainties related to events or conditions that may cast significant doubt upon whether the entity is able to continue as a going concern, have to be presented in the financial report adequately (IAS 1.25).

The management has to use all available information about the future, for at least the following twelve months after the closing date. For entities that ran a profitable business and had access to financial resources easily in the past years a detailed analysis is not required to underpin the going concern assumption. If this is not the case, management might have to take several factors into consideration to support decision making. For assessing going concern for example debt settlement plans, possible alternative access to financial resources and the assessment of future profitability can be used (IAS 1.26).

The appropriateness of the management's going concern assumption is also relevant for auditors. The auditor's responsibilities are stated in the International Standards of Auditing:

*“The auditor's responsibilities are to obtain sufficient appropriate audit evidence regarding, and conclude on, the appropriateness of management's use of the going concern basis of accounting in the preparation of the financial statements, and to conclude, based on the audit evidence obtained, whether a material*

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<sup>8</sup> IASB (2020)

<sup>9</sup> Regulation (EC) No 1606/2002 of the European Parliament and of the Council of 19 July 2002 on the application of international accounting standards

*uncertainty exists about the entity's ability to continue as a going concern.” (ISA 570.6)*

Uncertainties are material when disclosure is necessary for the fair presentation of the financial statements (ISA 570.18). If material uncertainties exist, adequate disclosure is made in the financial statements and the use of going concern basis of accounting is appropriate, auditors shall include a separate section in the audit report “Material Uncertainty Related to Going Concern” (ISA 570.22). If disclosure is not made adequately in the financial statements a qualified or adverse opinion must be expressed (ISA 570.23).

The economic crisis may also reflect in the financial reporting of Austrian companies. As the COVID-19 pandemic has increased the uncertainty on developments of businesses the European Securities and Markets Authority (ESMA) published “European common enforcement priorities for 2020 annual financial reports” with a focus on going concern assumptions and the presentation of COVID-19 related items on October 28<sup>th</sup>, 2020.<sup>10</sup>

The ESMA makes clear, that entity-specific disclosures are very important as the crisis may affect different business aspects.<sup>11</sup> It is also recommended that “*issuers disclose qualitative and quantitative information on the significant impacts of COVID-19 and the methodology applied determination*”<sup>12</sup>. It is also mentioned that material uncertainties may arise, inter alia, from the overreliance on temporary public support measures.<sup>13</sup>

## **2.2 Audit reports in Austria**

Audit in Austria has to be conducted in accordance with Regulation (EU) No. 537/2014 on specific requirements regarding statutory audit of public-interest entities (PIEs) and the Austrian generally accepted auditing standards, which are in line with the International Standards of Auditing. For stakeholders, the most informative sections of the independent auditor's report might be the opinion, the emphasis of matter paragraph and the key audit matters.

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<sup>10</sup> ESMA (2020)

<sup>11</sup> ESMA 2020) p 3.

<sup>12</sup> ESMA (2020) p 4.

<sup>13</sup> ESMA 2020) p 3.

**Audit opinion**

One major component of the independent auditor’s report is the audit opinion. Auditors have to “*form an opinion on the financial statements based on an evaluation of the conclusions drawn from the audit evidence obtained*” (ISA 700.6).

The auditor has to decide if an unqualified opinion, a qualified opinion, an adverse opinion or a disclaimer of opinion has to be expressed (ISA 705) (Table 2.1). When the “financial statements are prepared, in all material respects, in accordance with the applicable financial reporting framework” an unmodified opinion is expressed (ISA 700.16).

|   | <b>Auditor’s judgement</b> |                        |
|---|----------------------------|------------------------|
| <b>Nature of matter giving rise to the modification</b>   | Material but not pervasive | Material and pervasive |
| Financial statements are materially misstated             | Qualified opinion          | Adverse opinion        |
| Inability to obtain sufficient appropriate audit evidence | Qualified opinion          | Disclaimer of opinion  |

Table 2.1: Modifications of the audit opinion <sup>14</sup>

As COVID-19 might have an impact on going concern disclosure in audit reports, this study concentrates on modified opinions related to going concern. Similar to Ruhnke and Frey (2015), unqualified opinions with the additional section “Material Uncertainty Related to Going Concern” and qualified/adverse/disclaimed opinions regarding going concern will be called “going concern modified opinions”.

**Emphasis of matter paragraphs**

In order to improve the information content of auditor reports, addition communication to the audit opinion can be made in a separate section of the report. If it is necessary

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<sup>14</sup> ISA 705.A1

for the comprehension of the report, auditors should include an “Emphasis of Matter Paragraph”, which is defined as follows:

*“A paragraph included in the auditor`s report that refers to a matter appropriately presented or disclosed in the financial statements that, in the auditor`s judgment, is of such importance that it is fundamental to users` understanding of the financial statements” (ISA 706.7).*

According to ISA 705.9 an emphasis of matter paragraph should refer to information, that is already presented in the financial statements. In addition, the auditor should communicate that the emphasized matter does not lead to a modification of the audit opinion.

### **Key audit matters**

Further, the ISA require the communication of key audit matters in order to increase transparency of the performed audit, which constitutes the basis for the audit opinion. Due to ISA 701 the inclusion of key audit matters in the independent auditor`s reports is mandatory for listed companies for periods ending on or after December 15th, 2016. ISA 701.8 defines key audit matters as follows:

*“Those matters that, in the auditor`s professional judgment, were of most significance in the audit of the financial statements of the current period.”*

These matters are selected from matters communicated with those charged with governance and include accounting practices, accounting estimates and financial statement disclosures (ISA 260.16).

### 3 Literature review and hypotheses

#### 3.1 Determining factors of audit opinions

Recent literature focuses on determinants of going concern modified opinions by investigating the impact of auditor characteristics, client characteristics and environmental factors, like a financial crisis.

There is evidence in the literature that the **size of the auditing entity** can have an effect on the modification rate of audit reports. To categorize the size of the audit firm, several authors divide the firms in Big 4 audit firms and Non-Big 4 audit firms. The Big 4 firms comprise of Deloitte, EY (Ernst & Young), KPMG and PwC (PricewaterhouseCoopers). Xu et al. (2011) concluded, that Big 4 auditors issue a lower percentage of modified audit reports relative to Non-Big 4 auditors.<sup>15</sup> Contrary, Tagesson and Öhman (2015) find, that Big 4 auditors are more likely to issue going concern warnings.<sup>16</sup> Mareque et al. (2017) find no significant difference between Big 4 and Non-Big 4 auditors in the percentage of reports issued with going concern qualifications.<sup>17</sup>

In addition to this factor the **client size** might influence the propensity of issuing a going concern modified opinion. Geiger et al. (2014) suggest that “*auditors were more likely to increase the probability of a GCO for smaller companies after the start of the GFC, but not for larger companies.*”<sup>18</sup> Similar, Sultanoglu et al. (2018) find that large companies receive fewer modified reports than small companies.<sup>19</sup>

Further, evidence suggests that the amount of going concern modified opinions issued by auditors changes in **times of a financial crisis**. This effect was apparent during the global financial crisis 2008 where it has led to an increase in the amounts of modified opinions in audit reports. Xu et al. (2011) show that the modification rates in audit reports of Australian companies increased from 12 percent in 2005-2007 to 18 to 22

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<sup>15</sup> Xu, Jiang, Fargher, Carson (2011), p. 25.

<sup>16</sup> Tagesson, Öhman (2015), p 175.

<sup>17</sup> Mareque, Corrales, Pedrosa (2017), p154.

<sup>18</sup> Geiger, Raghunandan, Riccardi (2014), p 59.

<sup>19</sup> Sultanoglu, Mugan, Sekerdag, Oran (2018), p 622.

percent in 2008-2009.<sup>20</sup> Carson et al. (2019) also examined the Australian market before and after the global financial crisis and came to the same conclusion. Their results show that the increase in issued going concern opinions in audit reports is not fully explained by changes in client risk. The authors point out that this result may indicate, that “*audit reports with reference to going concern issues have become less informative regarding future corporate failure.*”<sup>21</sup> Ruhnke and Frey (2015) also find an increase of audit reports with a modification regarding going concern during the financial crisis by analyzing German entities in the years 2006-2010.<sup>22</sup> Similar, Mareque et al. (2017) show that the amount of going concern modified reports have increased during the world financial crisis 2008 in Spain.<sup>23</sup> Geiger et al. (2014) find that audit firms significantly increased their propensities to issue going concern opinions for subsequently bankrupt clients after the start of the global financial crisis.<sup>24</sup> The results of Beams and Yan (2015) provide US evidence by showing that during the world financial crisis auditors issued more going concern modified opinions after controlling for other predictors of going concern opinions. After the crisis, the amount of issued going concern modified opinions returned to the pre-crisis level.<sup>25</sup>

This audit conservatism can also be found after the Enron scandal. Feldmann and Read (2010) came to the conclusion, that going-concern modification increased in 2002-2003 compared to 2000-2001 and declined afterwards to the pre-Enron level.<sup>26</sup> The study of Caray et al. (2012) also deals with the change in auditors reporting behavior after corporate collapses in 2001 and found evidence that auditors were more likely to issue going-concern modified opinions in the periods after the scandals. In line with this findings Fargher and Jiang (2008) show, that Australian financially stressed companies received a going concern modified opinion after the crisis period (2000-2002) more likely than the periods before. Similar to Feldmann and Read (2010) the

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<sup>20</sup> Xu, Jiang, Fargher, Carson (2011), p 22.

<sup>21</sup> Carson, Fargher, Zhang (2019), p 2415.

<sup>22</sup> Ruhnke, Frey (2015), p 328.

<sup>23</sup> Mareque, Corrales, Pedrosa (2017), p154.

<sup>24</sup> Geiger, Raghunandan, Riccardi (2014), p 59.

<sup>25</sup> Beams, Yan (2015), p 160.

<sup>26</sup> Feldmann, Read (2010), p 267.

results indicate that this is only a short time effect as there is a decline in the issued going concern modified opinions after 2003.<sup>27</sup>

Due to the unpredictable nature of the COVID-19 pandemic and the subsequent economic restrictions, the extent of the impact of COVID-19 on the financial performance of companies is uncertain. As the pandemic resulted in a financial crisis, this uncertainty might be reflected in the amount of going concern modified opinions in auditor's reports. The literature mentioned above, raises the question of whether or not the COVID-19 crisis has led to an increasing amount of going concern modified audit opinions. Therefore, hypothesis one is formulated as follows:

*H. 1: During the COVID-19 crisis 2019-2020 more going concern modified opinions are issued than in the periods 2017-2018.*

Since the ESMA and the Austrian Kammer der Steuerberater und Wirtschaftsprüfer<sup>28</sup> highlight the importance of the disclosure of qualitative and quantitative information on the significant impacts of COVID-19, audit reports might be more likely to contain an emphasis of matter paragraph.

*H. 2: During the COVID-19 crisis 2019-2020 more emphasis of matter paragraphs are issued than in the periods 2017-2018.*

Although listed companies may have the size to get through the crisis without having to face going concern issues, it is of interest, if the COVID-19 crisis has an impact on the number and/or the content of key audit matters in the independent auditor's reports.

### **3.2 Determining factors of KAMs**

New audit regulation, the ISA 701, has changed the content of audit reports in 2016. Since then, the required key audit matters were a matter of interest for research. Pinto and Morais (2018) might be the first authors who investigated the determinants of the KAMs' disclosure.<sup>29</sup> The following years several articles follow them by discussing determining factors of KAMs and show the relationship between the auditor

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<sup>27</sup> Fargher and Jiang (2008), p 55.

<sup>28</sup> ESMA (2020) and KSW (2020)

<sup>29</sup> Pinto and Morais (2018), p 157.

characteristics, client characteristics and external factors on the content and number of KAMs.

Literature shows that **auditor characteristics** might impact the KAMs disclosure. Thereby, the studies focus on audit fee and auditor size. There is evidence that the number of reported KAMs depend on the **audit fee**. Pinto and Morais (2018) find a positive association between audit fee and the number of KAMs in the audit report.<sup>30</sup> Sierra-García et al. (2019) also examine the relationship between audit fee and KAMs disclosure and show that auditors present more entity-level-risk KAMs and fewer accounting-level-risk KAM in reports of companies that pay higher audit services fees.<sup>31</sup>

Wuttichindanon and Issarawornrawanich (2020) conclude that Big-4 auditors in Thailand report a higher number of KAM.<sup>32</sup> On the contrary, Pérez Pérez et al. (2021) investigated the Spanish market and cannot confirm that the **audit size** has an impact on KAMs.<sup>33</sup> Kend and Nguyen (2020) find differences between audit firms and the average number of reported KAMs. Their results show that the audit firm PwC was the one with the highest average number of reported KAMs per audit report.<sup>34</sup> In line with this result Sierra-García et al. (2019) come to the conclusion that PwC reports more KAMs than the other audit firms. They explain this effect with the complexity of PwC's clients.

There is also evidence that **client characteristics** have an impact on KAMs. Pinto and Morais (2018) show that companies with a higher **complexity**, which is defined as the number of business segments, are more likely to have a higher number of KAMs reported by their auditors.<sup>35</sup> In line with this result, Wuttichindanon and Issarawornrawanich (2020) suggest that audit reports of firms with many subsidiaries include more KAMs than others with less subsidiaries.<sup>36</sup>

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<sup>30</sup> Pinto and Morais (2018), p 145.

<sup>31</sup> Sierra-García et al. (2019), p 235 f.

<sup>32</sup> Wuttichindanon and Issarawornrawanich (2020), p 563.

<sup>33</sup> Pérez Pérez, Camacho-Miñano, Segovia-Vargas (2021), p 56.

<sup>34</sup> Kend and Nguyen (2020), p 427.

<sup>35</sup> Pinto and Morais (2018), p 145.

<sup>36</sup> Wuttichindanon and Issarawornrawanich (2020), p 563.

Pinto and Morais (2018) come to the result that the **sector** in which the company operates, has an influence on the number of KAMs disclosed. They find a negative association between banks and the number of KAMs in Europe and explain this effect with the high regulation standards in this sector.<sup>37</sup> Contrary, Kend and Nguyen (2020) point out that in audit reports for companies in the banking sector in Australia on average more KAMs are reported than in any other sector.<sup>38</sup> Similar, Wuttichindanon and Issarawornrawanich (2020) show that the finance and the construction industries in Thailand have higher numbers of KAMs.<sup>39</sup>

In addition, the impact of the **regulation environment** on KAMs disclosure is discussed in recent literature. Pinto et al. (2020) deal with the impact of the precision of accounting standards on KAMs disclosure and find that more precise accounting standards increase the probability of a KAM. Further, the readability of auditor's reports decreases if the KAM is based on higher rule-based accounting standards.<sup>40</sup> Abdullatif and Al-Rahahleh (2020) discuss the impact of the regulatory environment on developing countries and suggest that auditors in Jordan tend to report industry-specific KAMs rather than entity-specific KAMs in 2017 and 2018 and avoid KAMs related to government and internal controls. The results of interviews with the auditors show that the ISA 701 is not formulated clear enough and that auditors have to keep their relationship to their clients in mind when formulating KAMs.<sup>41</sup>

To conclude, the impact of auditor and client characteristics on the number and content of KAMs is already discussed in literature, but until now there is no evidence provided for the Austrian market. Similar to Sierra-García et al. (2019) hypotheses H. 3 and H. 4 are proposed:

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<sup>37</sup> Pinto and Morais (2018), p 146.

<sup>38</sup> Kend and Nguyen (2020), p 417.

<sup>39</sup> Wuttichindanon and Issarawornrawanich (2020), p 563.

<sup>40</sup> Pinto, Morais, Quick (2020), p 1.

<sup>41</sup> Abdullatif and Al-Rahahleh (2020), p 268.

*H. 3: The total number of KAMs included in the audit report is determined by auditor and client characteristics.*

*H. 4: The number of each type of KAMs included in the audit report is determined by auditor and client characteristics.*

Besides client and auditor characteristics, external factors, like the present state of the economy, might influence the composition of KAMs in audit reports. Until now there is, as far as is known, no study that deals with the impact of a financial crisis on KAMs. Auditors have to adapt to crisis-related risks when performing an audit. Therefore, the number and content of the most significant matters in the audit might change in times of a financial crisis. As auditors should refer to accounting estimates that contain a high estimation uncertainty (ISA 701.9), the COVID-19 crisis might especially be reflected in KAMs that are based on Accounting Standards dealing with Impairment of Assets.

To fill this gap in the literature the following hypotheses regarding the impact of the COVID-19 crisis on KAMs in audit reports of Austrian listed companies on the Vienna Stock Exchange are going to be tested:

*H. 5: The total number of KAMs included in the audit report is determined by the existence of a financial crisis.*

*H. 6: The number of each type of KAMs included in the audit report is determined by the existence of a financial crisis.*

#### 4 Sample and data

The study focuses on the Austrian market and examines the years 2017-2020. The annual financial reports of Austrian listed companies on the Vienna Stock Exchange's regulated market, which were continuously listed between 1.1.2017 and 31.12.2020, were collected. The key audit matters could be found in each of these reports, as it is a statutory requirement to include them in the independent auditor's reports. The annual financial reports in English were downloaded from the investor relation section of the companies' websites.

As the COVID-19 crisis reached Austria in March 2020 the study covers the financial reports two years before the crisis (2017-2018) and two years throughout the crisis (2019-2020). To obtain the sample of companies, a search on the website of the Austrian Stock Exchange was conducted.<sup>42</sup> To capture all Austrian companies that were listed in February 2021 on the Vienna Stock Exchange's regulated market the keywords "land: Austria" and "market: regulated market" were used for the search. From this search a beginning sample of 56 companies was obtained. In a next step all companies, that were newly listed within the period 01.01.2017 – 31.12.2020 were excluded to gain a sample of companies which were listed throughout the whole period without interruption. The remaining sample contained 51 companies. As one aim of the study is to analyze the key audit matters by assigning them to international financial reporting standards, the sample was reduced by all companies that reported only in national GAAP. This leaves a final sample 1 of 46 companies, from each of which the annual financial report is evaluated per year. In total, 184 reports are analyzed.

As not all variables of the model are suitable for financial institutions, the sample for the regression analysis is reduced by 10 industrial companies. This leaves a final sample for the regression analysis of 36 companies (sample 2). Nevertheless, the descriptive statistics for going concern and KAMs include all 46 companies (sample 1), as the variables of the tables are applicable for all industries.

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<sup>42</sup> Wiener Börse (2021)

| <b>Sample selection</b>   | Number of companies |
|---|---------------------|
| Number of companies from a search of the Vienna Stock Exchange    | 56                  |
| <u>Less:</u>  |                     |
| Companies that were newly listed within 01.01.2017 and 31.12.2020 | 5                   |
| Companies that report in national GAAP only                       | 5                   |
|   | 10                  |
| <b>Remaining sample 1</b>   | <b>46</b>           |
| <u>Less:</u>  |                     |
| Companies operating in the financial sector                       | 10                  |
| <b>Remaining sample 2</b>   | <b>36</b>           |

Table 4.1: Sample selection

## 5 Research design

### 5.1 Empirical models

For testing the hypotheses mentioned above the research design is divided into two parts.

First, hypothesis 1 (“During the COVID-19 crisis 2019-2020 more going concern modified opinions are issued than in the periods 2017-2018”) and hypothesis 2 (“During the COVID-19 crisis 2019-2020 more emphasis of matter paragraphs are issued than in the periods 2017-2018”), which refer to the impact of the COVID-19 crisis on going concern modified opinions, are verified by the use of descriptive statistics, as the amount of going concern modified opinions in the sample is vanishingly small.

Second, to test hypotheses 3 (“The total number of KAMs included in the audit report is determined by auditor and client characteristics”), 4 (“The number of each type of KAMs included in the audit report is determined by auditor and client characteristics”), 5 (“The total number of KAMs included in the audit report is determined by the existence of a financial crisis”) and 6 (“The number of each type of KAMs included in the audit report is determined by the existence of a financial crisis”) a linear regression model obtained by the data panel method is used. Thereby the study is based on the model of Sierra-García et al. (2019). This method is chosen because it allows to

analyze cross section and time series data at the same time, which is necessary to test the impact of several characteristics on the number of KAMs over the observation period of 4 years.

In order to select the most suitable regression method for the available panel data the Breush-Pagan Lagrangian multiplier test and the Hausman test was conducted. In a first step, the Breush-Pagan Lagrangian multiplier test showed that there is no heteroscedasticity in the data set and therefore a panel data model is preferable to an OLS model. In a second step the question if a fixed effects or a random effects model should be used had to be answered. In the Hausman test a random effects model is preferred under the null hypothesis due to higher efficiency. As the Null could not be rejected, the random effects model is used in the thesis.

As some information is not available for the Austrian market, the model is adapted as follows: First, the variable MATERIALITY is not included, as in contrast to audit reports in the United Kingdom independent audit reports in Austria do not include information about the materiality, on which the audit is performed. Second, the variable SPECIALIST had to be excluded due to missing data. After consulting the Audit Oversight Body of Austria (Abschlussprüferaufsichtsbehörde, APAB), the Austrian Institute for auditors (Institut für Wirtschaftsprüfer, IWP) and the Chamber of tax consultants and auditors (Kammer der Steuerberater und Wirtschaftsprüfer, KSW), it turned out that the data for the market share of audit firms per industry for the Austrian market is only available in anonymized form and therefore not usable for the study. Another change is the interpretation of the explanatory variable YEARS, as the year 2020 is defined as the year of the COVID-19 crisis.

Therefore, hypotheses 3 and 5 are tested by the following model (model 1):

$$\begin{aligned} \#KAM_{i,t} = & \beta_0 + \beta_1 AUDIT\ FIRM_{i,t} + \beta_2 AUDIT\ FEES_{i,t} \\ & + \beta_3 NON - AUDIT\ FEES\ RATIO_{i,t} + \beta_4 SWITCH_{i,t} + \beta_5 SIZE_{i,t} \\ & + \beta_6 LEVERAGE_{i,t} + \beta_7 CURRENT\ RATIO_{i,t} + \beta_8 ROA_{i,t} + \beta_9 LOSS_{i,t} \\ & + \beta_{10} COMPLEXITY_{i,t} + \beta_{11} REVENUES_{i,t} + \beta_{12} INVENTORIES_{i,t} \\ & + \beta_{13} PPE_{i,t} + \beta_{14} GOODWILL_{i,t} + \beta_{15} INTANGIBLES_{i,t} + \beta_{16} INDUSTRY_{i,t} \\ & + CONTROLS (YEAR - END, YEARS) + u_{i,t} \end{aligned}$$

For testing hypotheses 4 and 6 the key audit matters are divided into two groups, the entity-level risk KAM (ELRKAM) and the account-level-risk KAM (ALRKAM) following

Lennox et al. (2017) and Sierra Garcia et al. (2019). This leads to the following models (model 2a and model 2b):

$$\begin{aligned} \#ELRKAM_{i,t} = & \beta_0 + \beta_1 AUDIT FIRM_{i,t} + \beta_2 AUDIT FEES_{i,t} \\ & + \beta_3 NON - AUDIT FEES RATIO_{i,t} + \beta_4 SWITCH_{i,t} + \beta_5 SIZE_{i,t} \\ & + \beta_6 LEVERAGE_{i,t} + \beta_7 CURRENT RATIO_{i,t} + \beta_8 ROA_{i,t} + \beta_9 LOSS_{i,t} \\ & + \beta_{10} COMPLEXITY_{i,t} + \beta_{11} GOODWILL_{i,t} + \beta_{12} INDUSTRY_{i,t} \\ & + CONTROLS (YEAR - END, YEARS) + u_{i,t} \end{aligned}$$

$$\begin{aligned} \#ALRKAM_{i,t} = & \beta_0 + \beta_1 AUDIT FIRM_{i,t} + \beta_2 AUDIT FEES_{i,t} \\ & + \beta_3 NON - AUDIT FEES RATIO_{i,t} + \beta_4 SWITCH_{i,t} + \beta_5 REVENUES_{i,t} \\ & + \beta_6 INVENTORIES_{i,t} + \beta_7 PPE_{i,t} + \beta_8 INTANGIBLES_{i,t} + \beta_9 INDUSTRY_{i,t} \\ & + CONTROLS (YEAR - END, YEARS) + u_{i,t} \end{aligned}$$

$$u_{i,t} = \mu_i + e_{i,t}$$

For testing the hypotheses all auditor's reports on the consolidated financial statements, which are included in the annual financial statements of the above defined companies in the periods 2017-2020 were analyzed. All quantitative and qualitative data was collected by the use of the Thomson Reuters EIKON database<sup>43</sup> and by manually reviewing all audit reports and categorizing the content of the audit opinions and the key audit matters.

## 5.2 Study variables

### 5.2.1 Variables for going concern

Based on Xu et al. (2011) the audit opinion, which is included in the auditor's reports on the consolidated financial statements was categorized in the first step in (1) unqualified, (2) qualified and (3) adverse/disclaimed.

As the ESMA highlights the importance of qualitative and quantitative information on the significant impacts of COVID-19 in financial statements, the information in the emphasis of matter paragraph was analyzed. Therefore, the qualified and unqualified opinions were combined with the information of the emphasis of matter paragraphs.

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<sup>43</sup> The Thomson Reuters EIKON database, URL: <https://eikon.thomsonreuters.com/index.html>

The qualified opinion was categorized in (1) qualified for going concern, (2) qualified for others, (3) qualified with emphasis of matter for others and (4) qualified with emphasis of matter for going concern. Similar, the unqualified opinions were divided into (1) unmodified, which means that no emphasis of matter paragraph is in the auditor's report, (2) with an emphasis of matter for going concern, (3) with an emphasis of matter for COVID-19 and (4) with an emphasis of matter for others.<sup>44</sup>

The observation year was connected to the reporting year insofar as that the year of the reporting date is counted as the observation year, independent of the month of the reporting date. The years 2019 and 2020 are determined as years within the crisis. Although the COVID-19 pandemic has reached Austria in March 2020, annual financial reports for the year 2019 might refer to the crisis. This is because the Austrian Financial Reporting and Auditing Committee (AFRAC) classified the COVID-19 pandemic as a significant value-creating event. Therefore, the impact of the pandemic on the financial performance of the company has to be discussed in the notes to the consolidated financial statements.<sup>45</sup> As result also audit reports for the year 2019 might include emphasis of matter regarding COVID-19.

### **5.2.2 Variables for KAMs**

The linear regression model uses dependent, explanatory and control variables.

The dependent variables are the total number of KAMs included in the audit reports (#KAMs), the total number of entity-level-risk KAMs (#ELRKAMs) and the total number of accounting level-risk KAMs (#ALRKAMs). Similar to Pinto, Morais and Quick (2020) the KAMs were assigned to accounting standards (IFRS).<sup>46</sup> Afterwards, following Lennox et al. (2017) and Sierra Garcia et al. (2019), the KAMs were grouped into ELRKAMs and ALRKAMs. ELRKAMs include all KAMs that refer to the whole entity, whereas ALRKAMs include KAMs that include information about specific accounts.

In order to test the impact of auditor and client characteristics on the number of KAMs included in the audit reports, the following explanatory variables are defined:

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<sup>44</sup> Xu, Jiang, Fargher, Carson (2011), p 24.

<sup>45</sup> AFRAC (2020), p 5.

<sup>46</sup> Pinto, Morais and Quick (2020), p 11.

For each auditor's report the name of the AUDIT FIRM was collected by reading the audit reports. The identified audit firms were ranked 0 to 7. As EY reports the highest total number of KAMs in sample 2, this audit firm is taken as the reference.

Additionally, for the descriptive statistics, the firms were categorized into Big 4 firm and Non-Big 4. Thereby, the Big 4 firms comprise of Deloitte, EY (Ernst & Young), KPMG and PwC (PricewaterhouseCoopers).

Further, the variable AUDIT FEE is considered in the model. It reflects the amount of money, a client has to pay the auditor for conducting the audit. As a higher number of KAMs may lead to higher audit effort and auditing cost and therefore to a higher audit fee, a positive association between the number of reported KAMs and the value of the audit fee is expected.<sup>47</sup> To avoid problems of scale, the natural logarithm is used.<sup>48</sup> As the relation between non-audit fees and audit fees might be an indicator for the auditor independence<sup>49</sup>, the variable NON-AUDIT FEE RATIO is implemented in the model. It is calculated by dividing the non-audit fee with the total fee paid to the auditor. Audit fee data was obtained from the Thomson Reuters EIKON database. Missing data was manually collected from the annual reports.

In order to cover a change of the audit firm between the reporting years the variable SWITCH is used. It takes the value 1 if the auditor firm changes in comparison to the previous period. Otherwise, the value is 0.<sup>50</sup> As audit firms might differ in experience and in setting priorities for the audit, the change might have an impact on the number and content of KAMs.<sup>51</sup>

The model also comprises of variables for client characteristics. First, the SIZE of the client is considered. Therefore, the natural log of total assets is used.<sup>52</sup> As a larger

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<sup>47</sup> Pinto, Morais (2018), p 145 and Sierra-García et al. (2019), p 223.

<sup>48</sup> Bedard, Gonthier-Besacier, Schatt (2014) and Sierra-García et al. (2019)

<sup>49</sup> Causholli, Chambers, Payne (2014), Quick and Warming-Rasmussen (2015), p 150 and Sierra-García et al (2019), p 223.

<sup>50</sup> Brown, Knechel (2016) p 738 and Sierra-García et al. (2019), p 232.

<sup>51</sup> Sierra-García et al. (2019), p 232.

<sup>52</sup> Sierra-García et al. (2019), p 232, Goodwin-Stewart, Kent (2006), p. 393 and Prawitt, Sharp, Wood (2011), p 19.

company might face a higher number of risks an auditor has to adapt to, it is expected, that the number of KAMs is positive correlated with the client size.<sup>53</sup>

Another characteristic of interest is the financial situation of the client. To cover the effect of potential financial problems the variable LEVERAGE is used, which is calculated by dividing total debt by total assets.<sup>54</sup> As companies with a higher leverage might require more audit effort, a higher leverage might lead to a higher number of KAMs.<sup>55</sup> Data for total assets and debt was fully obtained from the Thomson Reuters EIKON database.

Furthermore, the liquidity of the client might influence the number and content of KAMs. Therefore, the variable CURRENT RATIO is used as a proxy.<sup>56</sup> It is calculated by dividing total current assets by total current liabilities. A higher liquidity risk is expected to increase the total number of KAMs in the audit report.<sup>57</sup> Data comes from the Thomson Reuters EIKON database when available.

Additionally, the profitability of the client is included in the model by using the variable ROA. It is measured as the ratio of profit before taxes to total assets.<sup>58</sup> The model also considers if the client faced a LOSS the previous year. If losses had occurred, the variable takes on the value 1 and 0 otherwise.<sup>59</sup>

Another characteristic of clients is the COMPLEXITY. The variable comprises of the number of subsidiaries a client has.<sup>60</sup> More subsidiaries might lead to complex business structures and therefore to more audit effort and as a result to a higher number of KAMs in the audit report.<sup>61</sup>

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<sup>53</sup> Sierra-García et al. (2019), p 232.

<sup>54</sup> Sierra-García et al. (2019), p 232, Beasley, Salterio (2001), p 553, Klein (2002), p 388, Wu et al. (2016), p 249.

<sup>55</sup> Sierra-García et al. (2019), p 232.

<sup>56</sup> Sierra-García et al. (2019), p 233, Hay et al. (2006), p 159, Ho, Hutchinson (2010), p 127.

<sup>57</sup> Sierra-García et al. (2019), p 233.

<sup>58</sup> Sierra-García et al. (2019), p 233 and Velte (2018), p 750.

<sup>59</sup> Sierra-García et al. (2019), p 233, DeFond, Zhang (2014), p 292, Lai, Gul (2008), p 221 and Zaman, Hudaib, Haniffa (2011), p 174.

<sup>60</sup> Sierra-García et al. (2019), p 233, André et al. (2016)

<sup>61</sup> Sierra-García et al. (2019), p 233.

Furthermore, the complexity of transactions and business should be reflected in the model. Therefore, the natural logarithm of GOODWILL, REVENUES, INVENTORIES, PPE (Property, Plant and Equipment), and INTANGIBLES are added as explanatory variables.<sup>62</sup>

The categorical variable INDUSTRY describes the business sector the client operates in.<sup>63</sup> To divide the sample into sectors, the structure of the Global Industry Classification Standards (GICS) was used, which was introduced by MSCI and S&P Dow Jones Indices in 1999. With the help of the GICS 11 sectors, 24 industry groups, 69 industries and 158 sub-industries can be defined.<sup>64</sup> To adapt to the sample size, the highest level of the GICS was chosen and the sample was divided into 11 sectors.

As the sample consists of companies with differently defined financial years, the control variable YEAR-END is included in the model. The busy season of audit firms is usually between January and April because most companies end their financial year at the end of December. It therefore controls the impact of the busy season on the number of KAMs. For all companies, that end their financial year on December 31<sup>st</sup> the variable takes on the value 1 and 0 otherwise.<sup>65</sup> As the model should test the impact of the COVID-19 crisis the variable YEAR is used for the years 2017, 2018, 2019 and 2020. As auditors define the KAMs in advance (at the beginning of the audit) the crisis might only be reflected in audit reports of the year 2020. As the crisis might lead to a riskier environment for the clients, auditors might react to the crisis by including a higher number of KAMs.

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<sup>62</sup> Sierra-García et al. (2019), p 233.

<sup>63</sup> Sierra-García et al. (2019), p 233.

<sup>64</sup> MSCI (2020)

<sup>65</sup> Sierra-García et al. (2019), p 233 and Bedard, Gonthier-Besacrier, Schatt (2014), p 14.

## 5.3 Descriptive statistics

### 5.3.1 Descriptive statistics for going concern

Table 5.1 shows the frequency of the audit report type per period for the years 2017-2020. Within the audit reports with an unqualified opinion the number of emphasis of matter paragraphs is very small. In the years 2017-2019, each year one emphasis of matter paragraph was included in the audit reports. In 2017, by observing 46 audit reports, one emphasis of matter paragraph for going concern was comprised. The following year only one company received an emphasis of matter paragraph for others. The COVID-19 crisis led to one emphasis of matter for COVID in 2019 and to one in 2020. Additionally, in 2020, one emphasis of matter for going concern was issued. Further, within the whole observation period no qualified opinion was issued.

| Frequency of audit report type per period           | Total      |             | 2017      |             | 2018      |             | 2019      |             | 2020      |             |
|---|------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|
|   | No         | (%)         | No        | (%)         | No        | (%)         | No        | (%)         | No        | (%)         |
| Unqualified   |            |             |           |             |           |             |           |             |           |             |
| unmodified  | 179        | 97.3%       | 45        | 97.8%       | 45        | 97.8%       | 45        | 97.8%       | 44        | 95.7%       |
| with an emphasis of matter for going concern        | 2          | 1.1%        | 1         | 2.2%        | 0         | 0.0%        | 0         | 0.0%        | 1         | 2.2%        |
| with an emphasis of matter for COVID                | 2          | 1.1%        | 0         | 0.0%        | 0         | 0.0%        | 1         | 2.2%        | 1         | 2.2%        |
| with an emphasis of matter for others               | 1          | 0.5%        | 0         | 0.0%        | 1         | 2.2%        | 0         | 0.0%        | 0         | 0.0%        |
| <b>Total unqualified</b>                            | <b>184</b> | <b>100%</b> | <b>46</b> | <b>100%</b> | <b>46</b> | <b>100%</b> | <b>46</b> | <b>100%</b> | <b>46</b> | <b>100%</b> |
| Qualified   |            |             |           |             |           |             |           |             |           |             |
| qualified for going concern,                        | 0          | 0%          | 0         | 0%          | 0         | 0%          | 0         | 0%          | 0         | 0%          |
| qualified for others                                | 0          | 0%          | 0         | 0%          | 0         | 0%          | 0         | 0%          | 0         | 0%          |
| qualified with emphasis of matter for others        | 0          | 0%          | 0         | 0%          | 0         | 0%          | 0         | 0%          | 0         | 0%          |
| qualified with emphasis of matter for going concern | 0          | 0%          | 0         | 0%          | 0         | 0%          | 0         | 0%          | 0         | 0%          |
| Adverse/Disclaimer                                  | 0          | 0%          | 0         | 0%          | 0         | 0%          | 0         | 0%          | 0         | 0%          |
| <b>Total qualified</b>                              | <b>0</b>   | <b>0%</b>   | <b>0</b>  | <b>0%</b>   | <b>0</b>  | <b>0%</b>   | <b>0</b>  | <b>0%</b>   | <b>0</b>  | <b>0%</b>   |
| <b>Total number of audit reports</b>                | <b>184</b> | <b>100%</b> | <b>46</b> | <b>100%</b> | <b>46</b> | <b>100%</b> | <b>46</b> | <b>100%</b> | <b>46</b> | <b>100%</b> |

Table 5.1: Frequency of audit report type per period

Table 5.2 gives an overview of the type of audit report by audit firm and the total number of audit reports per audit firm. In each period KPMG was the audit firm with the highest number of audit reports. In 2017 18 companies were audited by KPMG. One year later KPMG audited 20 companies and issued one emphasis of matter paragraph, which is not related to going concern or COVID-19. 2019 and 2020 the number slightly declined to 19 and 18 reports.

The audit firm with the second highest number of audit reports was EY with 10 reports in each year between 2017 and 2019 and 9 reports in 2020. EY issued one emphasis of matter paragraph for going concern in 2020.

| Type of audit report by audit firm | 2017       |            |            |                | 2018       |            |            |                |
|------------------------------------|------------|------------|------------|----------------|------------|------------|------------|----------------|
|                                    | Total      | Unmodified | Modified   |                | Total      | Unmodified | Modified   |                |
|                                    |            |            | EoM        | Qualifications |            |            | EoM        | Qualifications |
| Deloitte                           | 4          | 3          | 1          | 0              | 3          | 3          | 0          | 0              |
| EY                                 | 10         | 10         | 0          | 0              | 10         | 10         | 0          | 0              |
| KPMG                               | 18         | 18         | 0          | 0              | 20         | 19         | 1          | 0              |
| PwC                                | 6          | 6          | 0          | 0              | 5          | 5          | 0          | 0              |
| <b>Big 4 Average</b>               | <b>9.5</b> | <b>9.3</b> | <b>0.3</b> | <b>0.0</b>     | <b>9.5</b> | <b>9.3</b> | <b>0.3</b> | <b>0.0</b>     |
| BDO                                | 4          | 4          | 0          | 0              | 4          | 4          | 0          | 0              |
| PKF Centurion                      | 1          | 1          | 0          | 0              | 1          | 1          | 0          | 0              |
| Grant Thornton                     | 2          | 2          | 0          | 0              | 2          | 2          | 0          | 0              |
| SOT                                | 1          | 1          | 0          | 0              | 1          | 1          | 0          | 0              |
| <b>Non-Big 4 Average</b>           | <b>2.0</b> | <b>2.0</b> | <b>0.0</b> | <b>0.0</b>     | <b>2.0</b> | <b>2.0</b> | <b>0.0</b> | <b>0.0</b>     |
| <b>Total</b>                       | <b>46</b>  | <b>45</b>  | <b>1</b>   | <b>0</b>       | <b>46</b>  | <b>45</b>  | <b>1</b>   | <b>0</b>       |

| Type of audit report by audit firm | 2019       |            |            |                | 2020        |            |            |                |
|------------------------------------|------------|------------|------------|----------------|-------------|------------|------------|----------------|
|                                    | Total      | Unmodified | Modified   |                | Total       | Unmodified | Modified   |                |
|                                    |            |            | EoM        | Qualifications |             |            | EoM        | Qualifications |
| Deloitte                           | 3          | 3          | 0          | 0              | 4           | 4          | 0          | 0              |
| EY                                 | 10         | 10         | 0          | 0              | 9           | 8          | 1          | 0              |
| KPMG                               | 19         | 19         | 0          | 0              | 18          | 18         | 0          | 0              |
| PwC                                | 7          | 7          | 0          | 0              | 9           | 8          | 1          | 0              |
| <b>Big 4 Average</b>               | <b>9.8</b> | <b>9.8</b> | <b>0.0</b> | <b>0.0</b>     | <b>10.0</b> | <b>9.5</b> | <b>0.5</b> | <b>0.0</b>     |
| BDO                                | 5          | 4          | 1          | 0              | 5           | 5          | 0          | 0              |
| PKF Centurion                      | 1          | 1          | 0          | 0              | 1           | 1          | 0          | 0              |
| Grant Thornton                     | 1          | 1          | 0          | 0              | 0           | 0          | 0          | 0              |
| SOT                                | 0          | 0          | 0          | 0              | 0           | 0          | 0          | 0              |
| <b>Non-Big 4 Average</b>           | <b>1.8</b> | <b>1.5</b> | <b>0.3</b> | <b>0.0</b>     | <b>1.5</b>  | <b>1.5</b> | <b>0.0</b> | <b>0.0</b>     |
| <b>Total</b>                       | <b>46</b>  | <b>45</b>  | <b>1</b>   | <b>0</b>       | <b>46</b>   | <b>44</b>  | <b>2</b>   | <b>0</b>       |

Table 5.2: Type of audit report by audit firm

The audit firm PwC has increased their number of reports during the observation period. 2017 6 companies were audited by PwC, 2020 9 companies. PwC was the only audit firm, that issued one emphasis of matter paragraph for COVID-19 in 2020.

Out of the Non-Big 4 audit firms, BDO audited most of the Austrian listed companies with a number between 4 and 5 reports per year. They issued as the only one an emphasis of matter paragraph for COVID-19 in 2019.

Deloitte comes after BDO with a number of 3 to 5 audits per year and one emphasis of matter paragraph for going concern in 2017.

The other Non-Big 4 audit firms PKF Centurion, Grant Thornton and SOT (Süd-Ost-Treuhand) were responsible for 1 to 2 audits per year and included no emphasis of matter paragraphs in their reports.

| Types of audit report by industry | 2017      |            |          |                | 2018      |            |          |                |
|-----------------------------------|-----------|------------|----------|----------------|-----------|------------|----------|----------------|
|                                   | Total     | Unmodified | Modified |                | Total     | Unmodified | Modified |                |
|                                   |           |            | EoM      | Qualifications |           |            | EoM      | Qualifications |
| Materials                         | 3         | 3          | 0        | 0              | 3         | 3          | 0        | 0              |
| Industrial                        | 20        | 20         | 0        | 0              | 20        | 20         | 0        | 0              |
| Consumer discretionary            | 2         | 1          | 1        | 0              | 2         | 2          | 0        | 0              |
| Consumer staples                  | 3         | 3          | 0        | 0              | 3         | 3          | 0        | 0              |
| Financials                        | 10        | 10         | 0        | 0              | 10        | 10         | 0        | 0              |
| Communication services            | 2         | 2          | 0        | 0              | 2         | 2          | 0        | 0              |
| Utilities                         | 2         | 2          | 0        | 0              | 2         | 2          | 0        | 0              |
| Real Estate                       | 4         | 4          | 0        | 0              | 4         | 3          | 1        | 0              |
| <b>Total</b>                      | <b>46</b> | <b>45</b>  | <b>1</b> | <b>0</b>       | <b>46</b> | <b>45</b>  | <b>1</b> | <b>0</b>       |

| Types of audit report by industry | 2019      |            |          |                | 2020      |            |          |                |
|-----------------------------------|-----------|------------|----------|----------------|-----------|------------|----------|----------------|
|                                   | Total     | Unmodified | Modified |                | Total     | Unmodified | Modified |                |
|                                   |           |            | EoM      | Qualifications |           |            | EoM      | Qualifications |
| Materials                         | 3         | 3          | 0        | 0              | 3         | 3          | 0        | 0              |
| Industrial                        | 20        | 20         | 0        | 0              | 20        | 20         | 0        | 0              |
| Consumer discretionary            | 2         | 2          | 0        | 0              | 2         | 1          | 1        | 0              |
| Consumer staples                  | 3         | 2          | 1        | 0              | 3         | 2          | 1        | 0              |
| Financials                        | 10        | 10         | 0        | 0              | 10        | 10         | 0        | 0              |
| Communication services            | 2         | 2          | 0        | 0              | 2         | 2          | 0        | 0              |
| Utilities                         | 2         | 2          | 0        | 0              | 2         | 2          | 0        | 0              |
| Real Estate                       | 4         | 4          | 0        | 0              | 4         | 4          | 0        | 0              |
| <b>Total</b>                      | <b>46</b> | <b>45</b>  | <b>1</b> | <b>0</b>       | <b>46</b> | <b>44</b>  | <b>2</b> | <b>0</b>       |

Table 5.3: Types of audit report by industry

Additionally, the companies of the sample were divided into different industries following the GICS Code (Table 5.3). Within the total sample of 46 companies per period 20 companies operate in the industrial sector. The second largest group are the financials with 10 companies. The remaining companies operate in the sectors materials, consumers discretionary, consumer staples, communication services, utilities and real estate. In 2017 one modified audit report was issued for a company in the consumer discretionary sector. In 2018 on real estate company was affected. In 2019 and 2020 one emphasis of matter paragraph was included in an audit report of a company that operates in the sector consumer staples. Additionally in 2020 one modified audit opinion was issued in the consumer discretionary sector.

The data might indicate that Austrian listed companies were not affected by the COVID-19 crisis regarding going concern. With one going concern modified opinion in 2017 and one in 2020, hypothesis 1 - during the COVID-19 crisis 2019-2020 more going concern modified opinions are issued than in the periods before - could not be confirmed.

Hypothesis 2 - during the COVID-19 crisis 2019-2020 more emphasis of matter paragraphs are issued than in the periods before – could not be confirmed clearly. In 2020 the number of emphasis of matter paragraphs increased by one in comparison to the previous years.

### 5.3.2 Descriptive statistics for KAMs

Table 5.4 shows the identified KAMs by accounting standard per year and in total. The total number of KAMs declined over the observation period. In 2017 108 KAMs were included in audit reports. In the following periods 2018-2020 the amount of KAMs remained between 88 and 91.

| KAMs by accounting standard    | Total   |            | 2017        |            | 2018        |           | 2019        |           | 2020        |           | Covid-19 mentioned in 2020 |           |             |
|--------------------------------|---|------------|-------------|------------|-------------|-----------|-------------|-----------|-------------|-----------|----------------------------|-----------|-------------|
|                                | No  | (%)        | No          | (%)        | No          | (%)       | No          | (%)       | No          | (%)       | No                         | (%)       |             |
| <b>ELRKAMs</b>                 |   |            |             |            |             |           |             |           |             |           |                            |           |             |
| IAS 1                          | Presentation of Financial Statements                            | 1          | 0%          | 0          | 0%          | 0         | 0%          | 0         | 0%          | 1         | 1%                         | 1         | 3%          |
| IAS 8                          | Accounting policies, changes in accounting estimates and errors | 3          | 1%          | 2          | 2%          | 0         | 0%          | 1         | 1%          | 0         | 0%                         | 0         | 0%          |
| IAS 11                         | Construction contracts  | 11         | 3%          | 6          | 6%          | 3         | 3%          | 1         | 1%          | 1         | 1%                         | 0         | 0%          |
| IAS 12                         | Income taxes  | 32         | 8%          | 12         | 11%         | 8         | 9%          | 6         | 6%          | 6         | 7%                         | 2         | 6%          |
| IAS 24                         | Related Party Disclosures                                       | 1          | 0%          | 1          | 1%          | 0         | 0%          | 0         | 0%          | 0         | 0%                         | 0         | 0%          |
| IAS 28                         | Investments in Associates and Joint Ventures                    | 14         | 4%          | 3          | 3%          | 4         | 5%          | 3         | 3%          | 4         | 4%                         | 2         | 6%          |
| IAS 32                         | Financial Instruments: Presentation                             | 6          | 2%          | 1          | 1%          | 3         | 3%          | 1         | 1%          | 1         | 1%                         | 0         | 0%          |
| IFRS 3                         | Business combinations   | 18         | 5%          | 5          | 5%          | 2         | 2%          | 7         | 7%          | 4         | 4%                         | 0         | 0%          |
| IFRS 4                         | Insurance contracts   | 5          | 1%          | 2          | 2%          | 1         | 1%          | 1         | 1%          | 1         | 1%                         | 0         | 0%          |
| IFRS 6                         | Exploration for and Evaluation of Mineral Resources             | 4          | 1%          | 1          | 1%          | 1         | 1%          | 1         | 1%          | 1         | 1%                         | 0         | 0%          |
| IFRS 11                        | Joint arrangements  | 2          | 1%          | 1          | 1%          | 1         | 1%          | 0         | 0%          | 0         | 0%                         | 0         | 0%          |
| IFRS 13                        | Fair value measurement  | 14         | 4%          | 5          | 5%          | 4         | 5%          | 3         | 3%          | 2         | 2%                         | 0         | 0%          |
| <b>Total number of ELRKAMs</b> |   | <b>111</b> |             | <b>39</b>  |             | <b>27</b> |             | <b>24</b> |             | <b>21</b> |                            | <b>5</b>  |             |
| <b>ALRKAMs</b>                 |   |            |             |            |             |           |             |           |             |           |                            |           |             |
| IAS 2                          | Inventories   | 7          | 2%          | 2          | 2%          | 2         | 2%          | 2         | 2%          | 1         | 1%                         | 1         | 3%          |
| IAS 16                         | Property, plant and equipment                                   | 6          | 2%          | 1          | 1%          | 1         | 1%          | 2         | 2%          | 2         | 2%                         | 0         | 0%          |
| IAS 36                         | Impairment of assets  | 115        | 30%         | 28         | 26%         | 25        | 28%         | 27        | 28%         | 35        | 38%                        | 17        | 50%         |
| IAS 37                         | Provisions, contingent liabilities and contingent assets        | 32         | 8%          | 8          | 7%          | 5         | 6%          | 10        | 10%         | 9         | 10%                        | 0         | 0%          |
| IAS 38                         | Intangible assets   | 2          | 1%          | 0          | 0%          | 1         | 1%          | 1         | 1%          | 0         | 0%                         | 0         | 0%          |
| IAS 39                         | Financial instruments: recognition and measurement              | 2          | 1%          | 2          | 2%          | 0         | 0%          | 0         | 0%          | 0         | 0%                         | 0         | 0%          |
| IAS 40                         | Investment property   | 17         | 4%          | 4          | 4%          | 4         | 5%          | 5         | 5%          | 4         | 4%                         | 1         | 3%          |
| IFRS 5                         | Non-current assets held for sale and discontinued operations    | 4          | 1%          | 4          | 4%          | 0         | 0%          | 0         | 0%          | 0         | 0%                         | 0         | 0%          |
| IFRS 9                         | Financial Instruments   | 46         | 12%         | 12         | 11%         | 12        | 14%         | 11        | 11%         | 11        | 12%                        | 8         | 24%         |
| IFRS 15                        | Revenue from contracts with customers                           | 33         | 9%          | 8          | 7%          | 11        | 13%         | 8         | 8%          | 6         | 7%                         | 2         | 6%          |
| IFRS 16                        | Leases  | 8          | 2%          | 0          | 0%          | 0         | 0%          | 6         | 6%          | 2         | 2%                         | 0         | 0%          |
| <b>Total number of ALRKAMs</b> |   | <b>272</b> |             | <b>69</b>  |             | <b>61</b> |             | <b>72</b> |             | <b>70</b> |                            | <b>29</b> |             |
| <b>Total number KAMs</b>       |   | <b>383</b> | <b>100%</b> | <b>108</b> | <b>100%</b> | <b>88</b> | <b>100%</b> | <b>96</b> | <b>100%</b> | <b>91</b> | <b>100%</b>                | <b>34</b> | <b>100%</b> |

Table 5.4: KAMs by accounting standard

KAMs that refer to IAS 36 - Impairment of Assets occur most often in audit reports. They deal for example with the impairment and recoverability of goodwill and the valuation of several assets. In the years 2017 to 2019 26-28 percent of total KAMs were related to impairment of assets. In 2020, the year of the crisis, the portion of IAS 36 KAMs increased significantly to 38 percent. The second most common KAMs refer to IFRS 9 – Financial Instruments with 11-14 percent of total KAMs per year. KAMs

with the content IAS 12 - Income Tax, IAS 37 - Provisions, contingent liabilities and contingent assets and IFRS 15 – Revenues from contracts with customers each make a share of 8 percent of the total number of KAMs.

Additionally, the table includes the division of the KAMs into ELRKAMs and ALRKAMs. About 70 percent of the total number of KAMs refer to ALRKAMs. Whereas ALRKAMs experience a slight fluctuation, ELRKAMs decline over the years.

Furthermore, the table shows in which KAMs Covid-19 comments occurred in 2020. In 37 percent of the total number of KAMs the impact of the COVID-19 crisis was discussed. Half of the comments were found in KAMs that refer to IAS 36. 24 percent of the KAMs that include COVID-19 comments were related to IFRS 9.

| Number of KAMs identified per auditor | 2017       |             | 2018      |             | 2019      |             | 2020      |             |
|---------------------------------------|------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|
|                                       | No         | (%)         | No        | (%)         | No        | (%)         | No        | (%)         |
| Deloitte                              | 9          | 8%          | 6         | 7%          | 7         | 7%          | 8         | 9%          |
| EY                                    | 28         | 26%         | 17        | 19%         | 21        | 22%         | 19        | 21%         |
| KPMG                                  | 39         | 36%         | 39        | 44%         | 41        | 43%         | 32        | 35%         |
| PwC                                   | 13         | 12%         | 10        | 11%         | 15        | 16%         | 20        | 22%         |
| BDO                                   | 10         | 9%          | 7         | 8%          | 8         | 8%          | 9         | 10%         |
| PKF Centurion                         | 2          | 2%          | 2         | 2%          | 1         | 1%          | 3         | 3%          |
| Grant Thornton                        | 5          | 5%          | 4         | 5%          | 3         | 3%          | -         | -           |
| SOT                                   | 2          | 2%          | 3         | 3%          | -         | -           | -         | -           |
| <b>Total</b>                          | <b>108</b> | <b>100%</b> | <b>88</b> | <b>100%</b> | <b>96</b> | <b>100%</b> | <b>91</b> | <b>100%</b> |

| Mean number of KAMs identified per auditor | 2017        | 2018        | 2019        | 2020        |
|--|-------------|-------------|-------------|-------------|
|  | Mean No     | Mean No     | Mean No     | Mean No     |
| Deloitte                                   | 2.25        | 2.00        | 2.33        | 2.00        |
| EY   | 2.80        | 1.70        | 2.10        | 2.11        |
| KPMG                                       | 2.17        | 1.95        | 2.16        | 1.78        |
| PwC  | 2.17        | 2.00        | 2.14        | 2.22        |
| <b>Big 4 average</b>                       | <b>2.34</b> | <b>1.89</b> | <b>2.15</b> | <b>1.98</b> |
| BDO  | 2.50        | 1.75        | 1.60        | 1.80        |
| PKF Centurion                              | 2.00        | 2.00        | 1.00        | 3.00        |
| Grant Thornton                             | 2.50        | 2.00        | 3.00        | -           |
| SOT  | 2.00        | 3.00        | -           | -           |
| <b>Non-Big 4 average</b>                   | <b>2.38</b> | <b>2.00</b> | <b>1.71</b> | <b>2.00</b> |
| <b>Total</b>                               | <b>2.35</b> | <b>1.91</b> | <b>2.09</b> | <b>1.98</b> |

Table 5.5: Number of KAMs identified by auditor

As audit firms had a different number of clients, the total number of KAMs included in audit reports per audit firm varies greatly. KPMG and EY together were responsible for more than 60 percent of all identified KAMs (Table 5.5). The mean number of KAMs identified per auditor commutes around 2. Table 5.6 expands the previous table by giving an overview of the mean number of reported KAMs per industry. Here more

differences can be seen. For example, in 2020 companies of the materials sector receive a mean of about 3 KAMs whereas auditors of companies of the industrial sector include a mean of 1.76 KAMs. It also shows the differences between Big 4 and Non-Big 4 audit firms. As most of the companies of the sample operate as industrials and Non-Big 4 audit firms are most represented in this industry, the comparison within the industrial sector might be of most interest. Except of the year 2017 Non-Big 4 audit firms reported slightly less KAMs that the Big 4 firms.

| Mean number of reported KAMs |           |         | Materials | Industrial | Consumer discretionary | Consumer staples | Financials | Communication services | Utilities | Real Estate | All Sectors |
|------------------------------|-----------|---------|-----------|------------|------------------------|------------------|------------|------------------------|-----------|-------------|-------------|
| 2017                         | Big 4     | Avg     | 4.00      | 2.19       | 2.00                   | 1.00             | 2.50       | 3.50                   | 2.00      | 2.00        | 2.34        |
|                              |           | Clients | 2         | 16         | 1                      | 2                | 10         | 2                      | 2         | 3           | 38          |
|                              | Non-Big 4 | Avg     | 3.00      | 2.50       | 2.00                   | 2.00             | -          | -                      | -         | 2.00        | 2.38        |
|                              |           | Clients | 1         | 4          | 1                      | 1                | -          | -                      | -         | 1           | 8           |
| 2018                         | Big 4     | Avg     | 4.00      | 1.63       | 2.00                   | 1.00             | 2.20       | 2.00                   | 2.00      | 1.33        | 1.89        |
|                              |           | Clients | 2         | 16         | 1                      | 2                | 10         | 2                      | 2         | 3           | 38          |
|                              | Non-Big 4 | Avg     | 3.00      | 1.50       | 2.00                   | 3.00             | -          | -                      | -         | 2.00        | 2.00        |
|                              |           | Clients | 1         | 4          | 1                      | 1                | -          | -                      | -         | 1           | 8           |
| 2019                         | Big 4     | Avg     | 4.00      | 1.65       | 2.00                   | 1.00             | 2.80       | 2.50                   | 2.50      | 2.00        | 2.15        |
|                              |           | Clients | 2         | 17         | 1                      | 2                | 10         | 2                      | 2         | 3           | 39          |
|                              | Non-Big 4 | Avg     | 3.00      | 1.33       | 1.00                   | 2.00             | -          | -                      | -         | 2.00        | 1.71        |
|                              |           | Clients | 1         | 3          | 1                      | 1                | -          | -                      | -         | 1           | 7           |
| 2020                         | Big 4     | Avg     | 3.00      | 1.76       | 2.00                   | 1.00             | 2.50       | 2.00                   | 1.50      | 1.33        | 1.98        |
|                              |           | Clients | 3         | 17         | 1                      | 2                | 10         | 2                      | 2         | 3           | 40          |
|                              | Non-Big 4 | Avg     | -         | 1.67       | 3.00                   | 2.00             | -          | -                      | -         | 2.00        | 2.00        |
|                              |           | Clients | -         | 3          | 1                      | 1                | -          | -                      | -         | 1           | 6           |

Table 5.6: Mean number of reported KAMs by industry

Table 5.7 concentrates on the KAMs reported average per industry. The data shows that auditors of companies that operate in the material sector include on average the highest number of KAMs (on average 3 to 3.67 KAMs). Audit reports for consumer staples include the lowest number of KAMs (on average 1.33-1.67). The strongest decline of the average number of KAMs from 2017 to 2018 has occurred within the industrial companies. In contrast, the average number of KAMs per audit report of companies that operate in the financial sector stayed relatively constant within the whole observation period.

| KAMs reported average per industry | 2017       |      | 2018      |      | 2019      |      | 2020      |      |
|------------------------------------|------------|------|-----------|------|-----------|------|-----------|------|
|                                    | No         | Avg  | No        | Avg  | No        | Avg  | No        | Avg  |
| Materials                          | 11         | 3.67 | 11        | 3.67 | 11        | 3.67 | 9         | 3.00 |
| Industrial                         | 45         | 2.25 | 32        | 1.60 | 32        | 1.60 | 35        | 1.75 |
| Consumer discretionary             | 4          | 2.00 | 4         | 2.00 | 3         | 1.50 | 5         | 2.50 |
| Consumer staples                   | 4          | 1.33 | 5         | 1.67 | 4         | 1.33 | 4         | 1.33 |
| Financials                         | 25         | 2.50 | 22        | 2.20 | 28        | 2.80 | 25        | 2.50 |
| Communication services             | 7          | 3.50 | 4         | 2.00 | 5         | 2.50 | 4         | 2.00 |
| Utilities                          | 4          | 2.00 | 4         | 2.00 | 5         | 2.50 | 3         | 1.50 |
| Real Estate                        | 8          | 2.00 | 6         | 1.50 | 8         | 2.00 | 6         | 1.50 |
| <b>Total</b>                       | <b>108</b> |      | <b>88</b> |      | <b>96</b> |      | <b>91</b> |      |

Table 5.7: KAMs reported average per industry

Table 5.8 gives an overview of the frequency of KAMs per year. In 2017 audit reports with 2 or 3 KAMs occurred most frequently (80 percent of audit reports). This changed in the following periods. Compared to 2017 the frequency of audit reports with 3 KAMs dropped significantly in 2018, whereas the number of audit reports including 1 KAM increased. As a result, in 2018-2020 about 82 percent of audit reports included 1 or 2 KAMs.

| Frequency of KAMs per year |      |      |      |      |      |      |      |      |
|----------------------------|------|------|------|------|------|------|------|------|
| KAMs No                    | 2017 |      | 2018 |      | 2019 |      | 2020 |      |
|                            | No   | (%)  | No   | (%)  | No   | (%)  | No   | (%)  |
| 1                          | 7    | 15%  | 14   | 30%  | 14   | 30%  | 14   | 30%  |
| 2                          | 20   | 43%  | 24   | 52%  | 19   | 41%  | 24   | 52%  |
| 3                          | 17   | 37%  | 7    | 15%  | 9    | 20%  | 4    | 9%   |
| 4                          | 1    | 2%   | 0    | 0%   | 3    | 7%   | 3    | 7%   |
| 5                          | 0    | 0%   | 1    | 2%   | 1    | 2%   | 1    | 2%   |
| 6                          | 1    | 2%   | 0    | 0%   | 0    | 0%   | 0    | 0%   |
| Total                      | 46   | 100% | 46   | 100% | 46   | 100% | 46   | 100% |

Table 5.8: Frequency of KAMs per year

Table 5.9 shows the number of clients per auditor and per industry per year. Companies, that operate in the financial sector are mainly audited by the audit firm KPMG. The audit firms EY, KPMG and PwC are primarily responsible for the audit reports of industrial companies. Additionally, the market capitalization per industry is given in the table (reporting date: 06.05.2021). Although only 3 companies are operating in the materials sector, they have a share of 22 percent of the market capitalization. The financials have a share of 28 percent and the industrial companies have a share of 23 percent of the market capitalization, although the industrials dominate the sample by comparing the number of companies per industry.

| Number of clients per auditor | 2020     |          |           |          |          |               |                |          |          | Total     | Market Capitalization  | Market Capitalization in % |
|-------------------------------|----------|----------|-----------|----------|----------|---------------|----------------|----------|----------|-----------|------------------------|----------------------------|
|                               | Deloitte | EY       | KPMG      | PwC      | BDO      | PKF Centurion | Grant Thornton | SOT      |          |           |                        |                            |
| Materials                     | 1        | 1        | 1         | 0        | 0        | 0             | 0              | 0        | 0        | 3         | 24 280 782 840         | 21.7%                      |
| Industrial                    | 1        | 4        | 7         | 5        | 3        | 0             | 0              | 0        | 0        | 20        | 25 796 201 175         | 23.1%                      |
| Consumer discretionary        | 0        | 1        | 0         | 0        | 0        | 1             | 0              | 0        | 0        | 2         | 758 512 189            | 0.7%                       |
| Consumer staples              | 0        | 0        | 0         | 2        | 1        | 0             | 0              | 0        | 0        | 3         | 1 545 296 133          | 1.4%                       |
| Financials                    | 1        | 0        | 7         | 2        | 0        | 0             | 0              | 0        | 0        | 10        | 31 196 768 183         | 27.9%                      |
| Communication services        | 0        | 1        | 1         | 0        | 0        | 0             | 0              | 0        | 0        | 2         | 7 252 497 091          | 6.5%                       |
| Utilities                     | 1        | 0        | 1         | 0        | 0        | 0             | 0              | 0        | 0        | 2         | 14 972 255 197         | 13.4%                      |
| Real Estate                   | 0        | 2        | 1         | 0        | 1        | 0             | 0              | 0        | 0        | 4         | 5 852 374 475          | 5.2%                       |
| <b>Total</b>                  | <b>4</b> | <b>9</b> | <b>18</b> | <b>9</b> | <b>5</b> | <b>1</b>      | <b>0</b>       | <b>0</b> | <b>0</b> | <b>46</b> | <b>111 654 687 283</b> | <b>100%</b>                |

| Number of clients per auditor | 2019     |           |           |          |          |               |                |          |          | Total     |
|-------------------------------|----------|-----------|-----------|----------|----------|---------------|----------------|----------|----------|-----------|
|                               | Deloitte | EY        | KPMG      | PwC      | BDO      | PKF Centurion | Grant Thornton | SOT      |          |           |
| Materials                     | 0        | 1         | 1         | 0        | 0        | 0             | 1              | 0        | 0        | 3         |
| Industrial                    | 1        | 6         | 6         | 4        | 3        | 0             | 0              | 0        | 0        | 20        |
| Consumer discretionary        | 0        | 0         | 1         | 0        | 0        | 1             | 0              | 0        | 0        | 2         |
| Consumer staples              | 0        | 0         | 1         | 1        | 1        | 0             | 0              | 0        | 0        | 3         |
| Financials                    | 1        | 0         | 7         | 2        | 0        | 0             | 0              | 0        | 0        | 10        |
| Communication services        | 0        | 1         | 1         | 0        | 0        | 0             | 0              | 0        | 0        | 2         |
| Utilities                     | 1        | 0         | 1         | 0        | 0        | 0             | 0              | 0        | 0        | 2         |
| Real Estate                   | 0        | 2         | 1         | 0        | 1        | 0             | 0              | 0        | 0        | 4         |
| <b>Total</b>                  | <b>3</b> | <b>10</b> | <b>19</b> | <b>7</b> | <b>5</b> | <b>1</b>      | <b>1</b>       | <b>0</b> | <b>0</b> | <b>46</b> |

| Number of clients per auditor | 2018     |           |           |          |          |               |                |          |          | Total     |
|-------------------------------|----------|-----------|-----------|----------|----------|---------------|----------------|----------|----------|-----------|
|                               | Deloitte | EY        | KPMG      | PwC      | BDO      | PKF Centurion | Grant Thornton | SOT      |          |           |
| Materials                     | 0        | 1         | 1         | 0        | 0        | 0             | 1              | 0        | 0        | 3         |
| Industrial                    | 1        | 6         | 7         | 2        | 3        | 0             | 1              | 0        | 0        | 20        |
| Consumer discretionary        | 0        | 0         | 1         | 0        | 0        | 1             | 0              | 0        | 0        | 2         |
| Consumer staples              | 0        | 0         | 1         | 1        | 0        | 0             | 0              | 1        | 0        | 3         |
| Financials                    | 1        | 0         | 7         | 2        | 0        | 0             | 0              | 0        | 0        | 10        |
| Communication services        | 0        | 1         | 1         | 0        | 0        | 0             | 0              | 0        | 0        | 2         |
| Utilities                     | 1        | 0         | 1         | 0        | 0        | 0             | 0              | 0        | 0        | 2         |
| Real Estate                   | 0        | 2         | 1         | 0        | 1        | 0             | 0              | 0        | 0        | 4         |
| <b>Total</b>                  | <b>3</b> | <b>10</b> | <b>20</b> | <b>5</b> | <b>4</b> | <b>1</b>      | <b>2</b>       | <b>1</b> | <b>0</b> | <b>46</b> |

| Number of clients per auditor | 2017     |           |           |          |          |               |                |          |          | Total     |
|-------------------------------|----------|-----------|-----------|----------|----------|---------------|----------------|----------|----------|-----------|
|                               | Deloitte | EY        | KPMG      | PwC      | BDO      | PKF Centurion | Grant Thornton | SOT      |          |           |
| Materials                     | 0        | 1         | 1         | 0        | 0        | 0             | 1              | 0        | 0        | 3         |
| Industrial                    | 1        | 6         | 7         | 2        | 3        | 0             | 1              | 0        | 0        | 20        |
| Consumer discretionary        | 1        | 0         | 0         | 0        | 0        | 1             | 0              | 0        | 0        | 2         |
| Consumer staples              | 0        | 0         | 1         | 1        | 0        | 0             | 0              | 1        | 0        | 3         |
| Financials                    | 1        | 0         | 7         | 2        | 0        | 0             | 0              | 0        | 0        | 10        |
| Communication services        | 0        | 1         | 1         | 0        | 0        | 0             | 0              | 0        | 0        | 2         |
| Utilities                     | 1        | 0         | 1         | 0        | 0        | 0             | 0              | 0        | 0        | 2         |
| Real Estate                   | 0        | 2         | 0         | 1        | 1        | 0             | 0              | 0        | 0        | 4         |
| <b>Total</b>                  | <b>4</b> | <b>10</b> | <b>18</b> | <b>6</b> | <b>4</b> | <b>1</b>      | <b>2</b>       | <b>1</b> | <b>0</b> | <b>46</b> |

Table 5.9: Number of clients per auditor and industry

### 5.3.3 Descriptive statistics for regression analysis

Table 5.10 shows companies of sample 2 distributed by the number of KAMs, ELRKAMs and ALRKAMs over the whole observation period. The mean value of audit fees is TEUR 468, the non-audit fees ratio (NAF RATIO) is 0.23, total assets have a mean value of MEUR 3,947, the mean leverage is 0.29, the mean current ratio is 1.84 and the mean ROA is 4.63 percent.

| Sample companies distributed by the number of KAMs, ELRKAMs and ALRKAMs |            |            |                   |             |                     |             |               |              |
|---|------------|------------|-------------------|-------------|---------------------|-------------|---------------|--------------|
| #KAM  | #OBS       | TOTAL KAM  | AUDIT FEES (TEUR) | NAF RATIO   | TOTAL ASSETS (TEUR) | LEVERAGE    | CURRENT RATIO | ROA (%)      |
| 1   | 44         | 44         | 314.4             | 0.16        | 1 732 950           | 0.31        | 2.49          | 5.64%        |
| 2   | 72         | 144        | 459.1             | 0.27        | 3 044 685           | 0.29        | 1.61          | 3.80%        |
| 3   | 22         | 66         | 315.5             | 0.26        | 4 853 227           | 0.28        | 1.49          | 4.42%        |
| 4   | 2          | 8          | 707.0             | 0.05        | 3 997 418           | 0.39        | 0.70          | 12.16%       |
| 5   | 3          | 15         | 3216.7            | 0.15        | 42 202 333          | 0.20        | 1.19          | 6.42%        |
| 6   | 1          | 6          | 2480.0            | 0.06        | 31 576 000          | 0.19        | 1.38          | 4.71%        |
| <b>Total</b>  | <b>144</b> | <b>283</b> | <b>467.9</b>      | <b>0.23</b> | <b>3 947 333</b>    | <b>0.29</b> | <b>1.84</b>   | <b>4.63%</b> |

| #ELRKAM      | #OBS       | TOTAL ELRKAM | AUDIT FEES (TEUR) | NAF RATIO   | TOTAL ASSETS (TEUR) | LEVERAGE    | CURRENT RATIO | ROA          |
|--------------|------------|--------------|-------------------|-------------|---------------------|-------------|---------------|--------------|
| 0            | 89         | 0            | 443.0             | 0.19        | 2 671 767           | 0.30        | 1.88          | 5.13%        |
| 1            | 41         | 41           | 243.3             | 0.31        | 2 925 519           | 0.30        | 1.85          | 3.86%        |
| 2            | 13         | 26           | 1361.6            | 0.20        | 15 984 432          | 0.22        | 1.60          | 3.77%        |
| 3            | 1          | 3            | 265.0             | 0.07        | 2 884 790           | 0.17        | 1.09          | 2.96%        |
| <b>Total</b> | <b>144</b> | <b>70</b>    | <b>467.9</b>      | <b>0.23</b> | <b>3 947 333</b>    | <b>0.29</b> | <b>1.84</b>   | <b>4.63%</b> |

| #ALRKAM      | #OBS       | TOTAL ALRKAM | AUDIT FEES (TEUR) | NAF RATIO   | TOTAL ASSETS (TEUR) | LEVERAGE    | CURRENT RATIO | ROA          |
|--------------|------------|--------------|-------------------|-------------|---------------------|-------------|---------------|--------------|
| 0            | 8          | 0            | 551.8             | 0.08        | 5 002 821           | 0.25        | 2.39          | 4.88%        |
| 1            | 74         | 74           | 290.5             | 0.26        | 1 867 682           | 0.29        | 2.15          | 4.30%        |
| 2            | 48         | 96           | 520.4             | 0.20        | 4 063 902           | 0.30        | 1.44          | 4.34%        |
| 3            | 13         | 39           | 1076.9            | 0.22        | 12 580 123          | 0.28        | 1.23          | 7.43%        |
| 4            | 1          | 4            | 2480.0            | 0.06        | 31 576 000          | 0.19        | 1.38          | 4.71%        |
| <b>Total</b> | <b>144</b> | <b>213</b>   | <b>467.9</b>      | <b>0.23</b> | <b>3 947 333</b>    | <b>0.29</b> | <b>1.84</b>   | <b>4.63%</b> |

Table 5.10: Sample companies distributed by the number of KAMs, ELRKAMs and ALRKAMs

95 percent of the observed audit reports (#OBS) include 1 to 3 KAMs. The table indicates that audit reports with more KAMs refer to larger companies (higher total assets), as the mean total assets for 5 KAMs is MEUR 42,202 whereas the mean total assets for 1 to 4 KAMs is between MEUR 1,733 and MEUR 4,853.

About 62 percent (89 observation) of the audit reports do not comprise ELRKAMs, 29 percent include 1 and 10 percent include 2 ELRKAMs. With respect to the ALRKAMs most of the audit reports (85 percent) include 1 or 2.

To measure the degree of collinearity for each independent variable of the model the Variance Inflation Factor (VIF) is used.<sup>66</sup> Table 5.11 shows the VIF for the variables of all three models. Following Sierra-García et al. (2019), for the VIF a cut-off point of 10 is chosen. This means, that the VIF of a variable should not exceed the value 10. The VIF of the variables of model 1 are between 1.26 and 7.04. For Model 2a and Model

<sup>66</sup> Crraney and Surles (2002), p 392.

2b the VIFs are smaller with a range between 1.23 and 2.92 in model 2a and between 1.26 and 3.65 in model 2b.

| Model 1 (KAMs) |      |       | Model 2a (ELRKAMs) |      |       | Model 2b (ALRKAMs) |      |       |
|----------------|------|-------|--------------------|------|-------|--------------------|------|-------|
| Variable       | VIF  | 1/VIF | Variable           | VIF  | 1/VIF | Variable           | VIF  | 1/VIF |
| REVENUES       | 7.04 | 0.142 | COMPLEXITY         | 2.92 | 0.342 | REVENUES           | 3.65 | 0.274 |
| SIZE           | 6.45 | 0.155 | SIZE               | 2.74 | 0.365 | PPE                | 2.94 | 0.340 |
| INTANGIBLES    | 3.56 | 0.281 | AUDIT FEES         | 2.46 | 0.407 | INTANGIBLES        | 2.53 | 0.395 |
| PPE            | 3.43 | 0.292 | GOODWILL           | 2.10 | 0.476 | INVENTORIES        | 2.29 | 0.437 |
| COMPLEXITY     | 3.23 | 0.310 | LEVERAGE           | 1.64 | 0.610 | AUDIT FEES         | 2.39 | 0.418 |
| INVENTORIES    | 2.82 | 0.355 | CURRENT RATIO      | 1.31 | 0.763 | NAF RATIO          | 1.26 | 0.794 |
| AUDIT FEES     | 2.60 | 0.385 | NAF RATIO          | 1.30 | 0.769 |                    |      |       |
| GOODWILL       | 2.26 | 0.442 | ROA                | 1.23 | 0.813 |                    |      |       |
| LEVERAGE       | 1.90 | 0.526 |                    |      |       |                    |      |       |
| CURRENT RATIO  | 1.38 | 0.725 |                    |      |       |                    |      |       |
| NAF RATIO      | 1.37 | 0.730 |                    |      |       |                    |      |       |
| ROA            | 1.26 | 0.794 |                    |      |       |                    |      |       |
| Mean VIF       | 3.11 |       | Mean VIF           | 1.96 |       | Mean VIF           | 2.51 |       |

Table 5.11: Variance inflation factor

Additionally, to investigate the correlation between all variables used in the models, a Pearson Correlation table is calculated (Table 5.12). The values range from -1 to +1, where 1 means that two variables are perfectly positive correlated.

| Pearson correlations | A     | B     | C     | D     | E     | F     | G     | H     | I     | J     | K     | L     | M    | N    | O    | P    | Q    | R |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|---|
| A - KAMs             | 1     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | - |
| B - ELRKAMs          | 0.57  | 1     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | - |
| C - ALRKAMs          | 0.67  | -0.23 | 1     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | - |
| D - AUDIT FIRM       | -0.02 | 0.11  | -0.12 | 1     | -     | -     | -     | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | - |
| E - AUDT FEES        | 0.34  | 0.11  | 0.30  | -0.31 | 1     | -     | -     | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | - |
| F - NAF RATIO        | 0.04  | 0.08  | -0.02 | 0.19  | -0.22 | 1     | -     | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | - |
| G - SWITCH           | -0.10 | -0.03 | -0.09 | -0.04 | -0.05 | -0.18 | 1     | -     | -     | -     | -     | -     | -    | -    | -    | -    | -    | - |
| H - SIZE             | 0.40  | 0.18  | 0.30  | -0.26 | 0.78  | -0.16 | -0.05 | 1     | -     | -     | -     | -     | -    | -    | -    | -    | -    | - |
| I - LEVERAGE         | -0.10 | -0.13 | 0.00  | -0.13 | -0.19 | -0.01 | 0.09  | -0.15 | 1     | -     | -     | -     | -    | -    | -    | -    | -    | - |
| J - CURRENT RATIO    | -0.23 | -0.05 | -0.22 | 0.14  | -0.35 | -0.01 | -0.01 | -0.38 | -0.22 | 1     | -     | -     | -    | -    | -    | -    | -    | - |
| K - ROA              | -0.01 | -0.11 | 0.09  | 0.08  | 0.01  | -0.19 | 0.01  | 0.05  | -0.21 | 0.11  | 1     | -     | -    | -    | -    | -    | -    | - |
| L - LOSS             | 0.04  | 0.13  | -0.07 | -0.14 | 0.01  | 0.22  | 0.08  | -0.15 | -0.00 | -0.06 | -0.18 | 1     | -    | -    | -    | -    | -    | - |
| M - COMPLEXITY       | 0.26  | 0.16  | 0.15  | -0.03 | 0.63  | -0.06 | -0.00 | 0.76  | -0.10 | -0.32 | 0.02  | -0.07 | 1    | -    | -    | -    | -    | - |
| N - REVENUES         | 0.40  | 0.29  | 0.21  | 0.10  | 0.76  | -0.07 | -0.05 | 0.85  | -0.20 | -0.38 | -0.02 | -0.06 | 0.68 | 1    | -    | -    | -    | - |
| O - INVENTORIES      | 0.32  | 0.29  | 0.12  | 0.00  | 0.45  | 0.07  | -0.02 | 0.41  | -0.08 | -0.19 | -0.15 | 0.09  | 0.34 | 0.76 | 1    | -    | -    | - |
| P - PPE              | 0.38  | 0.19  | 0.28  | -0.19 | 0.70  | -0.18 | -0.03 | 0.77  | -0.07 | -0.37 | -0.03 | -0.03 | 0.49 | 0.89 | 0.73 | 1    | -    | - |
| Q - GOODWILL         | 0.30  | 0.16  | 0.21  | -0.09 | 0.68  | -0.01 | -0.09 | 0.65  | -0.28 | -0.37 | -0.00 | -0.02 | 0.63 | 0.75 | 0.53 | 0.58 | 1    | - |
| R - INTANGIBLES      | 0.40  | 0.33  | 0.18  | -0.12 | 0.67  | -0.04 | -0.06 | 0.60  | -0.42 | -0.23 | -0.08 | 0.03  | 0.33 | 0.70 | 0.55 | 0.59 | 0.69 | 1 |

Table 5.12: Pearson correlation

## 6 Results

### 6.1 Results of the linear regression models

Table 6.1 shows the result of the linear regression models with random effects.

To test hypothesis 3 “*The total number of KAMs included in the audit report is determined by auditor and client characteristics*” results of model 1 are used. The  $R^2$  of the model is 0.47.

The results show that the audit firms Deloitte (coefficient: -0.694; level of significance: 5 percent) and KPMG (coefficient: -0.394; level of significance: 10 percent) report significantly fewer KAMs than the audit firm EY. For all other variables, that refer to auditor characteristics (AUDIT FEE, NAF RATIO, SWITCH), no significant association between the value of the variable and the number of KAMs included in the audit report can be confirmed. The results for AUDIT FEE and NAF RATIO are consistent with Sierra-García et al. (2019).<sup>67</sup> Contrary Pinto and Morais (2018) find a positive association between audit fee and the number of KAMs in the audit report.<sup>68</sup> The results of this study lead to the conclusion, that auditor characteristics might not determine the total number of KAMs.

Within the variables for client characteristics, the variable INTANGIBLES is positively associated with the total number of KAMs (coefficient: 0.166; level of significance: 5 percent). This is not consistent with the results of Sierra-García et al. (2019) who find a significant negative association for the variable INTANGIBLES.<sup>69</sup> The positive association might lead to the conclusion, that auditors see higher risks in this type of business. Additionally, the results show, that companies operating in the materials sector (coefficient: 1.260; level of significance: 1 percent) report significantly more KAMs than companies in the communication service sector.

In line with Sierra-García et al. (2019) the control variable YEAR-END (coefficient: 0.504; level of significance: 10 percent) is positively and significantly related to the total

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<sup>67</sup> Sierra-García et al. (2019), p 234.

<sup>68</sup> Pinto and Morais (2018), p 145.

<sup>69</sup> Sierra-García et al. (2019), p 235.

number of KAMs in the audit report.<sup>70</sup> Consequently, auditors of companies that end their financial year on December 31<sup>st</sup> include more KAMs in the audit report.

Therefore, the results partly support hypothesis 3. The auditor characteristic AUDIT FIRM and the client characteristics INTANGIBLES and INDUSTRY are significantly related to the number of KAMs.

Hypothesis 4 *“The number of each type of KAMs included in the audit report is determined by auditor and client characteristics”* is tested by model 2a and model 2b. The R2 for model 2a is 0.25 and for model 2b it is 0.26.

Results show that there is no evidence that the number of ELRKAMs and ALRKAMs is determined by auditor characteristics.

With respect to client characteristics, the results of model 2a present a significant positive association between SIZE (coefficient: 0.238; level of significance: 10 percent) and the number of ELRKAMs. This result for the variable SIZE is consistent with Sierra-García et al. (2019). Therefore, auditors of larger companies report a higher number of ELRKAMs. For all other variables, no significant relationship can be shown.

Similar to model 1, the results of model 2b show that companies operating in the materials sector (coefficient: 0.150; level of significance: 5 percent) report significantly more ALRKAMs than the reference industry communication services. In addition, the control variable YEAR-END (coefficient: 0.472; level of significance: 10 percent) is related to the number of ALRKAMs. Audit reports of companies, that end their financial year on December 31<sup>st</sup> include significantly more ALRKAMs. This is contrary to Sierra-García et al. (2019), who find that audit reports of companies, that end their financial year on December 31<sup>st</sup> include significantly more ELRKAMs.<sup>71</sup>

The results above partly support hypothesis 4. Specific variables of client characteristics (SIZE, INDUSTRY) are significantly associated with the number of each type of KAMs (ELRKAMs and ALRKAMs). Between auditor characteristics and the number of each type of KAMs no relationship can be shown.

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<sup>70</sup> Sierra-García et al. (2019), p 235.

<sup>71</sup> Sierra-García et al. (2019), p 235.

Hypothesis 5 “*The total number of KAMs included in the audit report is determined by the existence of a financial crisis*” is also tested by Model 1.

The results of variable YEAR show that compared to the year 2017 in the years 2018 (coefficient: -0.467; level of significance: 0.1 percent), 2019 (coefficient: -0.462; level of significance: 0.1 percent) and 2020 (coefficient: -0.517; level of significance: 0.1 percent) significantly less KAMs are reported. As there are also less KAMs in 2018 and 2019, these results indicate, that the decline in the reported number of KAMs in 2020 can not be related to the existence of the financial crisis clearly. As including KAMs in Austrian audit reports has been mandatory since 2016, the decline after 2017 might be explained by a learning effect. Therefore, hypothesis 5 can not be supported.

Similar to hypothesis 5, hypothesis 6 “*The number of each type of KAMs included in the audit report is determined by the existence of a financial crisis*” the results of variable YEAR are relevant. Model 2a show a decline in the number of ELRAMs. Compared to the year 2017 in the years 2018 (coefficient: -0.343; level of significance: 1 percent), 2019 (coefficient: -0.421; level of significance: 0.1 percent) and 2020 (coefficient: -0.496; level of significance: 0.1 percent) significantly less ELRKAMs are reported. As there is not only a decline in the year of the COVID-19 crisis, the development of the number of ELRKAMs might also be explained by the above-mentioned learning effect. For ALRKAMs no significant difference within the years can be shown. Therefore hypothesis 6 can not be supported.

| Linear regression (random effects)           | Model 1 (KAMs)         | Model 2a (ELRKAMs) | Model 2b (ALRKAMs) |
|--|------------------------|--------------------|--------------------|
| AUDIT FRIM (Reference: EY)                   |                        |                    |                    |
| Deloitte                                     | -0.694* (0.350)        | -0.280 (0.359)     | -0.294 (0.362)     |
| KPMG   | -0.394. (0.228)        | -0.002 (0.230)     | -0.307 (0.228)     |
| PwC  | 0.431 (0.296)          | 0.208 (0.294)      | 0.446(0.297)       |
| BDO  | -0.060 (0.371)         | 0.358 (0.349)      | -0.227 (0.369)     |
| Grant Thornton                               | -0.569 (0.439)         | -0.311 (0.424)     | -0.107 (0.423)     |
| SOT  | 0.082 (0.646)          | 0.641 (0.578)      | -0.211 (0.609)     |
| PKF Centurion                                | -0.555 (0.771)         | -0.504 (0.810)     | -0.014 (0.787)     |
| AUDIT FEES                                   |                        |                    |                    |
|  | -0.117 (0.154)         | -0.090 (0.157)     | 0.109 (0.160)      |
| NAF RATIO                                    |                        |                    |                    |
|  | 0.224 (0.244)          | 0.008 (0.222)      | 0.211 (0.232)      |
| SWITCH                                       |                        |                    |                    |
|  | -0.217 (0.205)         | 0.017 (0.189)      | -0.194 (0.199)     |
| SIZE   |                        |                    |                    |
|  | -0.064 (0.245)         | 0.238. (0.137)     | -                  |
| LEVERAGE                                     |                        |                    |                    |
|  | -0.696 (0.786)         | -0.184 (0.705)     | -                  |
| CURRENT RATIO                                |                        |                    |                    |
|  | -0.027 (0.042)         | 0.021 (0.037)      | -                  |
| ROA  |                        |                    |                    |
|  | 0.128 (1.063)          | -0.260 (0.961)     | -                  |
| LOSS   |                        |                    |                    |
|  | 0.054 (0.232)          | 0.029 (0.213)      | -                  |
| COMPLEXITY                                   |                        |                    |                    |
|  | 0.040 (0.188)          | -0.101 (0.184)     | -                  |
| REVENUES                                     |                        |                    |                    |
|  | -0.150 (0.230)         | -                  | -0.093 (0.142)     |
| INVENTORIES                                  |                        |                    |                    |
|  | 0.058 (0.059)          | -                  | 0.055 (0.057)      |
| PPE  |                        |                    |                    |
|  | 0.123 (0.081)          | -                  | 0.068 (0.077)      |
| GOODWILL                                     |                        |                    |                    |
|  | 0.019 (0.030)          | 0.024 (0.029)      | -                  |
| INTANGIBLES                                  |                        |                    |                    |
|  | 0.166* (0.079)         | -                  | -0.056 (0.066)     |
| INDUSTRY (Reference: Communication services) |                        |                    |                    |
| CONSUMER DISCRETIONARY                       | 0.818 (0.766)          | 1.130 (0.820)      | -0.475 (0.787)     |
| CONSUMER STAPLES                             | -0.420 (0.569)         | -0.053 (0.570)     | -0.570 (0.617)     |
| INDUSTRIAL                                   | -0.360 (0.389)         | 0.538 (0.421)      | -1.095 (0.426)     |
| MATERIALS                                    | 1.260** (0.483)        | 0.702 (0.497)      | 0.150* (0.511)     |
| REAL ESTATE                                  | 0.770 (0.884)          | 0.164 (0.639)      | -0.659 (0.625)     |
| UTILITIES                                    | 0.131 (0.638)          | -0.356 (0.581)     | -0.066 (0.613)     |
| YEAR-END                                     |                        |                    |                    |
|  | 0.504. (0.262)         | -0.153 (0.257)     | 0.472. (0.278)     |
| YEARS (Reference: 2017)                      |                        |                    |                    |
| 2018   | -0.467*** (0.134)      | -0.343** (0.121)   | -0.135 (0.129)     |
| 2019   | -0.462*** (0.136)      | -0.421*** (0.124)  | -0.059 (0.129)     |
| 2020   | -0.517*** (0.150)      | -0.496*** (0.131)  | -0.096 (0.135)     |
| R <sup>2</sup>                               | 0.47422                | 0.25123            | 0.25533            |
| R <sup>2</sup> adjusted                      | 0.32869                | 0.07695            | 0.10514            |
| p-value                                      | 2.4047e <sup>-09</sup> | 0.064411           | 0.017513           |
| Observations                                 | 144                    | 144                | 144                |

Table 6.1: Results of the linear regression

AUDIT FIRM is a categorial variable to identify the audit firms Deloitte, KPMG, PwC, BDO, Grant Thornton, SOT and PKF Centurion. The audit firm EY is used as the reference. AUDIT FEES is the natural logarithm of the amount of money, a client has to pay the auditor for conducting the audit. NAF RATIO (non audit fee ratio) is calculated by dividing the non-audit fee with the total fee paid to the auditor. The variable SWITCH takes the value 1 if the auditor firm changes in comparison to the previous period. Otherwise, the value is 0. SIZE is the natural logarithm of total assets. LEVERAGE is calculated by dividing total debt by total assets. CURRENT RATIO is calculated by dividing total current assets by total current liabilities. ROA (return on assets) is the ratio of profit before taxes to total assets. LOSS is a variable that takes on the value 1 if losses had occurred in the previous period, 0 otherwise. COMPLEXITY is the number of subsidiaries a client has. For the variables REVENUES, INVENTORIES, PPE (property, plant and equipment), GOODWILL and INTANGIBLES the natural logarithm of the corresponding balance sheet and profit and loss statement item is used. INDUSTRY is a categorial variable to identify the industries CONSUMER DISCRETIONARY, CONSUMER STAPLES, INDUSTRIAL, MATERIALS, REAL ESTATE and UTILITIES. COMMUNICATION SERVICES is used as the reference. YEAR-END takes on the value 1 for all companies, that end their financial year on December 31<sup>st</sup>, 0 otherwise. YEARS is a categorial variable to identify the years 2017, 2018, 2019 and 2020. 2017 is used as the reference.

\*\*\* Significant at 0.1 percent (p-value [0, 0.001]), \*\* Significant at 1 percent (p-value [0.001, 0.01]), \* Significant at 5 percent (p-value [0.01, 0.05]), "." Significant at 10 percent (p-value [0.05, 0.1]).

The table shows the coefficient and the corresponding standard errors: coefficient (standard error). The used variables are explained in chapter 5.2.2.

## **6.2 KAM reporting in Austria vs KAM reporting in the United Kingdom**

### **6.2.1 Differences in the number of KAMs reported per audit report**

Comparing the results described above with the results of García et al. (2019) large differences regarding the number of KAMs and the number of each type of KAM in Austrian audit reports and audit reports of UK companies occur. Auditors in Austria include 1 to 6 KAMs, whereas in audit reports in the UK 1 to 10 KAMs can be found. Observing 280 audit reports of FTSE 100 companies in the period 2013-2016, they show that about 62 percent of the reports include 3 to 5 KAMs and about 23 percent include more than 5 KAMs.<sup>72</sup> In contrast, the results in Austria show that 95 percent of the observed audit reports include 1 to 3 KAMs.

With respect to the number of ELRKAMs a similar difference between the reporting of UK and Austrian auditors can be seen. In the UK most of the audit reports (62 percent) include 1 or two ELRKAMs<sup>73</sup>, whereas in Austria 62 percent of the audit reports do not comprise ELRKAMs. In addition, UK auditors include most of the time (60 percent) 2 or 3 ALRKAMs in their reports.<sup>74</sup> The results in Austria show, that 85 percent of the reports comprise 1 or 2 ALRKAMs.

There are also differences regarding the industry distribution of the sample used in the studies. In the study of García et al. (2019) consumer goods and consumer services dominate the sample, whereas in Austria the focus is on industrial companies.

Concentrating on the type of KAMs disclosed in audit reports further differences occur. In the UK the most frequent topics of KAMs are Revenues, Intangibles and Tax.<sup>75</sup> In Austria Impairment of assets, Financial Instruments and Revenues are the three most frequent topics included as KAMs in the audit reports.

Concluding, the results indicate that the reporting activity of audit firms in the UK is clearly more pronounced than the one of Austrian audit firms. Additionally, the focus of the KAMs differ.

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<sup>72</sup> Sierra-García et al. (2019), p 234.

<sup>73</sup> Sierra-García et al. (2019), p 235.

<sup>74</sup> Sierra-García et al. (2019), p 236.

<sup>75</sup> Sierra-García et al. (2019), p 233.

### **6.2.2 Differences in the determinants for KAM reporting**

Regarding the client characteristics, results of the regression analysis of Sierra-García et al. (2019) show a significant positive relationship between LOSS, REVENUES, INVENTORIES, PPE and GOODWILL and the number of KAMs reported and a significant negative association between LEVERAGE, COMPLEXITY, INTANGIBLES and the number of KAMs.<sup>76</sup> For Austria the results show a significant positive association between INTANGIBLES and the number of KAMs only. With respect to the auditor characteristics more similarities can be seen. Significant differences between audit firms and the number of KAMs reported can be found in both studies. Furthermore, in both studies no significant association between AUDIT FEES and the number of KAMs and between NAF RATIO and the number of KAMs occur.

In addition, differences in the determinants for each type of KAMs can be seen. In contrast to Sierra-García et al. (2019) the results for Austria show that there is no evidence that the number of ELRKAMs and ALRKAMs is determined by auditor characteristics.

Regarding the client characteristics, the results for the UK show a significant positive association between SIZE, CURRENT RATIO, ROA and LOSS and the number of ELRKAMs. LEVERAGE and COMPLEXITY are significantly negative related.<sup>77</sup> For Austria only a positive association between SIZE and the number of ELRKAMs can be found. Concentrating on the ALRKAMs, Sierra-García et al. (2019) find a significant positive relationship between REVENUES and INVENTORIES and the number of ALRKAMs and a negative relationship between INTANGIBLES and the number of ALRKAMs. Additionally, significant differences between the industries occur. For Austria, only differences in the industries can be seen.

In conclusion, for Austria less determinants for KAM reporting can be identified.

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<sup>76</sup> Sierra-García et al. (2019), p 235.

<sup>77</sup> Sierra-García et al. (2019), p 235.

## 7 Discussion and conclusion

The study analyses the effects of the COVID-19 pandemic on audit reports in terms of going concern modified opinions and the number and content of KAMs disclosed in audit reports.

Recent literature has focused on the impact of financial crisis on audit opinions and finds that the amount of going concern modified opinions increases in times of a crisis.<sup>78</sup> The results show that this is not the case for Austrian listed companies during the COVID-19 crisis. As for the sample companies no qualified opinion was issued in the period 2017-2020 and the number of emphasis of matter paragraphs regarding going concern did not increase in 2019 and 2020, the results indicate that Austrian listed companies were not affected by the COVID-19 crisis regarding going concern.

The introduction of ISA 701-Communicating Audit Matters in the Independent Auditor's report has led to more informative audit reports. Researchers have analyzed the impact of auditor and client characteristics<sup>79</sup> as well as the impact of the regulation environment<sup>80</sup> on KAMs disclosure and come to ambiguous results. To contribute to the literature the determinants of KAM reporting are investigated for the Austrian market. Results show that client characteristics play a larger role than auditor characteristics. The number of KAMs is determined by the audit firm, intangibles and the industry. For ELRKAMs the size of a company and for ALRKAMs the industry in which a company operates is determining. Auditor characteristics do not determine the type of KAM reported in the audit report.

As there is no study, that deals with the impact of a financial crisis on KAMs reporting this study aims to fill this gap in the literature. The results of the study show that in the year of the COVID 19 crisis not more KAMs but different KAMs were reported. During the crisis KAMs with the topic impairment of assets have increased, while the total number of KAMs has stayed constant. Concentrating on the development of KAM reporting over the observation period, a strong decline in the number of KAMs occurred

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<sup>78</sup> Xu et al. (2011), p 22, Carlson et al. (2019), p 2415, Ruhnke and Frey (2015), p 328, Mareque et al. (2017), p 154.

<sup>79</sup> Pinto and Morais (2018), Sierra-García et al. (2019), Wuttichindanon and Issarawornrawanich (2020), Kend and Nguyen (2020)

<sup>80</sup> Pinto et al. (2020)

between 2017 and 2018. This effect might be the result of a learning effect, as auditors might have reevaluated their KAM reporting after the first two years after the introduction of KAMs in Austrian audit reports.

The results of the study should be seen in light of the following limitations: The relatively small sample size and the different structure of the sample, compared to the study of Sierra-García et al. (2019), might be one reason for deviating results for the two countries. Additionally, in Austria the number of KAMs in the observed audit reports only differ slightly. This might be the reason for identifying fewer determinants of KAMs than in the UK by conducting a regression analysis. Further, KAMs could be determined by variables not used in the models.

For future research it would be interesting to investigate if the decline in KAMs over the years could be explained by a learning effect. Therefore, data for 2016 would be necessary, as it is the first year where the inclusion of KAMs was mandatory in Austrian audit reports. Additionally, further development of KAM reporting could be a field for further research. Furthermore, the differences in the results for UK and Austria raise the question how KAM reporting is implemented in audit reports of companies in other countries.

This study contributes to the literature in the field of information content of audit reports. It provides valuable information for investors and other stakeholders of audit reports, as it gives a broad overview of KAM reporting in Austria and shows the most important determinants of the number and content of KAMs. Additionally, it shows that auditors react to a crisis by changing the focus of KAMs, which indicates, that KAMs are adapted to the current situation of the company and therefore provide essential information for the market.

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## Appendix

The table below sums up the data collection:

| Collected Data  | Characteristics  |
|---|--|
| Name of the company                                   | Text   |
| ISIN (International Securities Identification Number) | Number   |
| Link to website (Investor Relations)                  | Hyperlink  |
| Sector (GICS code)                                    | Energy<br>Materials<br>Industrial<br>Consumer discretionary<br>Consumer staples<br>Health care<br>Financials<br>Information technology<br>Communication services<br>Utilities<br>Real Estate |
| Reporting date  | 29.02.XX<br>31.03.XX<br>30.04.XX<br>30.09.XX<br>31.12.XX   |
| Observation year                                      | 2017<br>2018<br>2019<br>2020   |
| Size  | Total assets   |
| Leverage  | Total debts / total assets   |
| Current ratio   | Total current assets / total current liabilities   |
| ROA   | Profit before tax / Total assets   |

|                               |  |
|-------------------------------|--|
| Loss in previous year         | 0...No<br>1...Yes  |
| Complexity                    | Number of subsidiaries   |
| Goodwill                      | Number   |
| Revenues                      | Number   |
| Inventories                   | Number   |
| Property, plant and equipment | Number   |
| Intangibles                   | Number   |
| Name of the audit firm        | Text   |
| Switch                        | 0...No<br>1...Yes  |
| Big 4                         | 0...No<br>1...Yes  |
| Audit fee                     | number   |
| Non-audit fee ratio           | Non audit related fees / (audit fees + audit-related fees)   |
| Audit report                  | 0...Unqualified opinion<br>1...Qualified opinion<br>2...Adverse/Disclaimed   |
| Qualified opinion             | 0...Qualified for going concern<br>1...Qualified for others<br>2...Qualified with emphasis of matter for others<br>3...Qualified with emphasis of matter for going concern                                 |
| Unqualified opinion           | 0...Unmodified<br>1...With an emphasis of matter for going concern<br>2...With an emphasis of matter for COVID-19<br>3...With an emphasis of matter for others   |
| Content of KAMs               | IAS 1 - Presentation of financial statements<br>IAS 2 - Inventories<br>IAS 8 - Accounting policies, changes in accounting estimates and errors<br>IAS 11 - Construction contracts<br>IAS 12 - Income taxes |

|                              |  |
|------------------------------|--|
|                              | IAS 16 - Property, plant and equipment<br>IAS 24 – Related party disclosures<br>IAS 28 - Investments in associates and joint ventures<br>IAS 32 - Financial Instruments: Presentation<br>IAS 36 - Impairment of assets<br>IAS 37 - Provisions, contingent liabilities and contingent assets<br>IAS 38 - Intangible assets<br>IAS 39 - Financial instruments: recognition and measurement<br>IAS 40 - Investment property<br>IFRS 3 - Business combinations<br>IFRS 4 - Insurance contracts<br>IFRS 5 - Non-current assets held for sale and discontinued operations<br>IFRS 6 – Exploration for and evaluation of mineral resources<br>IFRS 9 - Financial Instruments<br>IFRS 11 - Joint arrangements<br>IFRS 13 - Fair value measurement<br>IFRS 15 - Revenue from contracts with customers<br>IFRS 16 - Leases |
| Number of KAMs per report    | number   |
| Number of ELRKAMs per report | number   |
| Number of ALRKAMs per report | number   |

## **Abstract**

The study focuses on the impact of the COVID-19 pandemic on the audit opinion and the number and content of key audit matters (KAMs) in audit reports of Austrian listed companies on the Vienna Stock Exchange in the period 2017-2020. Results indicate that Austrian listed companies were not affected by the COVID-19 crisis regarding going concern. With respect to KAM reporting results show that in the year of the COVID-19 crisis not more KAMs but different KAMs were reported. In times of a crisis auditors focus on impairment of assets. By conducting a panel-data regression it can be shown that the number of KAMs is determined by auditor and client characteristics. Differently, the type of KAM (entity-level-risk KAMs (ELRKAMs) and accounting-level-risk KAMs (ALRKAMs)) is determined by client characteristics only. Comparing KAM reporting of Austria and the UK, the results indicate that the reporting activity of audit firms in the UK is clearly more pronounced than the one of Austrian audit firms.

## **Abstract (Deutsch)**

Die Studie untersucht den Einfluss der COVID-19 Pandemie auf das Prüfungsurteil und auf die angegebenen „besonders wichtigen Prüfungssachverhalte“ (KAMs) in Bestätigungsvermerken österreichischer Unternehmen, die im Zeitraum 2017-2020 an der Wiener Börse notierten. Die Ergebnisse zeigen, dass die COVID-19 Krise keine Auswirkung auf die Beurteilung der Annahme der Unternehmensfortführung hatte. Auch die Anzahl der KAMs hat sich während der Krise nicht verändert. Es konnte jedoch gezeigt werden, dass Wirtschaftsprüfer und Wirtschaftsprüferinnen in Zeiten der Krise einen stärkeren Fokus auf Werthaltigkeitstests legen. Mit Hilfe einer Panel-Daten Regression konnte ein signifikanter Zusammenhang zwischen der Anzahl der KAMs und bestimmter Charakteristiken von Prüfungsgesellschaften und Unternehmen nachgewiesen werden. Abweichend dazu sind für die Anzahl der entity-level-risk KAMs (ELRKAMs) und der accounting-level-risk KAMs (ALRKAMs) nur bestimmte Unternehmenseigenschaften entscheidend. Im Vergleich mit dem Vereinigten Königreich (UK) zeigt sich, dass österreichische Prüfungsgesellschaften deutlich weniger KAMs kommunizieren.