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Audit market concentration for the segments of listed and non-listed auditees in Slovenia

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ABSTRACT

High audit market concentration in the European Union (EU), especially in the segment of public interest companies (PIEs), was highlighted by the European Commission (EC) as problematic in the Green Paper on Audit Policy. We find that the market for the segment of listed companies is highly concentrated in Slovenia whereas in the segment of non-listed companies the concentration is relatively low. Given the observed trend of continuing decline in concentration level for non-listed companies and the overall observation of the differences between the two segments we conclude that the decision of the EC to prepare a separate, more stringent set of rules for the statutory audits of PIEs was justified. However, for proper implementation of national legislation for audits of non-PIEs (including mandatory audit firm rotation and prohibition of non-audit services) attention should also be placed on the effect of these measures on audit quality.

Keywords: Auditing, Concentration, Listed companies, Non-listed companies, Slovenia

JEL Classification: M42, M48, D40

Introduction

In the global market for audit services we have been witnessing the process of mergers and acquisitions of the largest market players in the global environment since the end of the 1980s (Minyard & Tabor, 1991; Wootton, Tonge & Wolk, 1994; Dunn, Kohlbeck & Mayhew, 2011; Velte & Stiglbauer, 2012). While there were still eight large global accounting firms at the end of the 1980s (Arthur Andersen, Coopers and Lybrand, Deloitte Haskins and Sells, Ernst and Whinney, Peat Marwick Mitchell, Price Waterhouse, Touche Ross and Arthur Young) known as the Big Eight, the year 1989 represents a milestone for a long and steady process of consolidation. The consolidation from the Big Eight to the Big Six as well as the consolidation from the Big Six to the Big Five both resulted from mergers among the industry largest players. On the other hand, the consolidation from the Big Five to the Big Four resulted from the demise of Arthur Andersen (Dunn, Kohlbeck & Mayhew, 2011). Arthur Andersen withdraw from the market in 2002 after having surrendered its licenses to practice statutory audits due to its involvement in some of the biggest accounting scandals at the turn of the millennium.

Since then the Big 4 accounting firms (PricewaterhouseCoopers, Deloitte, Ernst & Young and KPMG) dominate the global market for audit services. These developments were one of the reasons that motivated the European Commission (EC) in year 2010 to advise the public to the high level of concentration in certain segments of the audit market along with possible consequences and highlight it as a serious threat. The EC raised the concern in the Green Paper on Audit Policy: Lessons from the crisis, where it pointed out that the last twenty years have seen a strong market consolidation of audit services in which the big audit firms evolved into even larger market players and that the customers' choice of audit service providers is becoming increasingly limited. The Commission stressed that the segment of large public interest enterprises (PIEs) is facing the most accentuated problem of limited choice. Despite the number of small and medium-sized audit firms, the four large audit firms dominate the segment of large auditees and other PIEs, both globally as well as in the EU. In terms of revenues, the total market share of the Big 4 audit firms for listed companies exceeds 90% in a vast majority of the EU Member States (European Commission, 2010). The EC also expressed concerns about the quality of audits, as only a handful of audit firms that are able to conduct an audit of the largest and most complex institutions remain. Another common concern can be observed among various stakeholders: the decreasing number of market players, able to provide audit services to largest and most complex auditees, might entail an accumulation of systemic risk (European Commission, 2010). More specifically, the stakeholders are concerned that the collapse of another one of

the big audit firms could lead to significant turmoil in the global financial markets. In a recent study Gerakos and Syverson (2013) calculated the effect of the market scenario where supply concentration would further increase due to another one of the Big 4 audit firms withdrawing from the market. They estimated that such scenario would reduce client firms' surplus by as much as \$1.2-1.8 billion per year, disregarding the reduction of clients' surplus due to possible audit fee increase as a result of decreased number of market players.

With the Green Paper on Audit Policy the EC started the process of a comprehensive audit reform in the EU. Although the issue of auditor independence was placed in the center of the reform, the Green Paper also presented several solutions to tackle the problem of excessive market concentration and especially the dominating role of the Big 4. It proposed a variety of mechanisms to decrease audit market concentration by reducing Big 4 dominance and increasing competition by the non-Big 4 accounting firms. These mechanisms included banning audit firms from providing any non-audit services (the creation of pure audit firms), implementing mandatory audit firm rotation, and introducing mandatory joint audits in which at least one auditor should be a non-Big 4 firm. In the proposals and drafts that followed many of the initially proposed mechanisms were either eliminated or alleviated. The new Directive 2014/56/EU on statutory audits of annual accounts and consolidated accounts and Regulation 537/2014 on specific requirements regarding statutory audit of public-interest entities that were adopted in April 2014 (and will become applicable in mid-2016) introduced far more reserved requirements than originally proposed. However, for the first time the EU audit reform introduced stricter requirements to statutory audits of PIEs. Two prominent examples of these measures are prohibition of non-audit services to audit clients where Article 5 (Prohibition of the provision of non-audit services) now provides a detailed list of non-audit services that the statutory auditor should not provide to his/her audit client either directly or indirectly; and mandatory audit firm rotation where Article 17 (Duration of the audit engagement) for the first time implements mandatory audit firm rotation by requesting that neither the initial engagement nor a renewed engagement should exceed a maximum duration of 10 years (with possible prolongation in case of public tendering process or joint audit). As these were introduced in the form of Regulation they will be directly applicable without the need for implementing it in national legislation. The requirements regarding audits of non-PIEs, on the other hand, were presented in form of Directive, implying that the Member States must implement the requirements in their national legislation. In some areas the Directive 2014/56/EU gives the Member States the discretion to decide whether some measures that will be in place for the audits of PIEs will or will not also be applicable to audits of non-PIEs.

A variety of reasons exist as to why various stakeholders are concerned about the current structure of the market for audit services. In addition to the previously mentioned problems of limited choice and systemic risk the prevailing concerns comprise two additional potential threats as stressed by Caban-Garcia and Cammack (2009). The authors claim that the market power of major market players could cause monopolistic pricing as well as a decline in the quality of audits that can lead to a decreased stability of capital markets and investor confidence. Although the number of market players and other aspects of market concentration are crucial to mitigate the problems of limited choice and the threat of systemic risk it should be emphasized that empirical evidence does not provide consistent support for the argument that higher concentration is related to higher prices and/or lower audit quality. The theoretical justification for a relationship between seller concentration and their ability to increase prices above the competitive level was presented by Clarke (1985). However, Boone, Khurana and Raman (2012) present an alternative view, claiming that audit market concentration could increase, rather than decrease, audit quality because concentration could lower auditor's need to please the client and strengthen his/her professional values. This is supported by Buijink, Maijor and Meuwissen (1998) who studied German and Dutch markets for audit services and reported that high levels of concentration do not indicate limited competition and that increasing competition can be consistent with increasing concentration. Moreover, the more recent research by Francis, Michas and Seavey (2013) was motivated by the high-profile reports in the US, the UK and the EU that have raised concerns over the high concentration rates and their possible effects on audit quality. The authors studied the relationship between market structure and quality of audit outcomes in 42 countries. They report that Big 4 audits as well as non-Big 4 audits are of higher quality in countries where the group of the Big 4 firms has a larger market share. Contrary to Boone, Khurana and Raman (2012) the authors claim that this result could reflect markets demanding high-quality audits where lower-quality auditors are driven out of the market.

In the paper we analyze the audit market concentration in Slovenia. The aim of the study is to determine the level of concentration on two distinct segments of the audit market: the segment for listed and the segment for non-listed auditees. Similar to other EU Member States Slovenia is currently undergoing the process of adopting national legislation (Companies Act and Act on Auditing in particular) to the new EU Regulation and Directive. As some of the issues raised by the EU – namely the problem of limited choice and systemic risk – are highly related to concentration, the study of audit market concentration in different market segments in Slovenia is highly relevant and timely. It provides a basic understanding of the differences between the two viable segments of the audit

market: segment for listed and segment for non-listed companies which can serve as a prominent ground for different legislative treatment of the two. However, it is not to be expected that the sole low level of market concentration will also tackle the issues related to audit fees and audit quality. Beyond the audit market concentration related evidence provided by this study, regulators and policymakers should also consider available empirical evidence dealing with effects of measures such as mandatory audit firm rotation (Myers et al., 2003; Johnson et al., 2002; Jackson et al., 2008; Geiger and Raghunandan, 2002; Gerakos & Syverson, 2013; Bell, Causholli & Knechel, 2015; Cameran et al., 2015), prohibition of non-audit services (Gul, Tsui & Dhaliwal, 2006; Svanström, 2013; Ratzinger-Sakel & Schönberger, 2015; Bell, Causholli & Knechel, 2015) and joint audits (Deng et al., 2014; Audousset-Coulier, 2015) on auditor independence and, consequently, audit quality (Tepalagul & Lin, 2015) to properly address these highly relevant topics in the national legislation.

The article is further structured as follows. First, we present the historical development of the Slovenian audit market that presents the setting of our study. Next, the concentration coefficient and the Herfindahl-Hirschman index are presented as established measures of market concentration. We then summarize the findings of some recent studies in the area of audit market concentration and present our own research of audit market concentration in Slovenia along with the results of the analysis. The article concludes with the discussion of the main findings, policy implications and suggested areas for future research.

Development of the audit market in Slovenia

Contrary to other market economies with long tradition of auditing, the profession has a relatively short tradition in Slovenia. When Slovenia was part of the Yugoslav Republic (until 1991), workers' self-management and socially owned capital of enterprises represented characteristics with important impact on accounting and auditing (Zaman and Valentincic 2011). Until year 1991 accounting was prevalingly engaged with book-keeping and accounting reports were predominantly used by internal users. The role of auditing in that period was presented by Garrod and Turk (1995: 754) reporting that '*auditing as a process of judging the fair and true presentation of categories in financial statements was not a normal and obligatory phenomenon except in the case of joint ventures with foreign persons or organizations.*'. After Slovenia's declaration of independence in 1991, a new Companies Act (adopted in 1993) implemented mandatory auditing of financial statements of all large and medium-sized joint stock companies, large limited liability companies and all companies quoted on the stock exchange – a milestone that marks the beginning of the audit profession in Slovenia.

Companies Act called for adoption of Auditing Act, which was also adopted in year 1993. It called for establishment of the Slovenian Institute of Auditors as the principal institution responsible for the development of the auditing profession in Slovenia. The Institute was engaged with preparation of educational programs required to obtain professional titles (auditor, certified auditor) and licensing of certified auditors. Auditing Act also requested the direct use of International Standards on Auditing; no separate set of Slovenian national auditing standards was developed. Later amendments of the Auditing Act in 2001 and 2008 brought stricter independence-related requirements and the public oversight of the auditing profession. The Agency for Public Oversight of Auditing was established with the responsibility to carry out public supervision over the quality of audit services (Zaman and Valentincic, 2011). The new Auditing Act (2008) requires mandatory auditing of financial statements of all large and medium-sized companies, dual companies, small listed companies, companies preparing consolidated financial statements as well as banks and insurance companies.

The research by Le Vourc'h and Morand (2011) provides evidence of low audit fees in Slovenia. The authors investigated and compared audit fees charged to auditees included in Member States' main indices. To tackle the problem of different auditee sizes and enable comparison between countries the authors introduced the variable 'audit fees per million turnover'. The analysis revealed that among all EU Member States audit fees were lowest in Poland (214 EUR per million turnover), followed by Slovenia (267 EUR per million turnover). The highest audit fees for this segment of companies were reported for Belgium (792 EUR per million turnover) and Ireland (739 EUR per million turnover).

Audits are currently carried out by 187 registered certified auditors employed in 57 audit firms (as of July 2015). All of the Big 4 audit firms have entered the Slovenian audit market shortly after the adoption of the first Auditing Act in 1993. Mid-tier audit firms in Slovenia include BDO Revizija (member of BDO International), UHY Revizija in svetovanje (member of UHY International). Smaller audit firms with foreign ownership include AGC Consultatio (member of Consultatio Wirtschaftsprüfungs G. m. B. H.), IB Interbilanz Audit (member of IB Interbilanz Wirtschaftsprüfung G. m. B. H.), Probitas Alpen – Adria Audit (member of Alpen-Adria Wirtschaftsprüfungs G. m. B. H.), Rödl & Partner (member of Rödl Audit SP z.o.o.). Other 47 audit firms are small and medium-sized companies with fully Slovenian ownership that are not part of larger international networks.

Table 1 reveals the largest 15 audit firms in Slovenia in terms of total revenues earned in year 2013. The Big 4 audit firms accounted for as much as 59,98 % of

the total revenues on audit market. The share of the two other international mid-tier auditors is much smaller, accounting for only 2,60 % (BDO) and 1,41 % (UHY), respectively. None of the other audit firms with foreign ownership accounts for more than 1 % of the total market share in terms of revenues.

Table 1: 15 largest audit firms in Slovenia in year 2012 and 2013 by revenues
in EUR

Audit firm	Total revenues in year 2012	Total revenues in year 2013	% of total revenues on audit market in 2013
PRICEWATERHOUSECOOPERS	7.490.465	6.025.190	18,45%
KPMG Slovenija	5.584.010	5.086.348	15,57%
DELOITTE REVIZIJA	3.942.732	4.304.103	13,18%
ERNST & YOUNG	4.594.085	4.176.487	12,79%
BDO REVIZIJA	909.605	849.270	2,60%
ABC REVIZIJA	1.025.815	816.691	2,50%
PKF revizija in svetovanje	729.125	640.413	1,96%
AUDIT & Co.	705.696	625.116	1,91%
DINAMIC	499.806	481.991	1,48%
PLUS REVIZIJA	560.885	478.627	1,47%
VALUTA, družba za revizijo	501.851	468.918	1,44%
UHY Revizija in svetovanje	556.484	459.719	1,41%
AUDITOR revizijska družba	551.036	444.746	1,36%
PIT REVIZIJA	398.323	385.000	1,18%
BM VERITAS	398.095	366.382	1,12%
<i>Total revenues of Big 4 audit firms</i>	<i>21.611.292</i>	<i>19.592.128</i>	<i>59,98%</i>
<i>Total revenues of 10 largest audit firms</i>	<i>26.042.224</i>	<i>23.484.236</i>	<i>71,90%</i>
<i>Total revenues of 15 largest audit firms</i>	<i>28.448.013</i>	<i>25.609.002</i>	<i>78,40%</i>
Total revenues on audit market	35.526.174	32.664.476	

Source: Annual report of the Agency for Public Oversight of Auditing 2014 and GVIN database

Concentration coefficient and Herfindahl-Hirschman index

To determine the rate of market concentration for a particular industry, the researchers most frequently use the concentration coefficient and the Herfindahl-Hirschman index. The concentration coefficient is calculated as follows (Le Vour'h & Morand, 2011):

$$CR_k = \sum_{i=1}^k s_i$$

CR_k – concentration coefficient of k -largest companies

s_i – market share of company i

The concentration coefficient is the sum of the market shares (in the case of the audit market, predominantly measured by total audit fees collected) of the largest k companies in the market. The value of CR_k close to 1 indicates a very high market concentration and consequently the market may become interesting for antitrust regulators. In the case where the value of CR_k approaches 0, market concentration is low. Empirical evidence reports that high concentration in the audit market does not necessarily coincide with lack of competition (Buijink, Majoor & Meuwissen, 1998). The situation may differ considerably across different industries: despite the fact that the market is dominated by only a small number of large companies, it may still be more competitive than the market with a large number of market players (Belleflamme & Peitz, 2010). Recent empirical evidence in the auditing literature suggests that competition can also be impacted by unequal market shares (Dunn, Kohlbeck & Mayhew, 2011). This is supported by Francis, Michas and Seavey (2013) who report lower earnings quality for Big 4 clients in countries with higher market concentration within the Big 4 group.

In the U.S., the most commonly used concentration coefficient is CR_4 which shows the concentration level on basis of the sum of market shares of four largest companies in the industry (Pepall, Richards & Norman, 2008) but other coefficients (such as CR_8) are also used. Stefani (2006) provides an interpretation of CR_4 and CR_8 coefficients (Table 2). It should be noted that concentration coefficients should be interpreted along with their main limitation: they do not contain information on the total number of companies in the market which may - in some instances - lead to inaccurate conclusions.

Table 2: Interpretation of CR_4 and CR_8 coefficients

CR_4	CR_8	Interpretation
75–100%	90–100%	Very high market concentration
65–75%	85–90%	High market concentration
50–65%	70–85%	Moderate market concentration
35–50%	45–70%	Low to moderate market concentration

Source: Stefani, 2006.

While the calculation of concentration coefficients requires only a small number of largest market players' market shares, the calculation of Herfindahl-Hirschman index (HHI) entails the inclusion of market shares of all companies in the market. For a particular industry with N market players, the HHI is calculated as follows (Pepall et al., 2008)

$$HHI = \sum_{i=1}^N s_i^2$$

HHI – Herfindahl-Hirschman index

s_i – market share of company i

HHI index is calculated as the sum of squares of the market shares (predominantly measured by total audit fees collected) of all companies in the industry. It ranges from 0 to 1, moving from a large number of small companies with negligible market shares to a single company that controls the entire market. In an alternative form (if whole percentages are used) the index ranges from 0 to 10.000 points, an index of .3 being equal to 3.000 points. To assist in the interpretation of HHI indices we present one of the U.S. (U.S. Department of Justice and the Federal Trade Commission) and one of the EU (European Commission - Guidelines on the assessment of horizontal mergers) classifications (Table 3).

Table 3: Interpretation of HHI indices

HHI index in the U.S.	HHI index in the EU	Interpretation
HHI < 1.500	HHI < 1.000	Unconcentrated markets
1.500 < HHI < 2.500	1.000 < HHI < 2.000	Moderately concentrated markets
HHI > 2.500	HHI > 2.000	Highly concentrated markets

Source: U. S. Department of Justice and the Federal Trade Commission, 2010; European Commission, 2004.

Despite the fact that the concentration coefficient and the HHI reveal similar trends of concentration there are some significant differences between the two measures. Pong (1999) considers the HHI a better choice, as it includes market shares of all companies in the industry and not just a certain number of the largest companies in the industry. Similarly, Wootton et al. (1994) believe that despite the high correlation between the concentration coefficient and the HHI,

the latter considers the size of the companies and assigns greater weight to companies having larger market shares.

Results of some recent studies of audit market concentration

Between years 2006 and 2008, the U.S. Government Accountability Office (GAO) conducted a research of audit market concentration in the United States. The results showed that in year 2006 the large audit firms accounted for as much as 94 % of total revenues in the segment of listed companies whereas this percentage was even higher (96 %) in year 2002. Despite a slight decline in market concentration in 2006 the market structure for audit services in the United States in this segment of companies was still an oligopoly of the Big 4. HHI indices were especially high for selected industries: in year 2006, for example, the HHI of the audit market for the utilities sector was over 3.500. The study reveals that although the audit market in the segment of listed companies is concentrated overall, the degree of market concentration declines considerably with the size of companies. In the segment of smaller listed companies, for example, a strong trend of market concentration decrease is reported. The answers from the officials of the largest market players reveal that in the U.S. audit market the decrease of concentration is the consequence of the demise of Arthur Andersen (in many cases its smaller clients turned to non-Big 4 audit firms as new incumbent auditors) and the adoption of the Sarbanes-Oxley Act (changes in legislation led the largest audit firms to resign from auditing smaller clients and/or smaller clients turned to smaller audit firms as the consequence of increased fees). These developments in the segment of smaller listed companies were also reflected in the overall reduction of audit market concentration (U.S. Government Accountability Office, 2008).

A profound review of existing research on audit market concentration in the EU and elsewhere was presented by Velte and Stiglbauer (2012). On the basis of studies, investigating the concentration of the audit market in eight EU countries (Germany, Belgium, Denmark, Sweden, France, the Netherlands, Great Britain and Spain) and seven non-EU countries (United States, Switzerland, Australia, Bangladesh, China, Canada and New Zealand) the authors report the trend of increasing concentration in the audit market, particularly for the segment of EU listed companies. In the UK, a study of the market concentration for statutory audits of the FTSE 100 and FTSE 250 was carried out in 2010 by the UK Financial Reporting Council (FRC). The report reveals that in year 2009 the Big 4 audit firms audited 99 per cent of the FTSE 100 companies and as many as 235 of the FTSE 250 companies (Financial Reporting Council: Choice in the UK audit market, 2010). Moreover, the market shares were not distributed evenly

among the Big 4 firms: PwC was the largest player in the market, earning 47 per cent of FTSE 100 companies' audit fees in year 2009. Also, concentration was higher in some specific industry sectors: only two audit firms provided over 80 per cent of audit services in wholesale and retail trade; mining and quarrying; hotels and restaurants; and electricity, gas and water supply (Memorandum by the Office of Fair Trading, 2014).

Empirical evidence on concentration in the Slovenian audit market for the segment of listed companies is provided by Le Vourc'h and Morand (2011) who carried out an international study, investigating the concentration on the audit markets of the EU Member States. Along with the audit markets in Belgium, the Czech Republic, Germany, Greece, Luxembourg, Poland, Portugal, Great Britain and Denmark, the authors describe the Slovenian audit market for listed companies as moderately concentrated. More specifically, Le Vourc'h and Morand (2011) report that for the segment of the 41 auditees listed on the Ljubljana Stock Exchange in year 2009, the CR₁ by number of mandates was 34%, CR₄ was 66% and CR₈ was 88%. For the 6 companies, included in the main Slovenian blue-chip index (SBI) in year 2009 the CR₁ (again by number of mandates) was 66% while (along with 7 other EU countries) CR₄ was 100%, indicating that the Big 4 companies were auditing all companies in the main index SBI.

Table 4: HHI for audit market in Slovenia for listed and non-listed companies

Year	Listed companies	Non-listed companies
2002	2.696	1.256
2003	2.052	1.210
2004	2.284	1.158
2005	2.080	1.040

Source: Skitek, 2009.

International research primarily focuses on concentration related to the market for listed companies. However, scarce evidence on the market for non-listed companies is provided by Skitek (2009). The author studied the Slovenian market for audit services in the period 2002 - 2005. The results for the segment of listed companies are consistent with existing evidence of other researchers, reporting highly concentrated market in the beginning of the studied period with a trend to a moderately concentrated period towards the end of the studied period. On the other hand, Skitek reports that the Slovenian market for non-listed

companies is less concentrated, revealing a persistent trend from the moderately concentrated to unconcentrated marked (Table 4).

Analysis of the audit market concentration in Slovenia

Until year 2005 existing evidence reports less concentrated audit market in the segment of non-listed companies and the trend of decreasing audit market concentration in both segments of auditees (Skitek, 2009). Moreover, it reveals the continuation of this trend in the segment of listed companies until year 2009 (Le Vourc'h and Morand, 2011). Due to the fact that in Slovenia the revised Act on Auditing, imposing more stringent requirements for auditor independence, introducing mandatory audit partner rotation and a new audit oversight body (Agency for public oversight of auditing) was adopted in year 2008, the developments regarding audit market concentration should be further investigated.

We conducted a study based on analysis of publicly available data for the period between 2008 and 2011. First, we obtained data on the number of audit companies by year. In 2008 there were 50 audit firms in the official register kept by the Slovenian Institute of auditors. In 2009 the number increased to 51, in 2010 there were 52 registered audit firms and in year 2011 the number of audit firms reached 56. Using GVIN database, we obtained the data on all large auditees (listed and non-listed) that presented audited financial statements in the studied period. GVIN database is a web business information portal of Slovenian companies offering a wide specter of information including annual reports, business directories, bibliographic collection related to individual companies with full-text from Slovenian journals and comparison with other businesses as well as the economy as a whole. It is managed by Bisnode.

We decided not to include financial institutions. According to Bigus and Zimmermann (2008), financial institutions should be excluded from the analysis of market concentration due to the structure of their assets and to the fact that they are operating in more regulated business environment requesting specialized knowledge and larger audit teams often provided only by largest audit firms. The final sample consists of 769 auditees in year 2008, 763 auditees in 2009, 756 auditees in 2010 and 750 auditees in year 2011. From the GVIN database we obtained data on statutory auditors of all large listed and non-listed audit clients in the sample for the four years. Based on the methodology used by Le Vourc'h and Morand (2011) in their study on the effects of the implementation of the acquis on the consequences on the audit market, we calculated the market shares, both for listed and non-listed companies by audit mandates.

Concentration coefficients and HHI for companies listed on the Ljubljana Stock Exchange are presented in Table 5. Concentration coefficients, with the 4-year CR_4 average of 70,2 % and 4-year CR_8 average of 87,1 % exhibit high level of market concentration. The market share of medium-sized and small audit firms is almost negligible. HHI reveals that the market for audit services for listed companies can be classified as a moderately concentrated market. In the studied period all concentration rates exhibit a moderate trend of increasing market concentration.

Table 5: Concentration coefficients and Hirshman–Herfindahl indices for the number of companies listed on the Ljubljana Stock Exchange

	Companies listed on the Ljubljana Stock Exchange				
	2008	2009	2010	2011	Average
CR₄	67,3%	74,5%	69,6%	69,5%	70,2%
CR₆	81,8%	83,6%	78,6%	83,1%	81,8%
CR₈	87,3%	87,3%	85,7%	88,1%	87,1%
CR₁₀	90,9%	90,9%	89,3%	91,5%	90,7%
HHI	1.795,0	2.086,0	1.766,6	1.720,8	1.842,1

By contrast, concentration coefficients as well as HH indices exhibit low level of concentration or unconcentrated market for the segment of non-listed companies. The 4-year CR_4 average of 42 %, 4-year CR_8 average of 60 % and 4-year HHI average of 703,6 show dispersed supply of audit service providers for non-listed auditees. Moreover, a trend of further decrease of concentration can be observed for the investigated period (Table 6).

Table 6: Concentration coefficients and Hirshman–Herfindahl indices for the number of non-listed companies

	Companies non-listed on the Ljubljana Stock Exchange				
	2008	2009	2010	2011	Average
CR₄	43,8%	41,9%	40,9%	41,2%	42,0%
CR₆	56,3%	53,8%	52,3%	51,8%	53,6%
CR₈	62,6%	60,2%	58,9%	58,3%	60,0%
CR₁₀	67,8%	66,0%	64,1%	63,8%	65,4%
HHI	736,2	724,8	684,7	668,7	703,6

Discussion and conclusion

The analysis of concentration in the market for audit services in Slovenia indicates high concentration of the Big 4 audit firms for the segment of listed companies (4-year CR_4 average 70,2%, 4-year average HHI 1.842,1). On the other hand, the market is unconcentrated for the segment of non-listed companies (4-year CR_4 average 42 %, 4-year average HHI 703,6).

Considering the results provided by Skitek (2009) for the period 2002-2005 our results suggest that the level of concentration in both segments of auditees has decreased over the last 10-year period. The trend of decreasing concentration is more evident in the segment of non-listed companies. There are a number of factors contributing to the decreasing concentration in the market for non-listed companies. First, the number of registered audit firms is increasing. The growing number of registered audit firms, reported for the studied period (from 50 in 2008 to 56 in 2011) continues and as of July 2015 the number of registered audit firms has reached 57. Second, the revised Act on Auditing that was adopted in year 2008 requires mandatory audit partner rotation at least every 7 years. As many small audit firms in Slovenia have no more than one certified auditor this provision results in loss of audit clients after 7 years of audit firm engagement. Consequently, audit firm rotation has increased in this segment after the adoption of the revised act. And third, the owners' requirements, mandating audits to be carried out by one of the Big 4 audit firms are not as emphasized as in the segment of listed companies. This also contributes to a broader choice of audit service providers.

Given the overall observation of the differences between the two segments, the case of the audit market in Slovenia supports the decision of the EC to prepare a separate, more stringent set of rules for the statutory audits of PIEs.

To tackle the issue of excessive audit market concentration in the segment of PIEs the new Regulation 537/2014 on specific requirements regarding statutory audit of public-interest entities introduced, for the first time, mandatory audit firm rotation. According to the revised legislation the maximum duration of audit engagement is 10 years (the period can be extended if specific pre-determined criteria, i.e. public tender and/or joint audits are met). Due to the problem of limited choice faced by large auditees and considering the fact that an audit firm is not allowed to carry out a statutory audit for an auditee where it is already engaged with non-audit services such as tax consulting, appraisal services, services related to the internal audit function and other services affecting the financial statements, the revised legislation will force auditees to consider hiring audit firms other than the Big 4 (mid-tier auditors and smaller audit firms) to carry out statutory audits. Another measure that is expected to reduce audit

market concentration is the provision that any clause of a contract between a public-interest entity and a third party restricting the choice to certain categories or lists of audit firms to carry out the statutory audit is void. The third measure to tackle the concentration issue is the encouragement of joint audits with two companies carrying out the statutory audit and preparing a joint audit report. This provision is aimed at increasing the number of audit firms able to carry out most complex audits. We believe that the set of provisions of the revised audit legislation will contribute to reduced audit market concentration in the top segment of the market that will, in turn, alleviate the problem of limited choice faced by the largest auditees and reduce the systemic risk related to potential exit of another big audit firm from the audit market. However, the concentration-related measures that are primarily intended to alleviate the problems of limited choice and systemic risk may adversely affect audit quality (Francis, Michas and Seavey, 2013; Gerakos & Syverson, 2013; Bell, Causholli & Knechel, 2015; Cameran et al., 2015). Future research will reveal if intended positive effects of the new legislation to tackle the market concentration problem will materialize and whether audit quality in this segment of the audit market will be affected.

As already stressed out a vast body of research provides evidence that measures to tackle audit concentration may be detrimental to audit quality. The results of our study reveal that the segment of non-listed companies in Slovenia does not face high concentration concerns: a large number of auditees are audited by a large number of audit firms, each of them holding a small market share. Moreover, contrary to their listed counterparts, non-listed auditees do not face the problem of limited choice and systemic risk. Considering the situation and trend of continued market concentration decline we conjecture that measures intended to tackle the high concentration issue are not required in the segment of non-listed auditees. For proper implementation of national legislation for audits of non-PIEs (including mandatory audit firm rotation, prohibition of non-audit services and joint audits) national regulators and policymakers should consider the effect of these measures on audit quality.

Future research could elaborate the present study of audit market concentration by including medium-size auditees to pinpoint audit market concentration related specifics for this segment of auditees. Moreover, it would be warranted to consider whether, and to what extent, the concentration in the audit market affects audit fees and quality of statutory audits provided. An international study, comparing concentration levels, audit fees and audit quality in different settings (countries) could serve as a high quality platform for audit market concentration related policy recommendations.

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