STUDY

Requested by the ECON committee

EU Statutory Audit Reform

Impact on costs, concentration and competition

Policy Department for Economic, Scientific and Quality of Life Policies
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Authors: Marleen WILLEKENS (PI), Simon DEKEYSER, Ines SIMAC
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EU Statutory Audit Reform

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Abstract

In this study we execute an in-depth analysis of the evolution of market concentration, competition and costs in the EU market for statutory auditing before and after the Audit Reform. Based on data from archival databases and a survey, we present evidence suggesting that rivalry between the largest audit suppliers increased, as did audit costs, non-Big 4 audit market share, and joint audit rates. Non-audit services (NAS) fees earned by the incumbent auditor decreased.

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AUTHORS

Marleen WILLEKENS (PI), KU Leuven & BI Norwegian Business School
Simon DEKEYSER, KU Leuven
Ines SIMAC, KU Leuven

ADMINISTRATOR RESPONSIBLE

Drazen RAKIC

EDITORIAL ASSISTANT

Janetta CUJKOVA

LINGUISTIC VERSIONS

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To contact the Policy Department or to subscribe for updates, please write to:
Policy Department for Economic, Scientific and Quality of Life Policies
European Parliament
B-1047 Brussels
Email: Poldep-Economy-Science@ep.europa.eu

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LIST OF ABBREVIATIONS

ACCA	Association of Chartered Certified Accountants
B4	The Big 4 audit firms: Deloitte, EY, KMPG and PWC
Big 4	The Big 4 audit firms: Deloitte, EY, KMPG and PWC
BDO	Binder Dijker Otte (audit firm)
CEAOB	Committee of European Auditing Oversight Bodies
CFO	Chief financial officer
CMA	Competition and Markets Authority
DG	Directorate-General
EBA	European Banking Authority
ECG	European Contact Group
EGAOB	European Group of Auditor Oversight
EIOPA	European Insurance and Occupational Pensions Authority
ESMA	European Securities and Markets Authority
EU	European Union
FRC	Financial Reporting Council
GAO	Government Accountability Office
HHI	Herfindahl-Hirschman Index
ICAEW	Institute of Chartered Accountants in England and Wales
ICAS	Institute of Chartered Accountants of Scotland
ISA	International Standards on Auditing
MFR	Mandatory firm rotation
MPR	Mandatory partner rotation
MS	Market share

NACE	Nomenclature statistique des Activités économiques dans la Communauté Européenne
NAICS	North American Industry Classification System
NAS	Non-audit services
NB4	Non-big 4
OECD	Organisation for Economic Co-operation and Development
PIE	Public interest entities
POB	Public Oversight Board
SAD	Statutory Audit Directive
SIFI	Systemically important financial institution
SME	Small and medium sized entities
UK	United Kingdom
US	United States

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EXECUTIVE SUMMARY

Background

The **EU Audit Reform** came into being in the aftermath of the financial crisis. Its **major aim** was to strengthen confidence in the integrity of reported financial statements and to **improve audit quality**. In achieving this goal, one of the main objectives of the Audit Reform was to make the top end of the audit market **more dynamic**.

Aim

The overall objective of the study is to investigate the effects of the Audit Reform on **costs, concentration and competition** in the EU statutory audit market. We identified three key research questions:

1. Is there a (quantifiable) result of the Audit Reform in terms of reduced market concentration and increased market competition in the EU?
2. Is there a material difference in costs for auditees after the Audit Reform?
3. Are there inconsistencies in implementation of the Audit Reform by Member States, and if so, what are the consequences?

Key findings

- The **aggregate** EU market **concentration** remained fairly **constant** after the Audit Reform, but audit market concentration **in almost half of the EU Member States** as well as the **financial** segment of the market did **decrease**.
- Both the archival as well as survey evidence is consistent with **increased rivalry and market share mobility** in the EU audit market in recent years.
- The evidence indicates that **Non-Big 4** audit firms have **gained some market share** after the Audit Reform and **engage more in tender procedures** where they claim to compete on price, quality and technology. The increase in Non-Big 4 market share is larger in the financial sector segment of the market.
- There seem to be **very few enforcement actions relating to competition** in the audit market in the EU, but there is insufficient information available to draw solid conclusions.
- The (weighted) average (nominal) **audit costs increased modestly** after the Audit Reform.
- The increase in audit cost is driven by **increases in audit hours** and increased **complexities** for auditing multinational groups.
- The flexibility embedded in the Audit Reform resulted in **substantial variation between Member States in the implementation** of key aspects of the Audit Reform.
- In Member States with a relatively **strict** implementation of mandatory firm rotation (**MFR**), we observe a **decrease in Herfindahl-Hirschman Index (HHI) and Big 4 market share**, especially in the financial sector segment. There is also **convergence of market shares** of the large audit suppliers and an **increase** in the audit firm **switch rate**.
- In Member States with a **more flexible** implementation of **MFR**, there is **no substantial difference** in HHI and Big 4 market share before and after the Audit Reform, but we observe an **increase** in **market share mobility** and audit firm **switch rates**.

- Both in strict and flexible MFR regimes most audit firm **switching** is between the **same types of audit firms**.
- There is a **slight increase** in the **joint audit rate** for the group of **Member States allowing an extension** of MFR in case of a joint audit, but not in those that do not allow such an extension.
- In the **financial sector** segment, **the joint audit rate** almost **doubled** after the Audit Reform but only in Member States allowing for a **joint audit extension** of MFR.
- The provision of **non-audit services** to public interest entities (PIEs) by the statutory auditor has **decreased**. This effect is stronger the higher the non-audit services (NAS) fee was relative to the audit fee paid.
- Archival evidence shows an **increase of 'audit-only clients'** after the Audit Reform, but only in the sub-segment of **financial services PIEs**.
- It is **unclear** whether the observed (early) changes in concentration, competition and costs improved or will **improve audit quality** which could be a topic for **future research.**
- Future research on the **effects of Member State differences** in implementation of key aspects of the Audit Reform is also likely to be very **informative to future EU policymaking**.

1. INTRODUCTION

The overall objective of the study is to investigate the effects of the Audit Reform on costs, concentration and competition in the EU statutory audit market.

We identified **three overarching research objectives** and a number of specific research questions. See Boxes 1-3 for an overview.

Box 1: Research objective 1

1. To investigate whether there a (quantifiable) result of the Audit Reform in terms of reduced market concentration and increased market competition in the EU.

- Do the most recent market data allow the conclusion that the statutory audit sector in the EU has become less concentrated?
- Do the most recent market data allow the conclusion that the statutory audit sector in the EU has become more competitive?
- How is the current system working for smaller audit firms when applying in tendering procedures for large, public-interest companies?
- Have enforcement measures been taken by the European Commission (DG Competition) and national competition authorities in this sector, and if so, what conclusions can be drawn?

Box 2: Research objective 2

2. To investigate whether there is a material difference in costs for auditees after the Audit Reform.

- Did audit-related costs change after the Audit Reform?
- If so, what are the reasons for changes in audit costs after the Audit Reform?

Box 3: Research objective 3

3. To investigate whether there are inconsistencies in implementation of the Audit Reform by Member States, and, related to that, to assess the effects of specific aspects of the Audit Reform on market concentration, competition and costs in the EU.

- Are there inconsistencies in the implementation of the key parts of the reform in the various Member States and what were the effects on the costs, concentration and competition in the EU audit sector?
- Has mandatory firm rotation (MFR) led to increased competition in the EU market?
- Has the option of joint audits been taken up in Member States?
- Has the secondary effect of opening up the market for non-audit services materialised?

To investigate all these questions we adopted two major research methodologies in this study[1]:

- first, we used an **archival empirical research methodology** to analyse relevant data retrieved from databases such as Audit Analytics Europe and Orbis; and second
- we employed a **survey methodology** to collect and then analyse data that are not available from the former databases.

Note that, we administered two different surveys[2]:

- an **audit firm survey**, sent to all EU audit firms that have PIEs in their client portfolio;
- a **PIE survey** intended to be sent to all **financial sector** PIEs in the EU; and a modified version of the same survey sent to a representative sample of **non-financial sector** PIEs in the EU.

We also relied to a lesser extent on a third research methodology, namely the **interview methodology**. We conducted a number of interviews to acquire more information about key aspects of the study. More details are provided in ANNEX I. METHODOLOGY.

1 A detailed description of our research methodology can be found in Annex I.

2 All survey instruments are provided in ANNEX III and IV, respectively.

2. CONTEXT AND OBJECTIVES OF THE AUDIT REFORM

2.1. Context of the Audit Reform

Prior to the Audit Reform (i.e. Directive 2014/56/EU[3] and Regulation 537/2014), EU audit legislation was mainly covered by the Statutory Audit Directive (SAD) (i.e. Directive 2006/43/EC)[4]. The SAD included (among other things) a comprehensive set of rules related to the duties of a statutory auditor; it also introduced a requirement for both public oversight for the audit profession and improved cooperation between regulatory authorities in the EU. Furthermore, Directive 2006/43/EC also included the introduction of International Standards on Auditing (ISAs), provisions on auditor liability, continuing professional education and audit partner rotation. As such, it represented a big step towards harmonizing the statutory audit function throughout the EU, thus aiming to increase audit quality and to gradually converge upon a common European audit market.

In the aftermath of the global financial crisis, significant weaknesses were identified in the statutory audit function; these weaknesses were cited as a factor in auditors failing to provide any warning signals about troubled banks (see e.g. Humphrey, Loft and Woods, 2009). This strong criticism started to raise doubts about the accuracy of audited financial statements of large companies and intensified issues around auditor independence[5]. As a result, regulators and policy makers in Europe, as well as in the UK and the US, have initiated a series of high-level inquiries into the role and the effectiveness of external auditing (ACCA, 2011).

In Europe, the financial crisis highlighted shortcomings in the European audit system. In response, the European Commission (2010) released a wide-ranging Green Paper, 'Audit Policy: Lessons from the Crisis', in which the role of statutory auditing in the context of that time was seriously questioned. The Green Paper was followed by an open consultation in which multiple stakeholders were invited to respond. The European Parliament reacted to the Commission's 2010 Green Paper with its own report[6] highlighting transparency and auditor competition as valuable elements to statutory auditing but at the same time remaining critical of some other suggestions.

After the consultation, proposals were made by the European Commission to improve the quality of audits of Public-Interest-Entities (PIEs), and this eventually led to Regulation 537/2014. Proposals were likewise made to enhance the single market for statutory audits (eventually leading to Directive 2014/56/EU).

After being adopted in a co-decision procedure, both the Directive (2014/56/EU) and the Regulation (537/2014) came into effect in June 2016. In Table 1 an overview is given of some of the main provisions included in the new Regulation and Directive.

[3] Amending Directive 2006/43/EC.

[4] Amending the Fourth Council Directive (i.e. 78/660/EC) and the Seventh Council Directive (i.e. 83/349/EC) and repealing the Eight Council Directive (i.e. 84/253/EEC). For banks and other financial institutions, this was covered by Council Directive 86/635/EC.

[5] See e.g. MEMO/11/856 by the European Commission (http://europa.eu/rapid/press-release_MEMO-11-856_en.htm?locale=en).

[6] http://www.europarl.europa.eu/sides/getDoc.do?type=TA&language=EN&reference=P7-TA-2011-359.

Table 1: Overview of main provisions included in Regulation 537/2014 and Directive 2014/56/EU

Regulation 537/2014	Directive 2014/56/EU
Prohibition and capping of non-audit services *(Art. 4 and Art. 5)*	New definitions (e.g. PIEs) *(Art. 2)*
Mandatory firm rotation *(Art. 17)*	Independence and objectivity *(Art. 22)*
Auditor reporting *(Art. 10)*	Quality assurance *(Art. 29)*
Oversight at the EU level *(Art. 12)*	New mechanism to adopt ISAs *(Art. 26)*
Establishment of the CEAOB *(Art. 30)*	

Source: own source.

Note that the Regulation introduced a special transitional regime (Article 41) to avoid a 'cliff effect' with respect to mandatory audit firm rotation, which could disrupt the capital markets. As a result, the so-called mandatory rotation was planned to start at three different stages[7] (see Table 2):

Table 2: Transitional periods related to mandatory audit firm rotation

Start of the audit engagement	Number of audit engagement years	No renewal of audit engagement after
<16 June 1994	>20 years	17 June 2020
17 June 1994- 16 June 2003	11-20 years	17 June 2023
17 June 2003- 16 June 2014	<11 years	the maximum rotation period as applicable in the Member State following the Audit Reform

Source: own source.

2.2. Main objectives of the Audit Reform

In general, the goal of (any) auditor regulation is to improve external audit quality (see e.g. POB, 2000; ICAEW, 2002; POB, 2006; Holm and Zaman, 2012; Knechel, 2016). External auditing has value because it adds to the credibility and reliability of financial statements issued by companies. That is, reported financial information is of 'better quality' when it is vetted by an (external) auditor whose opinion is stated in the audit report (Hay, Knechel and Willekens, 2014; Langli and Willekens, 2018).

The new EU audit legislation came into being in the aftermath of the financial crisis. Its major aim was to strengthen confidence in the integrity of reported financial statements and to improve audit quality. In achieving this goal, the main objectives of the Audit Reform are to:

[7] The argument for these transitional arrangements is that companies that are in the category for which the audit engagement started between 2003-2014 are probably more flexible, whereas the other firms need extra time to adjust to the new legislative framework.

- Reinforce auditor independence and professional scepticism;
- Make the top end of the audit market more dynamic;
- Reduce unnecessary burdens on SMEs;
- Improve auditor supervision; and
- Ensure a higher level of transparency in companies' reported financial information.

In what follows, we elaborate upon each of these objectives and outline how the new Audit Reform attempts to achieve them.

2.2.1. Reinforce auditor independence and professional scepticism

One of the shortcomings identified in the audit market following the financial crisis was an overly familiar relationship between management and the audit firms responsible for statutory audits. To address this issue, the Audit Reform strongly concentrates on auditor independence and professional scepticism. Actions that threaten auditor independence and professional scepticism violate the ISA 200 requirements[8] and can jeopardise an auditor's ability to conduct audits of financial statements in accordance with ISAs.

The new legal framework strengthens requirements regarding independence by improving the organisational requirements of statutory auditors and audit firms (see Art. 24 of Directive 2014/56/EU). For PIE audits, the reform also establishes a list of prohibited non-audit services (NAS) for statutory auditors as well as limits on the fees that can be charged for NAS (see Art. 4 and Art. 5 of Regulation 537/2014). In essence, these regulations target activities that carry an inherent threat to auditor independence and can possibly increase conflicts of interest for statutory auditors.

2.2.2. Contribute to a more dynamic audit market

The top end of the audit market is characterised by high concentration levels (due to the so-called 'Big 4' domination), which impose a significant lack of auditor choice and thus create systemic risk. Long professional relationships with their clients make statutory auditors more likely to suffer from a lack of auditor independence, creating a situation that in turn might harm professional scepticism. To address this issue, the Audit Reform introduces measures aimed at reducing over-familiarity between statutory auditors and their clients, increasing competition (and choice) in the audit market while promoting market diversity at the top end of the audit market.

As such, the Audit Reform introduces a mandatory audit firm rotation regime for PIEs (see Art. 17 of Regulation 537/2014) and encourages joint audits and tendering. At the same time, it seeks to promote new market opportunities via the prohibition of certain NAS. This is a *de facto* requirement that a firm other than the statutory audit firm should deliver these services.

2.2.3. Reduce unnecessary burdens on SMEs

SMEs form an important part of the European economy and are essential for economic growth and employment. Because of calls over the years to reduce the regulatory burden for small businesses[9], the new audit legislation avoids imposing additional burdens on SMEs.

To this end, the Audit Reform entails a proportionate application of Directive 2014/56/EU to reduce the administrative burden for the auditor, and the requirements are simplified as they relate to auditor

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8 See: http://www.ifac.org/system/files/downloads/a008-2010-iaasb-handbook-isa-200.pdf.

9 See e.g. the "Small Business Act" of Europe: https://ec.europa.eu/growth/smes/business-friendly-environment/small-business-act_en.

independence and to the internal organisation and record keeping of the audit firm. For SMEs classified as PIEs (and therefore subject to Regulation 537/2014), the Member State may relax strict requirements with respect to audit committees, quality assurance (see Art. 26 of Regulation 537/2014) and the appointment of auditors (see Art. 16 of Regulation 537/2014).

2.2.4. Improve auditor supervision

Another important objective of the Audit Reform is related to the oversight of the auditing profession. Both the Directive and the Regulation stipulate that each Member State should have a single competent authority with responsibility for the public oversight system for auditors. In addition to conducting oversight, these competent authorities also gain more powers, including investigative rights as well as sanctioning powers.

Overall, this oversight will be conducted at the Member State level; however, cooperation and coordination will occur at the European level under the newly created Committee of European Auditing Oversight Bodies (CEAOB)[10], which is responsible for an effective and consistent supervision of the external audit function across the EU.

2.2.5. Ensure further transparency of companies' financial information

The financial crisis brought to light significant shortcomings in audit reports. These shortcomings cast doubt among investors about the credibility and reliability of audited financial statements, particularly in the financial services sector. To enhance transparency, the Audit Reform stresses the importance of making more detailed information accessible through audit reports. Thus, both the Directive and the Regulation introduce additional requirements to the content of the audit report.

2.3. Adoption of the Audit Reform in different Member States

The Audit Reform allows Member States flexibility regarding specific requirements in both the Directive as well as the Regulation. These are referred to as Member State options and provide a degree of flexibility in meeting the new EU audit legislation's demands . This flexibility includes areas such as the following: the definition of a PIE, the duration of mandatory firm rotation periods, decisions as to which NAS are prohibited and where the NAS level is capped.

In what follows, we first give an overview of the implementation status of the new EU audit legislation for each Member State from June 2016, to November 2018. Next, we focus on a number of Member State options in Regulation 537/2014 that are relevant to this study. Accordingly, we summarize how each Member State has implemented the respective Member State option into national law.

2.3.1. Implementation status

In Table 3, we provide an overview of the implementation process from June 2016 to November 2018 for all 28 Member States. The table is a summary of all the reports from Accountancy Europe on the new EU audit rules[11]. We notice that in the beginning (June 2016), only 12 of the 28 Member States had already implemented all rules into their national legislation. By January 2017, a total of 20 Member States had done so. Finally, by November 2018, 27 Member States had transposed all articles into their respective national legislative statutes. The country that has not yet implemented all rules is Slovenia.

[10] The CEAOB replaces the European Group of Auditor Oversight (EGAOB).

[11] Website: https://www.accountancyeurope.eu/publications/1606-new-audit-rules-state-play/.

Table 3: Member State implementation status from June 2016 to November 2018

Country	June 2016	Sep 2016	Jan 2017	March 2017	June 2017	Dec 2017	April 2018	Aug 2018	Oct 2018	Nov 2018
Austria	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Belgium	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bulgaria	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Croatia	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Cyprus	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Czech Rep.	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Denmark	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Estonia	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Finland	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
France	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Germany	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Greece	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hungary	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ireland	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Italy	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Latvia	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lithuania	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Luxembourg	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Malta	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Netherlands	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Poland	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Portugal	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Romania	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Slovakia	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Slovenia	No	No	No	No	No	No	No	No	No	No
Spain	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sweden	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
UK	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TOTAL:	**12**	**16**	**21**	**23**	**25**	**26**	**27**	**27**	**27**	**27**

Source: Accountancy Europe.

2.3.2. PIE definition

Directive 2014/56/EU gives each Member State the option to modify the definition of a PIE. This Member State option is important because it defines which companies will be subject to Regulation 537/2014 and thus to MFR and prohibition of NAS. In Table 4 we identify the Member States that follow the EU definition of a PIE vs. those that do not (per November 2018). This table is based on the latest[12] report from Accountancy Europe on the implementation of the new EU audit legislation. We notice that only 12 out of 28 Member States adopt the PIE definition as defined per EU law. In other words, there is still a lot of diversity across countries.

Table 4: Member State implementation of PIE definition

PIE definition as per the EU definition	PIE definition different from the EU definition
Cyprus	Austria
Denmark	Belgium
Estonia	Bulgaria
Finland	Croatia
Germany	Czech Rep.
Greece	France
Ireland	Hungary
Luxembourg	Italy
Netherlands	Latvia
Slovenia	Lithuania
Sweden	Malta
UK	Poland
	Portugal
	Romania
	Slovakia
	Spain
TOTAL: 12	**TOTAL: 16**

Source: Accountancy Europe.

For the archival part of this study, it is important to mention that our classification of a PIE is based on a company's listing status. If the company is listed, we classify it as a PIE, whereas some Member States might also classify non-listed companies as a PIE. The latter refinement is not represented in our sample because of data limitations[13].

[12] November 2018.

[13] Audit Analytics Europe only has EU listed PIEs in its database.

2.3.3. MFR implementation

Art. 17 of Regulation 537/2014 gives Member States a couple of options related to the duration of an audit engagement for PIEs. For example, they may change the initial engagement for a period of more than one year. Furthermore, as regards the rotation period (which is set by the EU at a maximum of 10 years), Member States are allowed to impose a rotation period of less than 10 years. Finally, Member States have the flexibility to extend the total duration to 20 years in the case of a public tendering and 24 years in the case of a joint audit. Table 5 gives an overview on the implementation of Art. 17 of Regulation 537/2014 and its options for all 28 EU Member States. There is consistency in the minimum and maximum initial duration of the engagement period at one and ten years, respectively. However, there are strong differences across Member States related to the options that allow for an extension of the audit engagement. In total, 18 countries allow a tender extension over four different periods. If we look at joint audit extension, we notice a total of nine Member States that allow this over four different periods. Combined, we notice 17 different mandatory audit firm rotation regimes across the EU.

Table 5: Member State implementation of MFR

Country	Min initial duration of engagement	Max initial duration of engagement	Tender extension	Joint Audit extension
Austria	1	10	No[14]	No[15]
Belgium	3	9	9	15
Bulgaria	1	7	No	No[16]
Croatia	1	10	10	10[17]
Cyprus	1	10[18]	10[19]	14[20]
Czech Rep.	1	10	10	No
Denmark	1	10	10	14
Estonia	2	10	10	No
Finland	1	10	10	14
France	6	10	6	14[21]
Germany	1	10	10[22]	14
Greece	1	10[23]	10	No
Hungary	1	10[24]	No	No

14 Up to 10 years with tender extension for engagements appointed between 2003-2014.
15 Up to 14 years with joint audit extension for engagements appointed between 2003-2014.
16 Mandatory joint audit for financial companies.
17 Mandatory under certain conditions.
18 9 years for banks.
19 Not for banks.
20 Not for banks.
21 Mandatory.
22 Not for banks.
23 5 years for SIFIs.
24 8 years for banks.

Country	Min initial duration of engagement	Max initial duration of engagement	Tender extension	Joint Audit extension
Ireland	1	10	No	No
Italy	9	9	No	No
Latvia	1	10	10	No
Lithuania	2	10	No	No
Luxembourg	1	10	10	No
Malta	1	10	10	No
Netherlands	1	10	No	No
Poland	2	5	No	No
Portugal	2	8 or 9	1-2[25]	No
Romania	1	10	10	No
Slovakia	2	10	10	No
Slovenia	3	10	No	No
Spain	3	10	No	4
Sweden	1[26]	10	10[27]	4
UK	1	10	10	No

Source: Accountancy Europe and ECG.

2.3.4. NAS implementation

Articles 4 and 5 of Regulation 537/2014 are related to the capping of non-audit fees and the prohibition of non-audit services, respectively. Both articles give Member States a degree of flexibility. For example, Member States may apply a more stringent cap than the 70 % rule[28]. Furthermore, Member States may prohibit more non-audit services than the ones listed in Regulation 537/2014[29] or allow the services referred to in Article 5.1 of the Regulation[30].

Table 6 summarises the implementation of these Member State options related to NAS. Most EU countries stick to the list of prohibited services included in the Regulation. It is noteworthy that most EU countries have also opted for a derogation of tax and/or valuation services and that Portugal alone chose to place its cap on non-audit fees below the 70% mark.

25 Extendable up to 10 years.

26 Max 4 years.

27 Not for banks.

28 Total fees for non-audit services other than those referred to in Article 5(1) of Regulation 527/2014 shall for three consecutive financial years be limited to 70 % of the average of the fees paid in the last three consecutive years.

29 Provision of tax services, services that involve playing any part in the management or decision-making of the audited entity, bookkeeping and preparing accounting records and financial statements, payroll services, designing and implementing internal control or risk management procedures, valuation services, selected legal services; internal audit services, services linked to financing, capital structure and allocation and investment strategy, promoting, dealing in or underwriting shares, selected human resources services.

30 Preparation of tax forms, identification of public subsidies and tax incentives, support regarding tax inspections by tax authorities, calculation of direct and indirect tax and deferred tax, provision of tax advice, and valuation services.

Table 6: Member State implementation of NAS

Country	Additional prohibitions next to Regulation	Derogation of tax and/or valuation	Cap
Austria	No	Tax & Valuation	70%
Belgium	No	Tax & Valuation	70%
Bulgaria	No	Tax	70%
Croatia	No	Tax & Valuation	70%
Cyprus	No	Tax & Valuation	70%
Czech Rep.	No	Tax & Valuation	70%
Denmark	No	Tax & Valuation	70%
Estonia	No	Tax & Valuation	70%
Finland	No	Tax & Valuation	70%
France	Yes	No	70%
Germany	No	Tax & Valuation	70%
Greece	No	Tax & Valuation	70%
Hungary	No	Tax & Valuation	70%
Ireland	No	Tax & Valuation	70%
Italy	No	No	70%
Latvia	No	Tax & Valuation	70%
Lithuania	No	Tax	70%
Luxembourg	No	Tax & Valuation	70%
Malta	No	Tax & Valuation	70%
Netherlands	Yes (white list)	No	70%
Poland	Yes (white list)	No	70%
Portugal	No	No	30%
Romania	No	Tax & Valuation	70%
Slovakia	No	Tax & Valuation	70%
Slovenia	No	No	70%
Spain	No	Tax & Valuation	70%
Sweden	No	Tax & Valuation	70%
UK	Yes	Tax & Valuation	70%

Source: Accountancy Europe.

2.4. Enforcement actions

In this section, we tried to address the following research questions:

- Are there enforcement actions taken by NCAs (if so, what did they reveal); and
- In which Member States has this occurred and is there a relationship with the way the Audit Reform has been implemented in each Member State?

First, we give details on the monitoring function over audit market quality and competition as outlined in Art. 27 of Regulation 537/2014. Afterwards, we summarise our findings on enforcement actions taken as well as ongoing investigations after the Audit Reform. The results of this section are based on a previous report published by the European Competition Network (ECN)[31] and subsequently discussed via an interview with the ECN[32].

2.4.1. Monitoring market quality and competition

Article 27 of Regulation 537/2014 states that NCAs and the ECN, when necessary, should frequently monitor the evolution of the PIE audit market. The relevant NCAs in this case are the national audit oversight bodies which are also members of the CEAOB[33]. Their primary goal is to assess the following:

- the risks associated with frequent reporting of audit quality deficiencies within an auditor or audit firm (including systematic deficiencies)[34];
- audit market concentration levels (including in specific sectors);
- the performance of the audit committee; and
- whether actions need to be taken to mitigate the risks referred above.

In terms of reporting, each NCA and the ECN must draw up a summary on the developments in the audit market of PIEs at least every three years and submit it to the CEAOB, ESMA, EBA, EIOPA, and the European Commission. Specifically, Article 27 of Regulation 537/2014 requires a report on these audit market developments by each NCA under the Audit Regulation as well as a joint report by the ECN. For this joint report by the ECN, all 28 NCAs are asked to report on any activities in this area which is then summarized in the final report. The first report has already been published in September 2017, whereas the next one will be released in 2020.

2.4.2. Enforcement cases and ongoing investigations

Based on the first report of the ECN, we notice that 13 out of 28 NCAs reported on their activities in the audit market. Out of the 13 contributors, five Member States were considered to have some issues related to the statutory audit function. These include: Denmark, Poland, Portugal, Romania, and the UK.

The issues reported by Poland and Portugal were of a lesser gravity relating to issues such as commenting on the implementation of the new audit regulation. In Romania, there was enforcement related to a possible breach of competition rules, but the case has been closed in the meantime. For Denmark, there was a report on the merger between EY and KPMG which dates from before the Audit Reform. Finally, in the UK there is regular oversight of the audit market followed by reports on the

[31] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52017DC0464.

[32] For more details we refer to Appendix I. Methodology.

[33] The composition of the CEAOB can be retrieved on this link: https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/ceaob-composition_en.pdf.

[34] Which could ultimately lead to the demise of an audit firm and all the negative consequences related to that such as a disruption of the provision of statutory audit services.

matter. The Competition and Markets Authority (CMA) recently launched a study in October 2018, and published an updated report[35] of their findings and proposed remedies in December 2018, which is currently open for public consultation. Note that, the CMA has some exceptional powers to look beyond Article 101 and Article 102 of the Treaty on the Functioning of the European Union which means that it is entitled to organise actions in particular markets if it can identify competition issues there.

In conclusion, we did not find information on a lot of enforcement actions taken in the audit industry except those in Romania and Denmark – the latter dating from prior to the new Audit Reform. As such, it is not possible to provide conclusions relating to whether or not the occurrence of enforcement actions are related to the way the Audit Reform has been implemented in each Member State.

[35] https://assets.publishing.service.gov.uk/media/5c17cf2ae5274a4664fa777b/Audit_update_paper_S.pdf.

3. REVIEW OF PRIOR RESEARCH FINDINGS

Statutory auditing is a regulated activity, and a major goal of auditor regulation is to safeguard and/or improve audit quality (see e.g. Holm and Zaman, 2012; Knechel, 2016; Köhler, Quick and Willekens, 2018; Langli and Willekens, 2018). To date (and to the best of our knowledge), no large-scale study has been performed investigating the effects of the EU Audit Reform on costs, competition and concentration in the European audit market. However, a plethora of academic auditing studies have investigated topics related to the main objectives of the EU Audit Reform, but those studies are based on data from prior time periods or other institutional environments. In what follows, we provide some key conclusions related to:

- audit market concentration and competition in the audit market (3.2);
- auditor independence (NAS and MFR) (3.3);
- joint audits (3.4); and
- audits for SMEs (3.5).

But first, we provide a brief summary (3.1) related to these topics.

3.1. Brief summary

A number of academic studies have investigated topics that relate to the main objectives of the Audit Reform. These include auditor concentration and competition, auditor independence, joint audits and audits of small companies.

Regarding concentration and competition, the main conclusions are that auditor concentration is rising yet most government-mandated studies fail to find any adverse effects related to this matter. Academic studies that examine the effect of concentration on audit pricing and/or audit quality report mixed results. Others have looked at competition as a dependent variable to explain the drivers of variation in competition.

When studying auditor independence, researchers typically look at the joint supply of audit and non-audit services as well as mandatory rotation. The evidence regarding the provision of NAS is rather mixed. Some studies conclude that providing NAS impairs audit quality, whereas others do not report a negative association with the quality of audit services but rather suggest the presence of knowledge spillovers. When we focus on firm rotation and auditor tenure in the auditor independence literature, the evidence generally shows that a longer tenure is not associated with lower quality audits and that mandatory rotation does not necessarily lead to enhanced audit quality.

For joint audits, the empirical evidence concludes that joint audits are typically associated with higher audit fees but not higher audit quality. However, some studies find that the specific pairing of auditors is an important driver of better audit quality in dual audit settings.

Finally, regarding the audits of small companies, it appears to be a matter of consensus that the cost of doing an audit for a small company is disproportionately high given the limited benefits. However, for those small companies that do hire auditors, research has shown evidence of improved financial reporting quality. Focusing on auditor characteristics (i.e. Big 4 vs. Non-Big 4), has brought rather mixed results, with some studies finding improved audit quality after switching to a Big 4 while other studies find no differences between categories.

3.2. Audit market concentration and competition

Supplier concentration and competition in the audit market have concerned audit policy makers over the past four decades. This is particularly true in the segment of large audit clients as it is characterized by the dominance of the Big 4 audit firms and a lack of auditor choice (OECD, 2009; Langli and Willekens, 2018). Generally, regulators and policy makers (both in the US and European audit markets) are worried that a high level of auditor concentration in the large client market segment might affect the degree of price competition, auditor choice and audit quality (ICAS, 2008). In an attempt to address this issue, multiple governmental bodies across the globe (before 2008) initiated studies in search of policy recommendations (e.g. Treasury Committee, 2002; Coordinating Group on Audit and Accounting Issues, 2003; GAO, 2003, 2008; FRC, 2006; Oxera, 2006, 2007; US Chamber of Commerce, 2006; US Department of Treasury, 2008); however, most of these studies conclude that even though there is an increasing trend in auditor concentration, there is no compelling need to address it because there is no evidence of concentration having adverse effects. Nonetheless, the 2008 financial crisis renewed attention to the competitiveness of the audit market, particularly in industries that are characterised by systemic risk (e.g. European Commission, 2010; UK House of Lords, 2011; Oxera, 2011; Competition and Markets Authority, 2018).

In its investigations of the effects of auditor concentration and competition, prior academic research has typically used audit market concentration measures as a proxy for competition and directly examined the effect of concentration as an independent variable on audit pricing and/or audit quality. However, the empirical evidence points to mixed results.

In terms of audit pricing, Pearson and Trompeter (1994), for example, find a negative association between industry concentration and audit fees, suggesting that higher concentration is associated with increased price competition. Bandyopadhyay and Kao (2004) find no support for the assumption that audit fees are higher in more concentrated markets, whereas Feldman (2006) finds that since the demise of Arthur Andersen, the large US audit firm, both market concentration and audit fees have increased. Others, such as Casterella et al. (2013), report evidence of a higher fee premium (for specialization) only in concentrated markets, while Gerakos and Syverson (2015) find that the loss of an additional Big 4 firm (which is associated with higher auditor concentration) would result in an overall increase in audit fees. Finally, Eshleman and Lawson (2016) re-examine the association between auditor concentration and audit fees and document a positive association when controlling for local fixed effects[36].

With regard to the effect on audit quality, Kallapur et al. (2010) as well as Francis et al. (2012) find a positive association between concentration and audit quality, whereas Huang et al. (2016) only find that audit market concentration has an indirect positive association with audit quality. Boone, Khurana and Raman (2012) report a negative association between concentration and auditor tolerance for earnings management. Similarly, Eshleman and Lawson (2016) find a positive effect on audit quality the higher the audit market concentration and suggest a possible relation with higher audit fees.

Dedman and Lennox (2009) and Numan and Willekens (2012) argue that auditor concentration is not always an appropriate measure for competition (either theoretically or empirically). In keeping with this view, Numan and Willekens (2012) and Bills and Stephens (2015) develop and use alternative measures of auditor competition based on spatial economics and report a positive association between audit fees and the distance in market share of an auditor from its closest competitor (which is a measure of market power).

[36] That is, by including Metropolitan Statistical Area (MSA) level indicators.

Finally, some academic studies explain the variation in the level of competition across different audit market segments (i.e. competition as a dependent variable) using dynamic measures of audit market competition. A working paper by Dekeyser et al. (2017) investigates the effect of mutual forbearance among audit firms on dynamic competition variables, such as market share mobility in a market segment (i.e. the sum of market share changes of all audit firms in a market segment) and leader dethronement (i.e. whether the industry leader is dethroned by a rival in a market segment). Furthermore, Chang et al. (2009) study and report an increase in market share mobility after audit fee deregulation in Taiwan. Bujink et al. (1996) compare market share mobility in Germany vs. the Netherlands for the period 1970-1994 and find that highly concentrated markets also exhibit high market share mobility.

3.3. Auditor independence

As auditor independence is crucial for audit quality, regulators often focus on auditor independence requirements. These typically include: 1) the prohibition of certain non-audit services (NAS) to audit clients; and 2) mandatory rotation of partners and/or firms (Langli and Willekens, 2018).

3.3.1. Joint supply of audit and non-audit services

The joint supply of certain types of non-audit services (NAS) by the auditor has been a topic of much attention in the research literature, and again the empirical evidence is mixed. Some studies document a negative association between NAS supply by incumbent auditors and audit quality (e.g. Sharma and Sidhu, 2001; Kinney et al., 2004; Ferguson et al., 2004; Krishnan, Sami and Zhang, 2005; Francis and Ke, 2006; Gul et al., 2006; Khurana and Raman, 2006). For example, an Australian study by Sharma and Sidhu (2001) finds a negative association between the provision of NAS and issuance of going-concern opinions (ceteris paribus). Similarly, in the US setting, Kinney et al. (2004) report higher levels of restatements when the auditor is associated with higher audit fees, audit-related fees, and unspecified NAS fees. Other studies find support for the view that the provision of NAS does not impair audit quality (e.g. DeFond et al., 2002; Ashbough et al., 2003; Nam and Rouen, 2012; Knechel and Sharma, 2012; Koh et al., 2013). For example, DeFond et al. (2002) find no significant association between the level of NAS fees and the issuance of going-concern opinions in the US market after the Sarbanes-Oxley Act. Moreover, Koh et al. (2013) provide evidence that earnings quality increased when auditors provided NAS, particularly in the case of information services related to NAS. This suggests the presence of knowledge spillovers when auditors conduct both audit and non-audit services.

3.3.2. Mandatory rotation

Another way to enhance auditor independence is the introduction of mandatory rotation (Langli and Willekens, 2018). Mandatory rotation relates to: 1) mandatory partner rotation (MPR)[37] and 2) mandatory audit firm rotation (MFR). As the new audit regulation introduces MFR, we focus on prior literature studying audit firm rotation or topics related to audit firm rotation, such as audit firm tenure.

Most research studies do not find support for the argument that longer tenure periods are associated with impaired audit quality. For example, some studies report lower audit quality in the early years of tenure. Geiger and Raghunandan (2002) find more audit reporting failures in the first year of engagement. In a similar vein, Carcello and Nagy (2004) document a higher incidence of fraudulent financial reporting in the first three years of the auditor-client relationship. Others report a positive association between audit tenure and audit quality (e.g. Johnson et al., 2002; Myers et al., 2003; Gosh and Moon, 2005; Chen et al., 2008; Bratten et al., 2018). Myers et al. (2003) even conclude that the longer

[37] This is already installed as a requirement for PIEs in the 2006 EU Audit Directive.

auditor tenure is, the more reluctant auditors are to accept extreme management decisions. Bratten et al. (2018) focus on the banking sector and find a positive relation between long auditor relationships and the demand for high-quality audits. Looking at MFR, a study by Kwon, Lim and Simnett (2014) finds that mandatory rotation in the Korean audit market did not result in enhanced audit quality compared to longer audit tenure situations in pre-regulation periods and voluntary post-rotation situations. They also report higher audit fees for mandatory rotations compared to the pre-regulation period. Finally, Bleibtreu and Stefani (2018) adopt an analytical model to investigate the effects of MFR on client importance and auditor concentration and find them to be directly in contrast with each other. More specifically, they find that concentration will increase if auditors start low-balling for clients, but client importance will decrease – whereas if auditors wait until the full maximum tenure of their competitors expires before gaining new clients, concentration will decrease but client importance will increase.

3.4. Joint audits

Prior research on joint audits documents an increase in audit fees not necessarily accompanied by an increase in audit quality (Guo et al., 2017). For example, in a cross-country comparison between the mandatory joint audit regime of France and the single audit regime of the UK, Andre et al. (2016) find significantly higher audit fees in France compared to the UK but no evidence of better audit quality (as proxied by abnormal accruals). Another study by Lesage et al. (2016) looks at the Danish audit market before and after the abolishment of the mandatory joint audit regime and draws the conclusion that the joint audit regime was associated with higher audit fees but had no significant association with audit quality (measured via abnormal accruals). A theoretical study by Deng et al. (2014) focused on the pairs of auditors that are formed in a joint audit setting. The study shows that compared to having just one big auditor, having a big auditor paired with a smaller one does not necessarily improve audit quality. These results suggest that the specific pairing of auditors might be an important issue to consider. Similarly, Francis et al. (2009) performed an empirical study looking at auditor pairs in the French audit market and concluded that audit quality is indeed different based on the type of auditor pair (i.e. a Big 4 paired with a Non-Big 4, or a Non-Big 4 with a Non-Big 4). Next, Zerni et al. (2012) performed a Swedish study on voluntary joint audits and documented higher audit fees. Finally, Holm and Thinggaard (2014) documented fee reductions for companies that switched to single auditors in Denmark after the mandatory joint audit period. Note that this was only the case when the joint audit pair contained a big audit firm.

3.5. Audit of small companies

There appears to be an obvious consensus about the need to perform statutory audits under strict rules when it comes to large public companies (PIEs). However, following the European Commission's Green Paper, questions have been raised about the compliance burden placed on smaller companies. Keasey et al. (1988) argue that the cost of doing an audit for a small company is disproportionately high given the limited benefits. However, Blackwell et al. (1998) find evidence that firms which engaged in voluntary audits (in a sample of private firms) had lower interest rates on banks loans compared to firms which remained unaudited. The same conclusion is reported by Alle and Koch (2009), who show that audited private firms are more likely to be granted credit than unaudited firms. Similarly, Kim and Granger (2011) find that having an external audit (per se) is associated with increased benefits, particularly when it comes to the pricing of private debt (which is an important element for SMEs). Similarly, Langli (2015) does not find support for lower interest rates or the granting of credit for small firms which opted out of having an audit during the mandatory auditing deregulation for very small firms in Norway in 2011.

In terms of financial reporting quality, Clatworthy and Peel (2013) investigate a sample of UK private firms which have been audited and report fewer accounting errors in such firms (ceteris paribus). Similarly, Downing and Langli (2016) document lower reporting system quality when firms opt out of doing an audit after the statutory auditing deregulation for small companies in Norway in 2011. Dedman and Kausar (2012) show that the effect of choosing a voluntary audit increases conservative financial reporting.

In terms of auditor characteristics, there are studies that report differences in private firm reporting quality depending on who the auditor was (Big N vs. non-Big N). For example, for a sample of EU firms, Van Tendeloo and Vanstraelen (2008) find that Big N auditors are associated with less earnings management than non-Big N auditors. Che et al. (2016) look at Norwegian private firms switching between Big N and non-Big N auditors and find lower earnings management when companies switch from a non-Big N to a Big N auditor. On the other hand, Vander Bauwhede and Willekens (2004) find no evidence of differences between Big N and non-Big N auditors in the Belgian private firm setting (when investigating discretionary accruals). Likewise, Gaeremynck et al. (2008) report no significant differences in financial reporting quality between Big N and non-Big N auditor characteristics for Belgian private companies.

4. AUDIT MARKET STRUCTURE AND COSTS IN THE PIE SEGMENT BEFORE AND AFTER THE REFORM

This chapter serves two main objectives:

- first, we assess whether there is a quantifiable result in terms of reduced market concentration and increased competition in the audit sector; and second,
- we investigate whether the new regime has brought a material difference in costs for audited entities for statutory audit activities.

We address these questions by presenting **descriptive evidence** of the evolution of concentration, competition and audit cost measures in the listed PIE segment of the EU audit market **before and after the Audit Reform**[38]. In particular, we provide statistics over the period 2013-2017, including three pre-implementation years (2013-2015), the year of transition (2016) and one post-implementation year (2017)[39]. We intentionally label this 'descriptive evidence' as the results do not allow us to draw causal inferences about the Audit Reform. We first present evidence for the **overall PIE segment** of the EU audit market (Section 4.1.), followed by evidence presented for **different audit market segments** (Section 4.2.)[40]. We distinguish and analyse three types of market segmentations:

- segmentation by the industry of the audited entity (financial vs. non-financial industries);
- segmentation by the size of the audited entity; and
- segmentation by the Member State.

Our descriptive analysis of the EU market structure is based on different types of measures as different measures pick up various aspects of the phenomenon. First, we present static measures of audit market concentration and competition, including the **Herfindahl-Hirschman Index (HHI)**; the **combined Big 4 audit market share**; and the individual **market share evolution of the 4 largest players** in the market from 2013-2017 (the leader, second market player, third market player, fourth market player and the aggregate market share of the remaining segment). These **static measures** capture competition or concentration by examining market shares at a single point in time.

However, these static measures conceal much of the dynamic competitive processes and underlying changes in market shares. Substantial variation in market shares may exist, even in markets where competition is labeled as low using static competition measures. Therefore, we also present **dynamic measures** of competition, including **market share mobility**; the **percentage of switches** in the EU audit market and the percentage of switches from Big 4 to Non-Big 4 and from Non-Big 4 to Non-Big 4. The dynamic measures capture evolutions over time and implicitly assume more mobility of clients and market shares in more competitive markets. For a detailed description of all these measures, we refer to ANNEX I. METHODOLOGY, as well as the glossary (ANNEX V. GLOSSARY).

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38 Our analyses only consist of listed PIEs. For brevity's sake, we refer to this segment as the PIE segment. However, the reader should be aware that we do not include non-listed PIEs in our analyses.

39 Note that we are using the most recent market data available at the time of the study (November 2018). For an overview of the databases used, see ANNEX I. METHODOLOGY; for a description of sample composition, see ANNEX I. METHODOLOGY.

40 Note that the results reported in 4.1.1. and 4.1.2. are EU weighted averages, which means that Member State averages are adjusted for their weight in the sample. In ANNEX II. TABLES OF GRAPHS, we also provide all results using regular averages.

4.1. Aggregate EU audit market: descriptive analysis of the change in auditor concentration, competition and costs

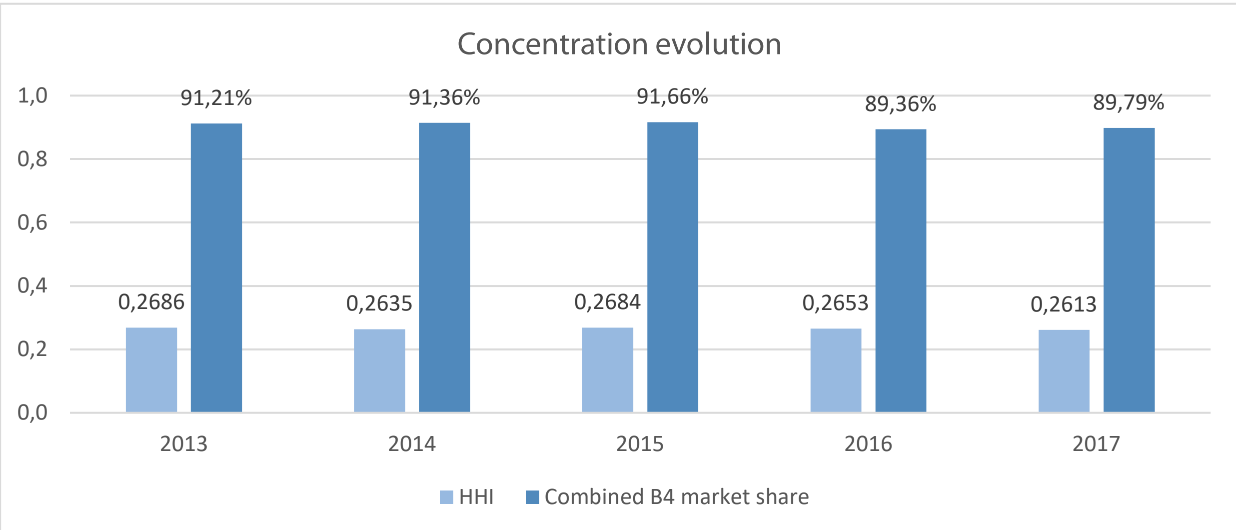
In this section we address three major research questions:

- First, we examine whether or not audit market concentration decreased and competition increased in the PIE segment of the EU audit market after the implementation of the Audit Reform.
- Second, we examine whether and how smaller audit firms have been affected by the new legislation in terms of market share changes.
- Third, we examine whether PIEs experienced higher costs (i.e. audit fees and non-audit fees) after the Audit Reform.

4.1.1. Static measures of competition

The evolution of the HHI and the combined Big 4 market share is depicted inGraph 1[41]. Note that the HHI depicts the level of concentration taking into account all audit firms, whereas the combined Big 4 market share focuses on the Big 4 dominance in the EU PIE audit market. There is **very little variation in the aggregate EU HHI**, which ranges from 0.27 in 2013 to 0.26 in 2017. The combined Big 4 market share does show a decrease from over 91.2 % in the period 2013-2015 to 89.8 % in 2017. This implies that the **non-Big 4 market share increased slightly** after the EU Audit Reform, by about 1.4 %, to a level of 10.2 %[42]. Overall, we conclude that in terms of aggregate EU PIE market concentration, the **changes are not large** after the implementation of the Audit Reform, but the non-Big 4 market share did increase slightly.

Graph 1: Evolution of market concentration in the EU PIE audit market 2013-2017



[41] For tabulated results, see Table AII-1.

[42] Note that this result is not reported in Graph 1 but is equal to 100% minus the Big 4 market share.

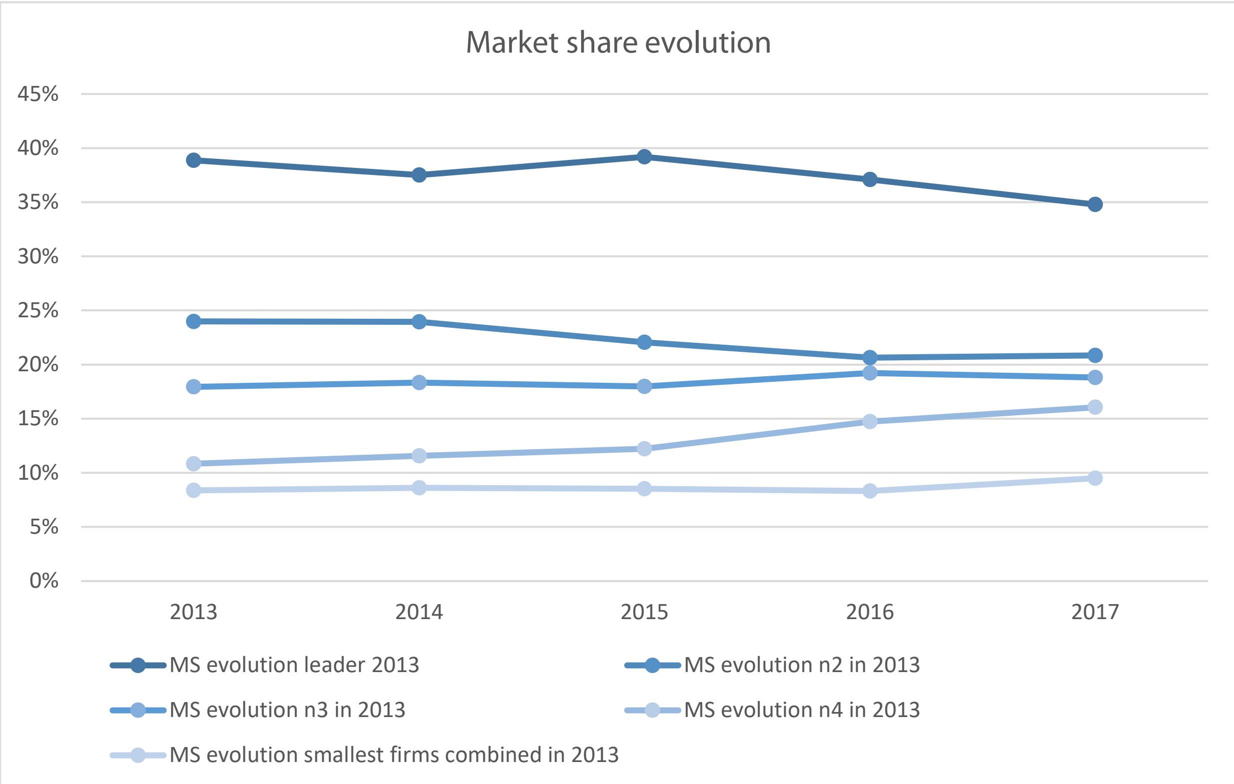
In Graph 2[43], we depict the evolution of the EU weighted average individual market share of the four largest audit suppliers in each Member State PIE audit market, as well as the weighted average aggregate market share of all other smaller suppliers[44].

The results show that the **weighted average EU market share of the leaders** (i.e. *Market share evolution leader in 2013*) **drops rather strongly** from an average of 38.9 % in 2013 to 34.8 % in 2017; this represents a drop of >4 %. For the market share evolution of the **second market players** (i.e. *Market share evolution n2 in 2013*), we notice a **similar pattern**. For the third and fourth players in the EU audit markets, we document the opposite pattern. More specifically, for the **third players** (i.e. *market share evolution n3 in 2013*), the **market share** in 2013 was, on average, 17.9 % and **increased slightly** to 18.8 % in 2017. The change in the **fourth players' average market share** (i.e. *market share evolution n4 in 2013*) exhibits an **even stronger effect**. That is, on average, the number four had a market share of 10.8 % in 2013 which increased to 16.1 % in 2017. This is an increase of >5 %, which is bigger compared to the increase of the third player (i.e. <1 %).

Finally, the aggregate **market share of the smaller players** in the market remained **fairly stable** between 2013-2016 at around 8.5 % but then increased in 2017 to 9.5 %.

In conclusion, the descriptive evidence is consistent with an **increase in competition within the group of the four biggest market players** across the EU, where the market leaders and their runners-up lose ground to the third and fourth market players, and a **small increase** is noticed in the aggregate market share of the **smaller audit suppliers** across the EU.

Graph 2: Evolution of market shares of various types of suppliers in the EU PIE audit market



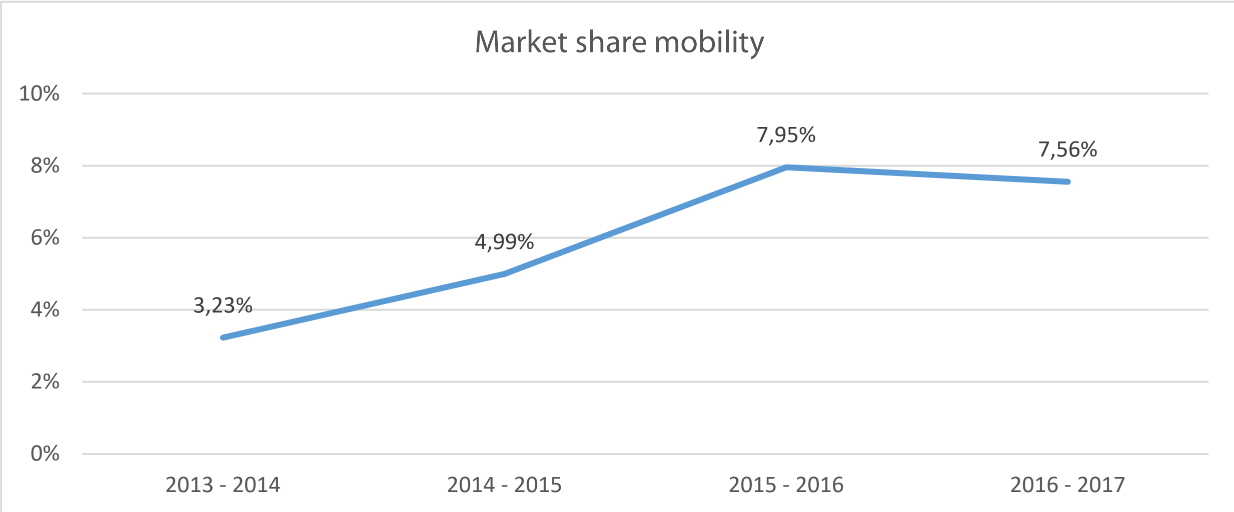
[43] For tabulated results supporting Graph 2, see Table AII-1.

[44] Note that we first identify the market leader in 2013 as well as the numbers two, three and four in each of the EU PIE audit markets. For the majority of the Member States in the sample, these players are typically the Big 4 audit firms. Next, we compute the EU weighted average for each market supplier. We then follow their EU weighted average market share over time (i.e. 2013-2017).

4.1.2. Dynamic measures of competition

InGraph 3, the average EU market share mobility (i.e. *market share mobility*, or the market share percentage that shifts between audit suppliers from one year to the next) is reported[45]. Market share mobility was 3.2 % in 2013-2014 and increased to 7.6 % in 2016-2017. This evidence suggests that **rivalry between audit suppliers** in the EU market **increased** between 2013 and 2017.

Graph 3: Evolution of average audit market share mobility in the EU



Increased market share mobility implies that **more PIE clients switch auditors** over the period 2013-2017. Next, in Table 7 we further analyse which types of audit firms PIEs choose when they switch, i.e. Big 4 or Non-Big 4.

Table 7[46], Panel A, shows the EU overall (weighted average) switch rate followed by (component) switch rates relating to changing to a different type of audit supplier. The **aggregate EU (weighted average) switch rate increases** over time, but the switches to a different type of auditor does not necessarily follow this pattern. Panel B of Table 7 reports the median audit fees of PIE clients switching across categories of auditors showing that **clients switching from a Big 4 to another Big 4** are those **paying the highest audit fees**, and that PIEs switching from a B4 to a NB4 pay on average much lower fees.

[45] For tabulated results, see Table AII-2.

[46] For a full overview of the switch percentages, we refer to Table AII-2 and Table AII-3.

Table 7: Descriptive analysis of auditor changes

	2014	2015	2016	2017
Panel A: Inter-category switching				
EU weighted average switch rate	6.07%	10.77%	11.97%	12.02%
From Big 4 to Big 4	2.47%	3.16%	4.49%	4.95%
From Big 4 to Non-Big 4	1.02%	1.47%	1.01%	1.60%
From Non-Big 4 to Big 4	0.49%	1.51%	1.51%	0.99%
From Non-Big 4 to Non-Big 4	2.03%	4.62%	4.96%	4.47%
Panel B: Median audit fees of switchers (EUR thousands)				
From Big 4 to Big 4	260	369	458	256
From Big 4 to Non-Big 4	64	82	60	58
From Non-Big 4 to Big 4	50	51	47	44
From Non-Big 4 to Non-Big 4	12	12	18	14

Overall, based on these descriptive statistics, it is difficult to distinguish a favourable pattern for the Non-Big 4 segment of the audit market. That is, we do notice some positive changes for the Non-Big 4 audit firms in the post-implementation period in terms of the number of clients which choose to switch to a Non-Big 4. However, most of the **switches to Non-Big 4 audit firms are from smaller clients** (with lower audit fees), whereas the **bigger clients tend to switch among the Big 4** auditors.

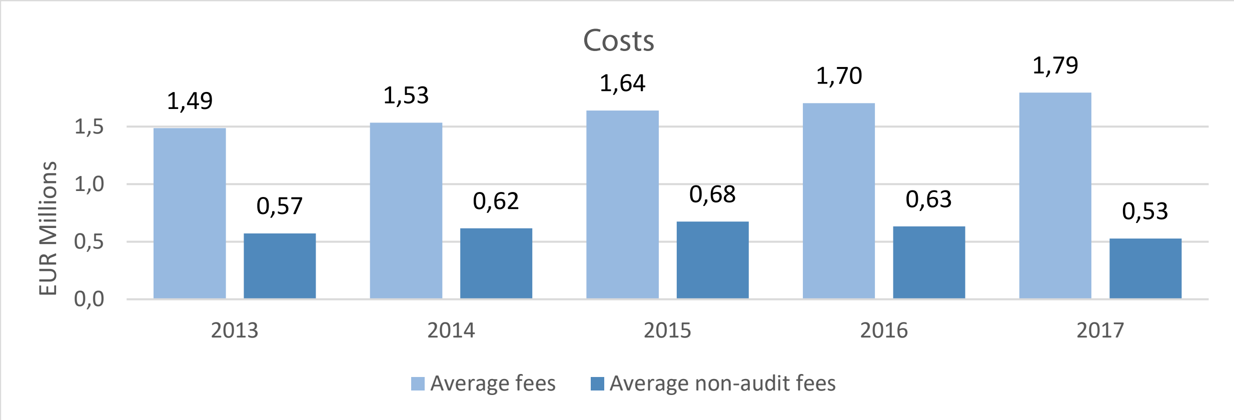
4.1.3. Evolution of audit and related costs

The cost measures are calculated at the Member State level using balanced panel data. Afterwards, the weighted averages are taken to adjust for their relative importance within the sample composition. Note that we report **nominal changes** in costs and fees throughout this study. Graph 4[47] reports the evolution of the average audit fees and non-audit fees paid to the incumbent auditor from 2013 to 2017.

The **cost of external auditing** (i.e. *average audit fee*) **steadily increases over time** with an average of EUR 1.5 million in 2013 to almost EUR 1.8 million in 2017. For **non-audit fees**, we document an **increasing trend in the pre-implementation** period with an average of almost EUR 0.7 million in 2015. **Afterwards**, the **average non-audit fees decline** to EUR 0.5 million in 2017. The latter result could be associated with the implementation of the Audit Reform, which has capped the level of NAS fees to enhance auditor independence, but establishing a causal inference is not possible as other contemporaneous events may also affect the relationship. A similar pattern arises when investigating the median of audit fees and non-audit fees: the median audit fees increase steadily over time while median non-audit fees seem to decrease after 2015 (see Table AII-14 and Table AII-15).

[47] For tabulated results, see Table AII-1.

Graph 4: Evolution of the average audit and non-audit fees paid to the incumbent auditor



4.1.4. Conclusions

In this section we provided descriptive evidence on the evolution in auditor concentration, competition and costs for the overall EU PIE audit market. We document **very little evolution** in **aggregate EU market concentration** measures: on average, the *HHI* and the *combined Big 4 market share* decreased slightly, but these changes are rather small, and the **level of concentration is still high**. However, in terms of **competition** we document that the average *market share* of the four biggest players in the local EU markets exhibits an interesting pattern over the period of 2013-2017. In particular, **market shares of the market leaders and runners-up decrease** over the sample period, whereas the **third and fourth suppliers** in the local markets typically **gain ground**. This is an indication of **increased rivalry** within the group of the four biggest market players. Related to this, we also observe **an increase** in the average **market share of the group of smaller audit suppliers** in the EU by 1 percentage point (from 8.5 % to 9.5 % in 2017).

The evidence from the dynamic measures of competition confirms **more variation in the audit firms' market shares**. More specifically, we document that the average *market share mobility* has increased to almost 8 % of the total audit market annually (where it was only about 3.5 % in 2013). However, regarding the **type of auditor switching**, we only find a **weak favourable pattern** for the Non-Big 4 segment of the audit market as we report a slight increase in PIEs switching from Big 4 to Non-Big 4, and most of the switches to Non-Big 4 audit firms concern smaller PIE clients (with lower audit fees), whereas the bigger clients tend to switch among the Big 4 auditors.

Finally, we document an **increasing trend in average audit fees**. By contrast, **average non-audit fees have declined** since 2016. However, it is not possible to attribute the increase in average audit fees to the Audit Reform only as there might be other elements driving audit fees upwards.

4.2. Market segment differences in concentration, competition and cost effects

The focus of this section is to provide further empirical evidence on the evolution of auditor market concentration, competition and costs over 2013-2017 for different segments in the EU statutory audit market, as the evolution might differ across different market segments. In particular, we zero in on the following segments:

- the financial sector (4.2.1.);
- the small vs. large PIE client segments (4.2.2.); and
- and the individual Member States (4.2.3.).

For each of the specified audit market segments, we address research questions similar to the ones posed in Section 4.1.

- First, we examine whether or not audit market concentration decreased and competition increased in the PIE segment of the EU audit market after the implementation of the Audit Reform.
- Second, we examine whether and how smaller audit firms have been affected by the new legislation in terms of market share changes.
- Third, we examine whether PIEs experienced higher costs (i.e. audit fees and non-audit fees) after the Audit Reform.

4.2.1. Financial sector market segment

The first market segment we focus on are the PIE clients in the financial services industry. We define the financial services sector as financial and insurance activities and companies, based on NACE, Section K. Note that all metrics are calculated per Member State. Afterwards, the EU weighted average is taken to avoid biased results because of Member States for which there are few observations.

a. Static measures of competition

Graph 5[48] reports the evolution of HHI and the combined Big 4 market share for the financial services audit client sector from 2013 to 2017.

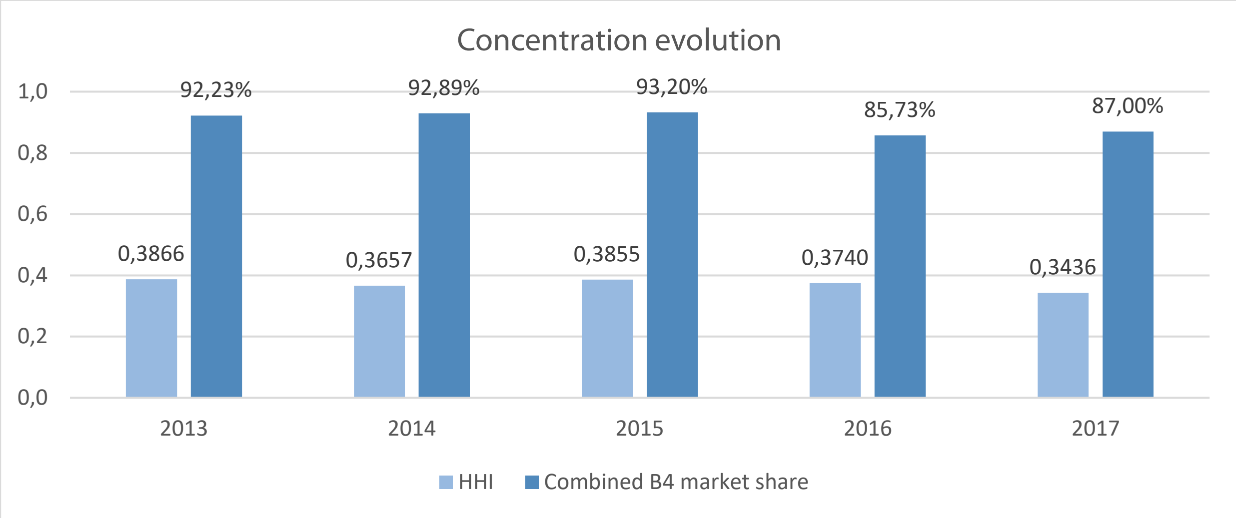
First, we notice that the average **HHI levels are significantly higher compared to the overall audit market** (see supra, 4.1.1.). For example, in 2017, the average HHI for the overall audit market is 0.26, whereas for the financial services sector this amounts to 0.34. In terms of evolution, the **HHI levels** in the financial sector segment **decrease** from an average of 0.39 in 2013 to 0.34 in 2017. The decrease in auditor concentration is thus more pronounced in the financial services industry (i.e. >0.04 from 2013-2017) compared to the overall audit market (i.e. <0.01 from 2013-2017).

Next, the combined Big 4 market share shows a similar pattern. In 2013, the **combined Big 4 market share** in the financial sector segment was 92.2 %, **dropping** to 87 % in 2017. This difference from 2013 to 2017 is >5 %, which is significantly larger compared to the observed evolution in the aggregate EU audit market (i.e. <1.5 %, see supra, 4.1.1.). Overall, in terms of auditor concentration, we do find that the **level of concentration has decreased in the financial sector** segment, based on descriptive

[48] For tabulated results, seeTable AII-4.

statistics. In addition, this decrease seems to peak around the implementation year of the Audit Reform; however, we cannot rule out that factors other than the Audit Reform could have influenced this effect.

Graph 5: Evolution of audit market concentration in the financial sector segment 2013-2017

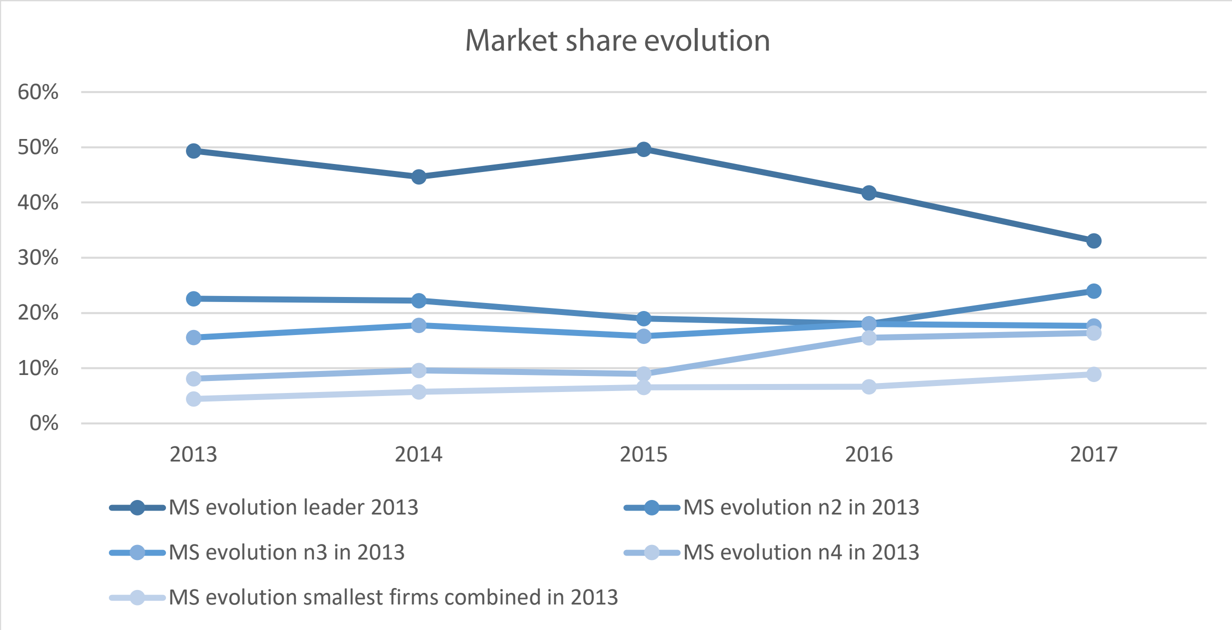


In Graph 6[49], the evolution of the EU weighted average individual market shares of the four biggest (local) audit suppliers in the financial audit market segments (reference year 2013) are illustrated. From this graph it is clear that the **market shares of the four largest audit suppliers converged** in the financial segment of the audit market. Note the **large drop** in market share of the **financial sector audit leader** (i.e. *Market share evolution leader in 2013*) from an average of 49.4 % in 2013 to an average of 33.1 % in 2017 (i.e. a loss of >16 %).

Interestingly, the **aggregate market share of the smaller players** in the market **increased** quite a bit over the period 2013-2017, from 4.4 % to 8.9 %. Overall, these results suggest an increase in rivalry within the group of the four biggest market suppliers in the audit market segment of financial services clients, as well as among smaller audit suppliers, where the 2013 market leaders lost serious ground to the other market suppliers.

[49] For tabulated results, see Table AII-4.

Graph 6: Evolution of market shares of various types of suppliers in the financial segment



b. Dynamic measures of competition

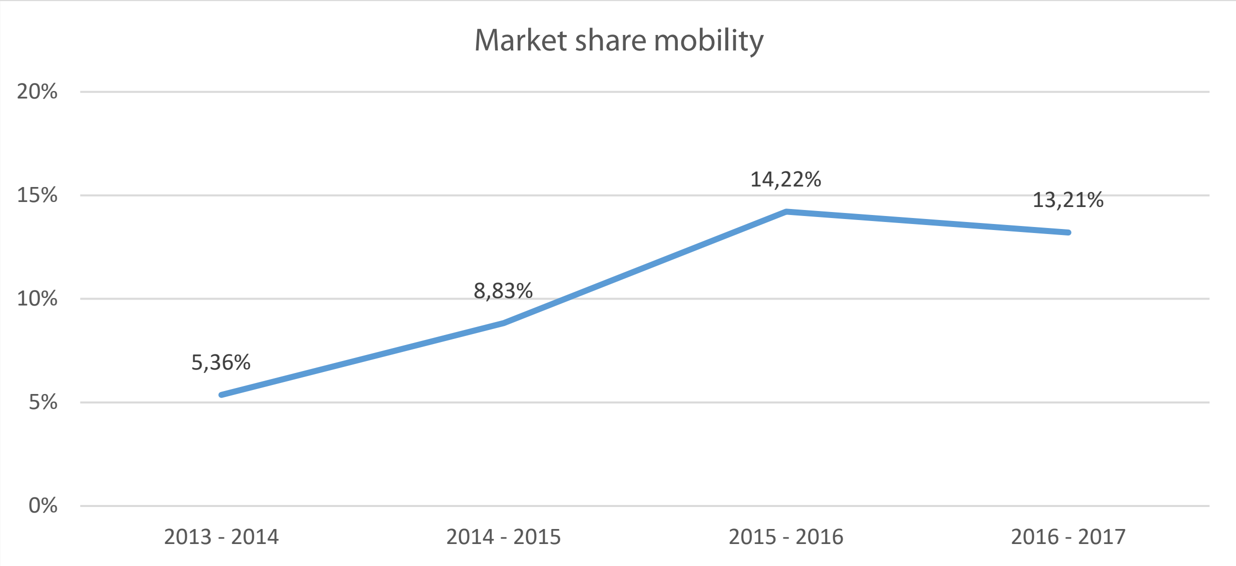
In Graph 7[50], we depict the evolution from 2013-2017 in average market share mobility (or the percentage of market share that relates to clients switching from the auditors used in the prior year to new audit suppliers) in the market segment of financial services audit clients (i.e. *market share mobility*).

As was the case for the aggregate EU audit market, **market share mobility shows an increasing trend** as of 2013-2014. However, the level of market share mobility in the segment of financial sector clients is much larger, peaking at 14.2 % in 2015-2016. This continues through 2016-2017, where we notice that the average market share mobility is 13.2 %.

Overall, the empirical evidence based on average market share mobility suggests that **rivalry** between audit suppliers in the audit market segment of financial clients has **increased**, even more as compared to the overall market share mobility.

[50] For tabulated results, see Table AII-5.

Graph 7: Evolution of average market share mobility in the segment of financial sector clients



The documented increase in market share mobility suggests that there was **more auditor switching in the financial sector segment** of the EU audit market.

Next, in Table 8[51], we further analyse this auditor switching. Table8, Panel A, shows the EU overall (weighted average) switch rate in the segment of financial sector clients followed by switch rates relating to adopting a different type of audit supplier. Again, we observe an increase in the EU overall switch rate over time, but it is clear that switching to a different type of auditor is marginal, and that the **switching rate from Big 4 to non-Big 4 did not increase** after the Audit Reform.

Panel B of Table 8 reports the median audit fees of clients switching across categories. The evidence shows when **large financial clients** switch between auditors, they **move from one Big 4 to another**. This is similar to what we find for the overall EU audit market.

Table 8: Descriptive analysis of auditor switches in the segment of financial sector clients

	2014	2015	2016	2017
Panel A: Inter-category switching				
EU weighted average switch rate	7.08%	7.35%	14.77%	15.38%
From Big 4 to Big 4	2.59%	1.63%	5.83%	7.58%
From Big 4 to Non-Big 4	2.52%	1.24%	0.62%	1.47%
From Non-Big 4 to Big 4	0.52%	0.30%	2.13%	1.21%
From Non-Big 4 to Non-Big 4	1.08%	2.93%	5.67%	4.92%

[51] For an overview of all the percentages, we refer to Table AII-6.

	2014	2015	2016	2017
Panel B: Median audit fees of switchers (in thousands of EUR)				
From Big 4 to Big 4	166	180	653	126
From Big 4 to Non-Big 4	74	86	70	55
From Non-Big 4 to Big 4	29	87	34	34
From Non-Big 4 to Non-Big 4	7	12	18	10

Overall, based on these descriptive statistics, it is difficult to distinguish a favourable pattern for the Non-Big 4 audit firms in the industry segment of financial services clients. In addition, most of the switches to Non-Big 4 audit firms relate to smaller clients (with lower audit fees), whereas the bigger clients tend to switch from one Big 4 to another.

c. Evolution of audit and related costs

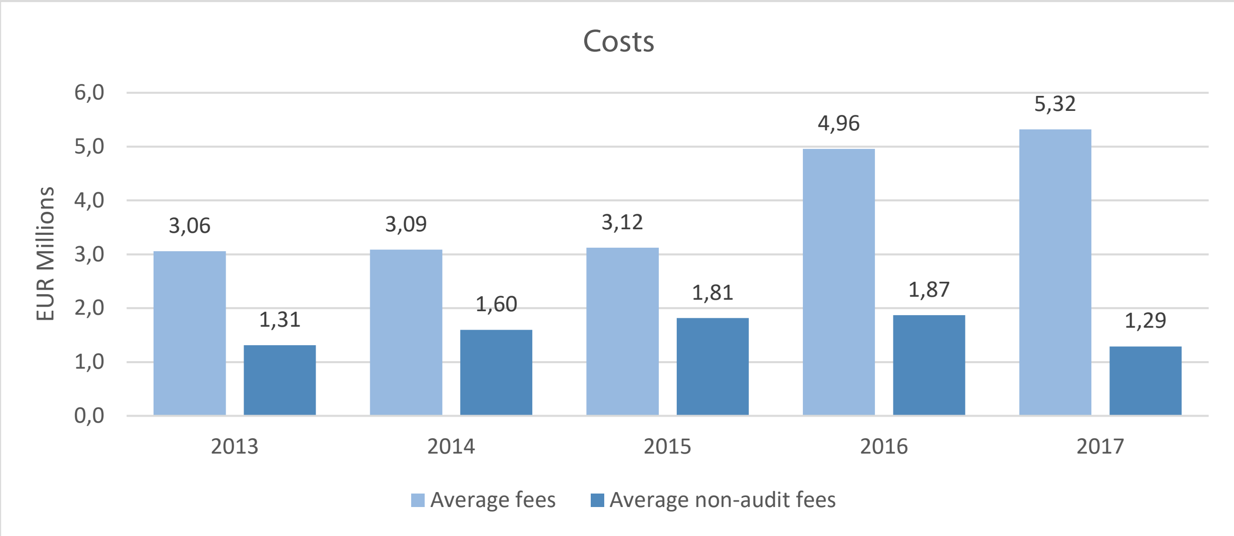
For our analysis of costs in the financial sector segment of the EU audit market, we refer to Graph 8[52], which shows average audit fees and non-audit fees from 2013 to 2017[53]. Note that we report **nominal changes** in costs and fees. The **cost of external auditing** (i.e. the average audit fee) **increases over time**, with an average of EUR 3.1 million in 2013 rising to EUR 5.3 million in 2017. We do, however, notice a spike in average audit fees as of 2016 (which is a year of transition) and a further increase in 2017. For **non-audit fees**, we document an increasing trend from 2013-2016, with an average of almost EUR 1.9 million in 2016. In 2017, the average non-audit fees **declined** to EUR 1.3 million in 2017. Similar trends are also documented in the overall audit market[54].

[52] For tabulated results, see Table AII-4.

[53] Calculated based on balanced panel data.

[54] The results are somewhat different for median audit fees and non-audit fees. The EU weighted median audit fees show a fluctuating pattern (i.e. increasing and then decreasing following 2015) but we do find a decrease in the median audit fees across all auditees irrespective of their Member State. Upon inspection of the EU weighted median non-audit fees, we notice these are increasing after 2015 whereas a decreasing trend is reported for individual auditees irrespective of their Member States (see Table AII-19). The strong difference between the EU weighted median and the individual median follows from the fact that in the UK there are a lot of firms that have low NAS fees leading to a median NAS fee which is substantially lower in the UK than in other Member States. As the UK represents about half of the auditees in the financial sector balanced sample, it has a large influence on the individual median. However, when we calculate the weighted median by first calculating the median at Member State level and then weighing this median by Member State the UK represents about 25% of the weighted sample and, therefore, the influence of the small NAS fees in the UK is less prominent.

Graph 8: Evolution of the average audit and non-audit fees paid to the incumbent auditor by financial sector clients



4.2.2. Different audit market segments (by client size)

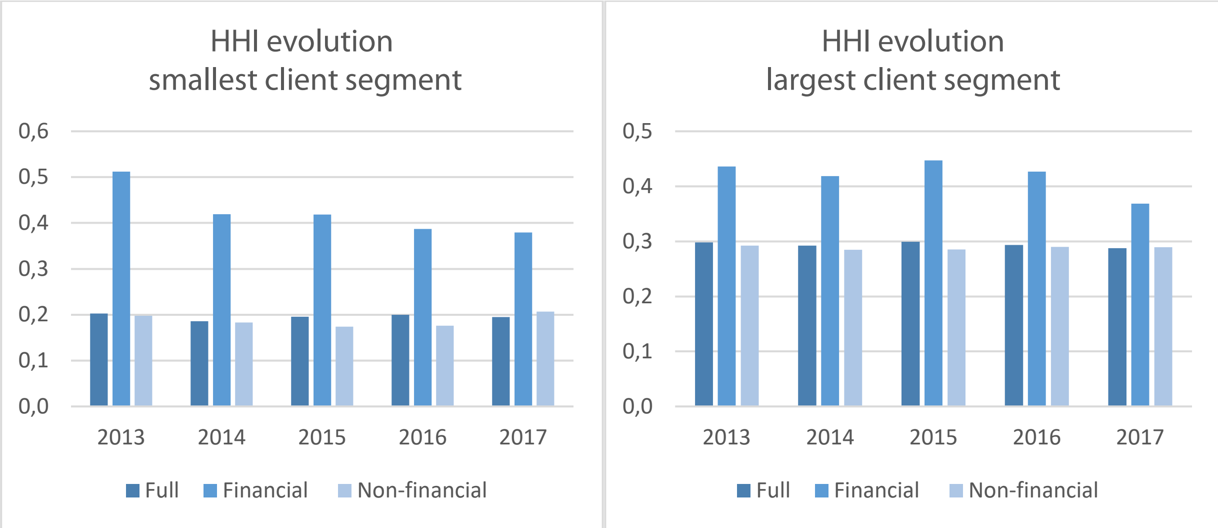
In this section, we analyse whether the evolution in concentration and competition differs in different size segments of the audit market. We do this for the aggregate EU audit market, for the market segment of financial sector clients and for non-financial sector clients. For each of these segments we identified five size quintiles, where client size is measured in terms of market capitalisation (across all years). In the remainder of this section we will only discuss the concentration measures for the 1st (smallest) and 5th (largest) size quintiles. Tabulated results of concentration for all size quintiles over 2013-2017 are given in Table AII-7.

Graph 9 reports the evolution of the HHI index in both the smallest and largest PIE quintile of the aggregate EU audit market, including the sub-segments of the smallest and largest financial and non-financial sector clients. Note that the level of market concentration is higher in the largest client segment of the EU market than in the smallest client segment.

The **HHI index** for the **smallest client segment** (all sectors) remains **relatively stable** over 2013-2017 (around 0.2). A similar trend is observable for the sub-segment of the smallest non-financial clients. By contrast, for the more concentrated **financial sector sub-segment of the smallest auditees**, we observe that the (larger) **HHI levels diminish significantly** over 2013-2017 (i.e., an average HHI of 0.51 in 2013, declining to to slightly less than 0.38 in 2017).

For the **largest PIE segment**, we document a **fairly stable** trend in the evolution of the aggregate HHI index as well as in the sub-segment of non-financials auditees (around 0.29 in the period in 2013-2017, for the aggregate EU audit market). However, in the **sub-segment of the largest financial PIE auditees we depict a declining trend** (i.e. in 2013 the HHI index equaled 0.44, declining to 0.37 in 2017).

Graph 9: Evolution of the HHI index of the smallest vs. largest client size segment

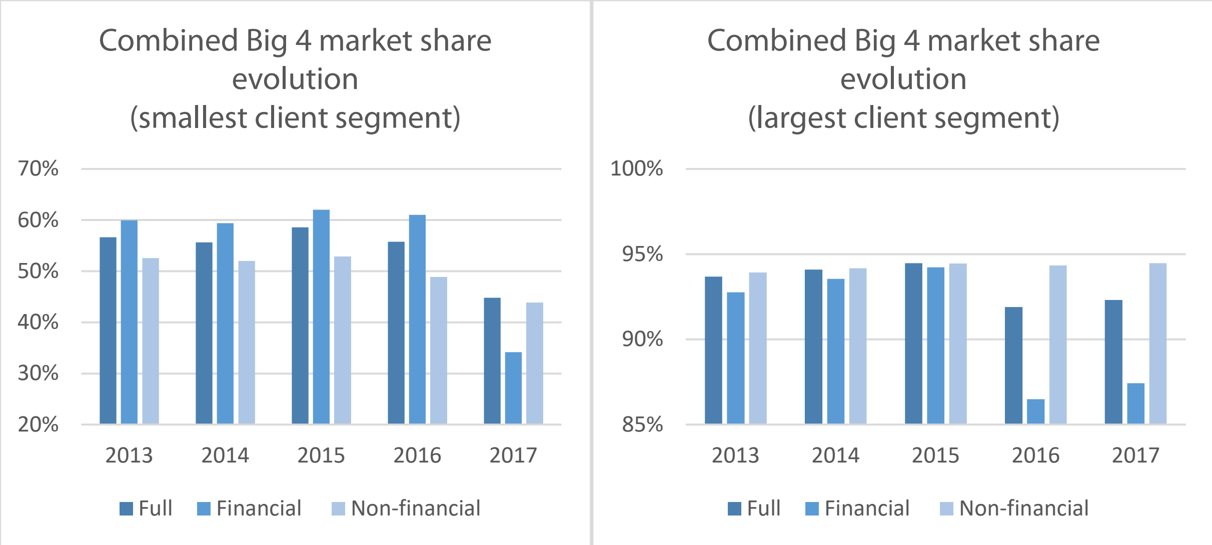


Graph 10 shows the evolution of the combined Big 4 market share for the smallest and largest PIE size quintiles of EU.

The **combined Big 4 market share** for the **smallest client segment** (**all sectors**) remains **fairly stable** until reaching around 56 % in 2016 and then exhibits a strong decline in 2017, falling to a combined Big 4 market share of 44.8 %. Turning to sub-segments of the **financial services sector**, we also observe a very **strong reduction in Big 4 dominance in 2017**. From 2013 to 2016, the total market share of the Big 4 averages around 60 % in the sub-segment of the smallest financial sector clients, but this plummets to 34.2 % in 2017. We also document a significant reduction in the sub-segment of smallest **non-financial** clients, but this reduction is **less pronounced** than the decline in the sub-segment of the smallest financial sector clients. That is, in 2013, the Big 4 has a total market share of 52.5 % in the smallest client segment of the non-financial sector, and this diminishes to 43.9 % in 2017.

In the **largest client quintile** of the EU, the **combined Big 4 market share** amounted to 93.7 % in 2013, **dropping only marginally** to 92.3 % in 2017. A similar trend is documented for the largest client sub-segment in the **non-financial** industry, where the Big 4 dominance remains relatively unaltered, ranging between 93.9 % in 2013 and 94.5 % in 2017. We conclude that the Big 4 dominance in the largest client segment did not change significantly after the Audit Reform. Turning to the largest client sub-segment of **financial sector** clients, we document again (as was the case for the smallest client sub-segment in that industry) a diminishing trend over 2013-2017. In 2013, we report an average combined Big 4 market share of 92.8 %, which contracts to 87.4 % in 2017. Note, however, that the reduction in Big 4 auditor dominance for financial sector clients is less significant in the largest client segment compared to the smallest client segment.

Graph 10: Evolution of the combined Big 4 market share of the smallest vs. largest client size segment



4.2.3. Individual EU Member States

In this section we divide the EU audit market geographically and define each Member State as a separate market segment. The objective is to analyse the evolution in concentration and competition measures as well as the evolution of audit costs per Member State. For every measure of interest and for each Member State, we calculate the average level in the pre-implementation period (i.e. the average over 2013-2015) and compare this with the post-implementation (i.e. 2017) average.

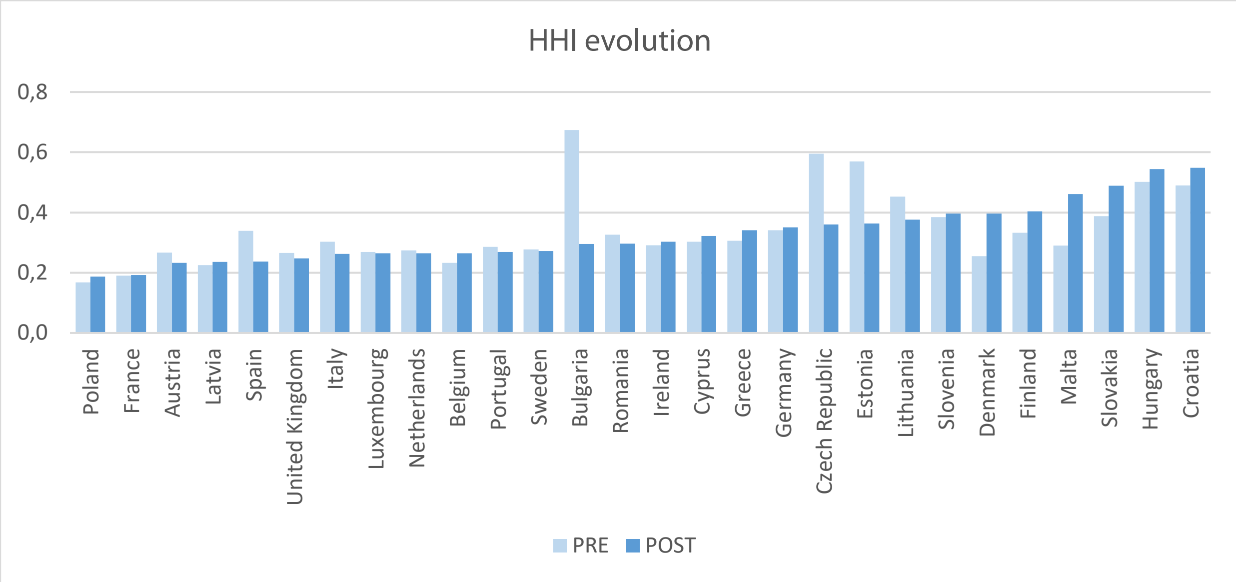
a. Static measures of competition

Graph 11 shows the details for the HHI levels for each Member State[55], comparing the average level of HHI before implementation with the level of HHI after implementation[56]. In total, **13 Member States** experienced a **reduction in audit market concentration** (measured by HHI) after the Audit Reform. Note, however, that some of these changes are driven by the composition of our sample rather than by the Audit Reform itself as some Member States have very few observations in our sample. For example, Bulgaria had only one 2013 auditee in our sample resulting in a high concentration ratio by construction.

[55] These are presented in ascending order on the x-axis based on the level of HHI for the year 2017.

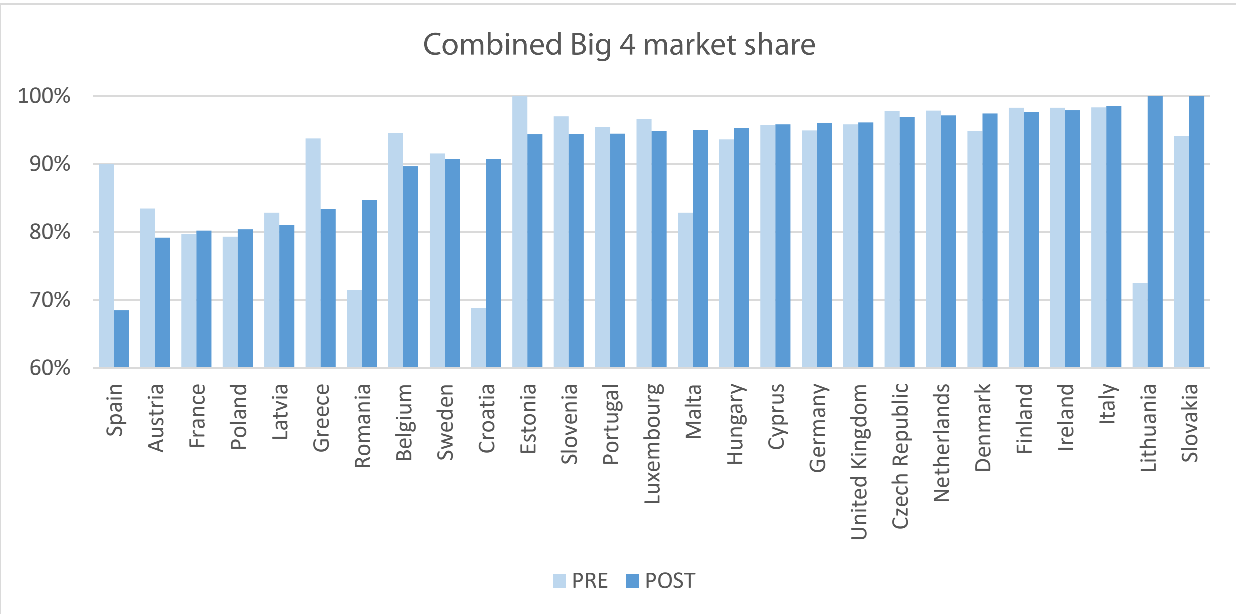
[56] Tabulated results for all Member States are presented in Table AII-8.

Graph 11: Evolution of the HHI per Member State before and after the Audit Reform



Similarly, in Graph 12[57] the combined Big 4 market share is reported for each Member State[58], and the average level of combined Big 4 market share before implementation is compared with the level of combined Big 4 market share after implementation[59]. In total, **14 Member States experienced a reduction in Big 4 auditor dominance** after the Audit Reform.

Graph 12: Evolution of the aggregate Big 4 market share per Member State before and after the Audit Reform



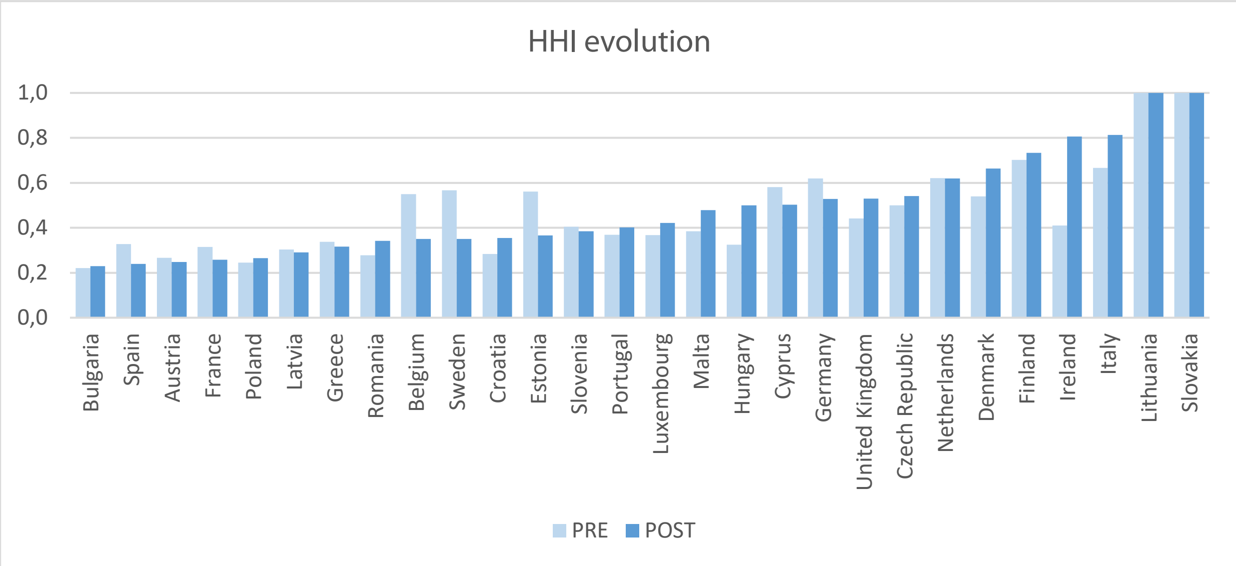
57 Note that Bulgaria is omitted from the sample due to missing observations.

58 These are presented in ascending order on the x-axis based on the level of combined Big 4 market share for the year 2017.

59 Tabulated results for all Member States are presented in Table AII-9.

In Graph 13[60], we also report the changes in HHI levels in the financial services sector for each individual Member State[61]. In total, **11 Member States exhibit a reduction in concentration in the financial services segment** of the audit market after the Audit Reform.

Graph 13: Evolution of the HHI per Member State before and after the Audit Reform (financial sector segment)



b. Dynamic measures of competition

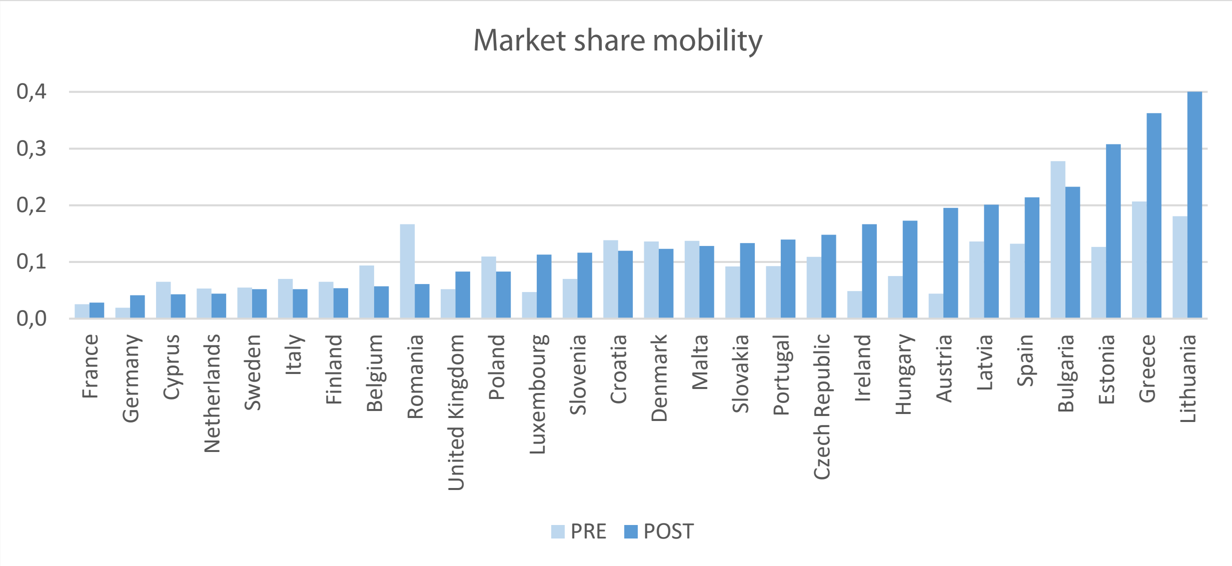
The evolution of the market share percentage that shifts between audit suppliers from one year to the next (i.e. *market share mobility*) per individual Member State is exhibited in Graph 14[62]. In total, **16 Member States experienced an increase in market share mobility** after the Audit Reform.

[60] Member States are presented in ascending order on the x-axis based on the level of HHI in the financial services sector for the year 2017.

[61] Tabulated results for all Member States are presented in Table AII-10.

[62] The Member States are presented in ascending order on the x-axis based on the level of Market Share Mobility for the year 2017. For tabulated results, we refer to Table AII-11.

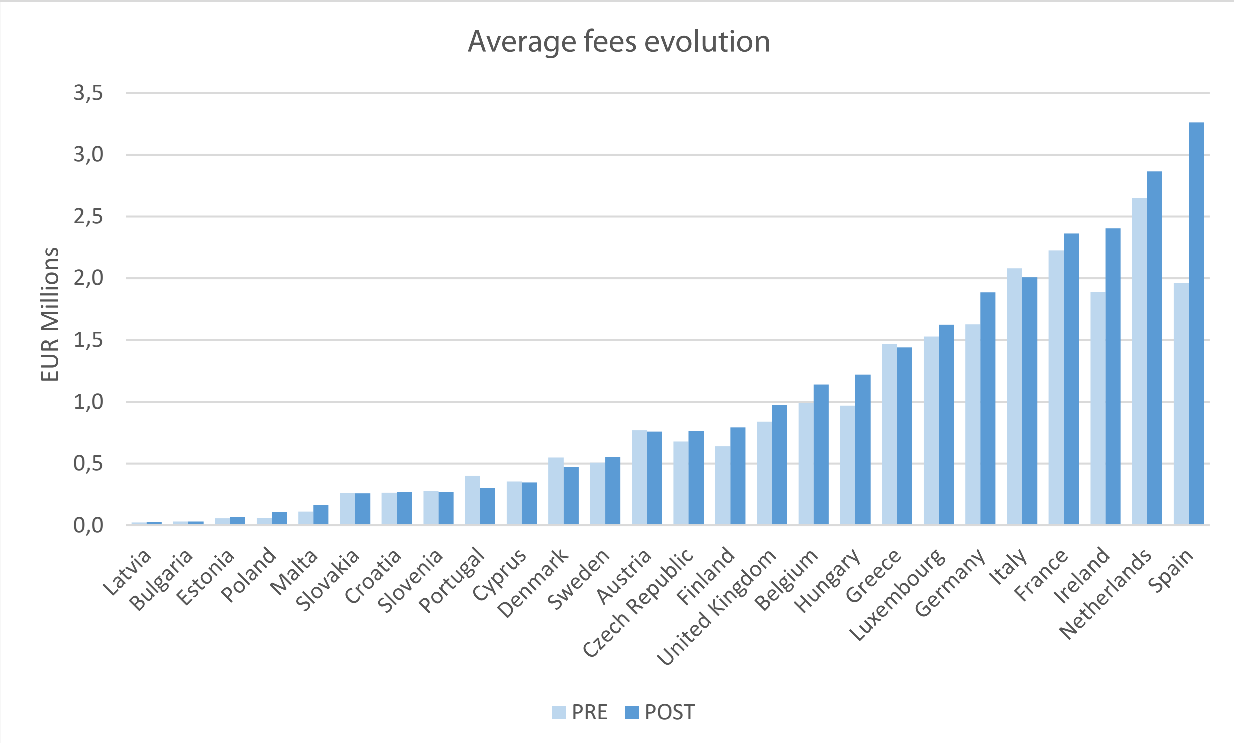
Graph 14: Evolution of market share mobility per Member State before and after the Audit Reform



c. Evolution of audit-related costs

For each Member State, we report the evolution of the average audit fee in Graph 15[63] expressed in **nominal values**. In total, **18 Member States experienced an increase in average audit fees** and 22 Member States experience an increase in median audit fees after the Audit Reform.

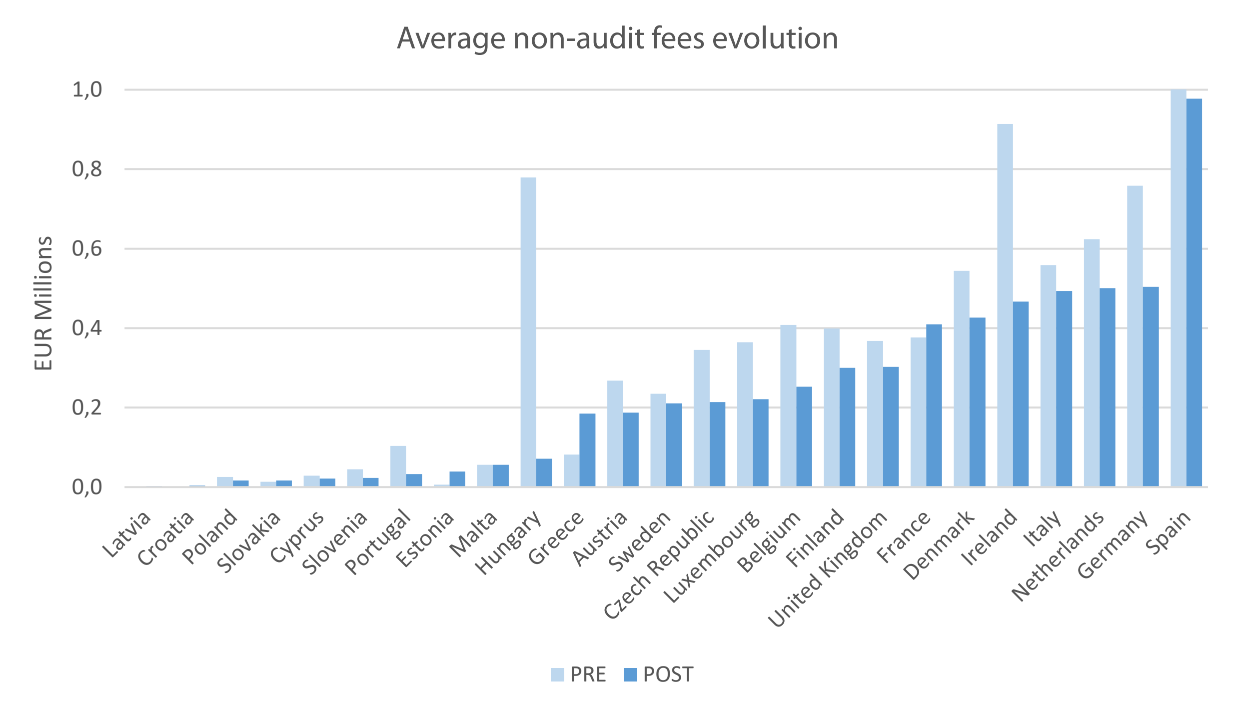
Graph 15: Evolution of average audit fees per Member State before and after the Audit Reform



[63] The Member States are presented in ascending order on the x-axis based on the average level of audit fees for the year 2017. Note that Romania and Lithuania are omitted from the sample due to missing observations. For tabulated results we refer to Table AII-12.

We also present evidence on the evolution of the average non-audit fee paid to the incumbent auditor for each individual Member State in Graph 16[64] expressed in **nominal values**. We observe a **reduction in average non-audit fees in 17 Member States** and a reduction in median non-audit fees in 15 Member States after the Audit Reform.

Graph 16: Evolution of average non-audit fees per Member State before and after the Audit Reform



4.2.4. Conclusions

In this section, we analysed the evolution of audit market concentration, competition and costs from 2013 to 2017 for different audit market segments.

The first market segmentation is by industry of the audited entity, and more precisely we zoom in on **the financial services sector**. We observe that the market segment of financial PIEs is **much more concentrated** compared to the overall EU, but does show a **decreasing trend in HHI** as well as **combined Big 4 market share**. However, in **2017 market concentration is still very high** with an HHI equal to 0.34 and the average combined Big 4 market share in the financial sector still at 87 %. As regards market share evolution of the four biggest market players in this industry, the descriptive statistics show that **the 2013 market leader seriously lost ground to the other market players**. In 2017, this trend resulted in a market where the four largest audit firms are competing more closely with each other for market share compared to in 2013. In terms of **market share mobility**, we detect an **increasing trend** as of 2013. Our analysis of **switch rates fails to document a consistent favourable pattern for the Non-Big 4** audit firms in the industry segment of financial services clients. In addition,

[64] The Member States are presented in ascending order on the x-axis based on the average level of non-audit fees for the year 2017. Note that Romania, Lithuania, Bulgaria, Latvia and Croatia are omitted from the sample due to missing observations. Tabulated results are provided in Table AII-13.

most of the switches to Non-Big 4 audit firms are from smaller clients (with lower audit fees), whereas the bigger clients tend to switch from one Big 4 to another.

It should be noted that, even though we report an increase in market share for Non-Big 4 audit firms, supplemental analyses (see infra, 6.2) show that audit fees have increased for Non-Big 4 financial sector auditees (whereas it has decreased for Big 4 financial auditees), which explains why elevated market shares for non-Big 4 suppliers in the financial segment of the audit market occurs jointly with stagnant switch rates to Non-big 4 suppliers. As far as audit costs are concerned, we document an increase in **average (nominal) audit fees** over time, with a spike in 2016 and then increasing further in 2017. On the contrary, **average (nominal) non-audit fees decrease** after 2016.

The second market segmentation is by the **size of the audited entity**, using market capitalisation as the measure of size. We split the aggregate EU audit market into five size quintiles, defining the 1st quintile as the smallest audit client segment and the 5th quintile as the largest audit client segment. We document that the level of (aggregate) market concentration in the EU is higher the largest segment of the EU market than in the smallest segment. We also see that the **aggregate EU level of HHI did not change significantly** over time in **both the smallest and largest** client segments. However, we do find a pronounced decrease of supplier concentration as measured by **HHI** in both size segments **for the financial services sector.** In terms of **Big 4 auditor dominance**, we report evidence of **a reduction** in the combined Big 4 market share in the segment of **smallest audit clients**, and this both for the financial and non-financial sub-segments. In the segment of the largest audit clients, we observe a small decrease in Big 4 auditor dominance, but only in the sub-segment of financial services sector PIEs.

Finally, we analyse the evolution of concentration, competition and audit-related costs at the level of the indidual Member States and find differences across Member States. We report **reductions in the level of audit market concentration as measured by HHI (Combined Big 4 market share) in 13 (14) Member States.** Based on measures of market share mobility in each individual Member State, we find that **16 Member States** experienced an **increase in market share mobility** after the implementation of the Audit Reform. Finally, we document an increase in the **average level of audit fees** in **18 Member States**. By contrast, the **average level of non-audit fees** has **dropped in 17 Member States** since the Audit Reform.

5. DESCRIPTIVE EVIDENCE OF THE IMPACT OF SPECIFIC PROVISIONS OF THE AUDIT REFORM

In this chapter, we investigate the impact of some key provisions of the Audit Reform (separately) on market structure (competition, concentration) and on costs for audited entities. In particular we focus on mandatory firm rotation (5.1), joint audits (5.2) and regulation with reference to the supply of non-audit services by the statutory auditor and/or the auditor's network to the audited entity (5.3). We also assess whether differences in the implementation of some of these provisions are associated with different outcomes. The research questions that can be posed in this context include:

- Has the mandatory firm rotation (MFR) led to increased competition in the market?
- Has the option of joint audits been taken up in Member States?
- Do any signs point to positive effects on competition from joint audits?
- How did mandatory firm rotation and joint audits affect costs for the audited entities?
- Has the secondary effect of opening up the market for non-audit services materialised?
- Are there examples of inconsistencies in the implementation of key parts of the reform in the various Member States, and have those had negative effects on the costs, concentration and competition in the EU audit sector?

In what follows, we provide descriptive evidence based on archival data. A further investigation of (some of) these questions is also reported in Chapter 6, where we provide a multivariate analysis, and in Chapters 7 and 8, where we report evidence obtained from surveys administered by PIEs and audit firms.

5.1. Mandatory Firm Rotation

The main research questions we address in this section are:

- Does competition between and the market power of audit firms change (increase) after the implementation of MFR, and do the effects of MFR on (price) competition between audit firms differ between Member States?
- Can differences in cost effects be observed resulting from MFR for PIEs in strict rotation regimes vs. in less strict regimes?

A **challenge** when addressing these questions is that it is **hard to separate the effect of the MFR rules from effects triggered by other rules** in the Audit Reform. Our approach is to examine whether differences in the implementation of MFR across Member States are associated with a different evolution of market structure and costs. We **do not claim to establish causal inferences** as such between the type of MFR regime and the effects on the audit market. Instead, we merely document descriptive evidence.

We identified implementation differences between Member States with regard to MFR provisions in Regulation 537/2014 along three criteria:

- whether the maximum initial duration period for auditors is less than 10 years;
- whether the maximum initial period can be extended when initiating a tender procedure; and
- whether the maximum initial period can be extended by appointing a joint auditor.

Details of the implementation of MFR can be found in Table 5 and ANNEX I. METHODOLOGY. In order to distinguish between Member States where MFR was implemented in a strict way compared to a more flexible way, we we first identify for each Member State the **maximum engagement period**, i.e. the maximum number of years an auditee is allowed to have the same audit firm. We than calculate the **EU median value** of the Member States' maximum engagement period, which equals 20 years. We then divide the Member States into two categories based on this median:

- **strict** Member States (i.e. maximum engagement period of less than 20 years); and;
- **flexible** Member States (i.e. maximum engagement period equal to or exceeding 20 years).

Note that in some Member States the regulations are stricter for banks or financial institutions, and therefore we reclassify the Member States using the EU median of the maximum engagement period for the financial industry which equals 17.5 years. Table 9 provides an overview of all the countries which were classified as having a 'strict' vs. 'flexible' implementation. Per column, the countries have been tabulated in descending order based on the maximum engagement period (i.e., countries with longer maxium engagement periods are tabulated at the bottom).

Table 9: Overview of Member States with a strict vs. flexible adoption of the MFR provision

Non-financial sector		Financial sector	
Strict implementation Max engagement period < 20 years	**Flexible implementation Max engagement period ≥ 20 years**	**Strict implementation Max engagement period < 17.5 years**	**Flexible implementation Max engagement period ≥ 17.5 years**
Poland	Croatia	Poland	Croatia
Bulgaria	Czech Republic	Bulgaria	Czech Republic
Italy	Estonia	Hungary	Estonia
Austria	Greece	Italy	Latvia
Hungary	Latvia	Cyprus	Luxembourg
Ireland	Luxembourg	Austria	Malta
Lithuania	Malta	Ireland	Romania
Netherlands	Romania	Lithuania	Slovakia
Portugal	Slovakia	Netherlands	UK
Slovenia	Sweden	Portugal	Belgium
Spain	UK	Slovenia	Denmark
	Belgium	Sweden	Finland
	Cyprus	Spain	France
	Denmark	Greece	Germany
	Finland		
	France		
	Germany		

We then examine whether and how audit market concentration and competition changed following the introduction of MFR, and we also look at changes in costs and whether there are differences between the two categories of Member States. We provide descriptive evidence for both the full audit market (5.1.1) and the financial services segment of the audit market (5.1.2), covering the period 2013-2017[65]. Finally, we conclude in 5.1.3.

5.1.1. Aggregate EU audit market

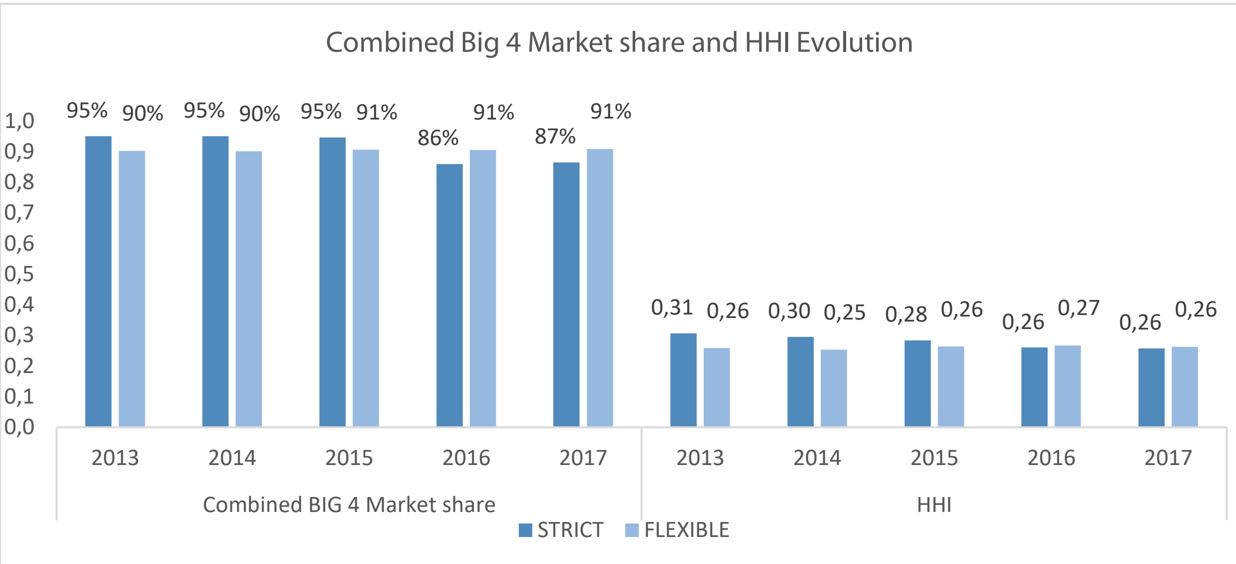
First, we analyse the differences in Member State implementation of MFR for the full audit market. As we do above (see supra, Chapter 4), here we calculate all metrics at the Member State level, and afterwards the EU weighted averages are used for the analyses.

a. Static measures of competition for strict vs. flexible MFR implementation environments

Graph 17[66] gives an overview of HHI and the combined Big 4 market share for the two categories of Member States (i.e. strict vs. flexible MFR implementation environments).

An interesting observation is that in the **pre-implementation period** (2013-2015), the level of audit market concentration as measured by the **HHI** was, on average, **higher in Member States** that eventually **implemented the MFR provisions in a stricter way** (HHI = 0.31 in 2013) as compared to Member States that chose a more flexible approach to MFR (HHI = 0.26 in 2013). In the **post-implementation** period, we only note a **decrease in HHI** for Member States with a '**strict implementation**'. For strict MFR Member States concentration decreased by 0.05 from 2013 to 2017 (HHI = 0.26 in 2017). A similar pattern of change is observed in the combined Big 4 market share where the Big 4 had a higher market share in 2013 in the strict (95%) vs. flexible (90%) Member States. However, the Big 4 market share decreased in the strict Member States (to about 87%) but remained stable in the flexible Member States (91%).

Graph 17: Evolution of audit market concentration: strict vs. flexible MFR regimes

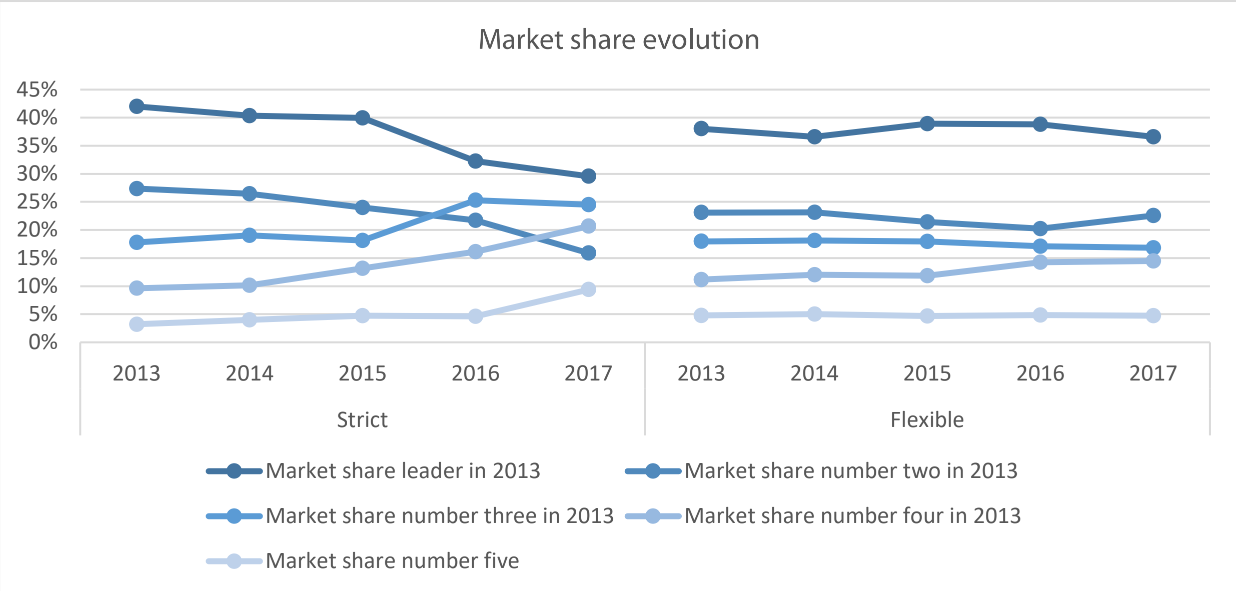


[65] The measures are calculated based on the complete sample of PIE clients, which includes clients from all three categories of the transitional period (see supra,Table 3). The inclusion of clients who rotated mandatorily and voluntarily results in an overall upward bias for the competition metrics in this section.

[66] For tabulated results, we refer to Table AII-20.

We now turn to Graph 18[67] to analyse the market share evolution of different types of audit suppliers in the strict vs. flexible MFR Member States. We divide the types of suppliers into the leader, the runner-up, numbers 3 and 4 and the aggregate of smaller suppliers in the audit market. Upon inspection of Graph 18, it is clear that the individual **market shares of the largest audit suppliers** in the market **converge in 2017 in strict MFR Member States,** but hardly do in flexible MFR Member States. In particular, the **market share of the leader in 2013** was diminished by 12.4% towards 2017 in the strict MFR Member States and only by 1.5% in the flexible MFR Member States. The **strongest drop** in market share was experienced by the **second market player** in **strict** MFR Member States. In the segment of **flexible** MFR Member States, the second market player market share remained relatively **unchanged**. For the **number three market player**, we see an increase in market share in the strict MFR Member states (about +6.7%) and a decrease in flexible MFR Member States (about -1.1%). The **fourth market player** gains almost 11 % in the strict MFR Member States and almost 3.3% in the flexible MFR Member states. Finally, the market share evolution of **all other firms increase by about 6 %** over the period 2013-2017 in the **strict Member States** whereas it remains rather stable in the flexible Member States.

Graph 18: Evolution of market shares for different types of audit suppliers: strict vs. flexible MFR regimes



b. Dynamic measures of competition for strict vs. flexible MFR implementation environments

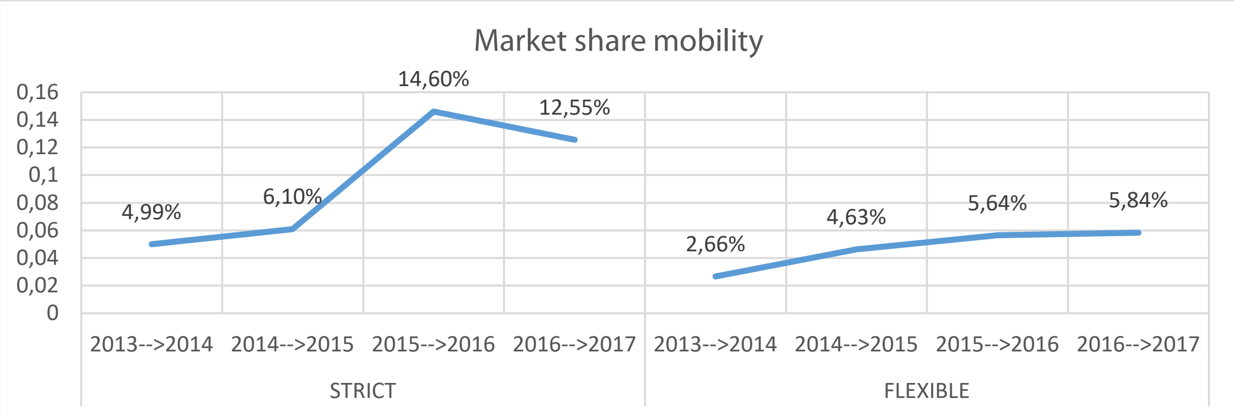
In Graph 19[68], we present descriptive evidence on market share mobility (or the aggregate percentage of market share that shifts between audit suppliers from one year to the next) for the categories of flexible vs. strict MFR Member States. From the graph it is clear that market share mobility increased significantly in the two categories of Member States, albeit at a different pace: the market share mobility increased substantially in the strict MFR Member States after the Audit Reform (from about 5%

[67] For tabulated results, we refer to Table AII-20.

[68] For tabulated results, we refer to Table AII-21.

in 2013-2014 to 12.6% in 2016-2017) and gradually in flexible MFR Member States (from about 2.7% in 2013-2014 to 5.8% in 2016-2017).

Graph 19: Evolution of market share mobility: strict vs. flexible MFR regimes



Next, we analyse the percentage of PIE audit clients switching audit firms from one year to the next (i.e. *percentage of PIE clients having different auditors in t and t-1*). We observe in Member States with both flexible and strict MFR regimes an increase in the audit firm switch rate, which about doubled from 2013-2014 to 2016-2017.

Table 10: Percentage of clients switching: strict vs. flexible MFR regimes

	2014	2015	2016	2017
Panel A: Strict				
Percentage of PIE clients having different auditors in t and t-1	9.84%	17.21%	18.09%	16.67%
Big 4 to Big 4 (as a % of total switches)	51.47%	49.04%	71.45%	61.58%
Big 4 to Non-Big 4 (as a % of total switches)	16.19%	13.41%	3.05%	8.45%
Non-Big 4 to Big 4 (as a % of total switches)	11.46%	9.69%	6.73%	5.16%
Non-Big 4 to Non-Big 4 (as a % of total switches)	20.87%	27.83%	18.76%	24.80%
Panel B: Flexible				
Percentage of PIE clients having different auditors in t and t-1	5.09%	8.72%	9.96%	10.40%
Big 4 to Big 4 (as a % of total switches)	37.40%	22.51%	25.50%	34.14%
Big 4 to Non-Big 4 (as a % of total switches)	17.11%	14.09%	10.43%	14.99%
Non-Big 4 to Big 4 (as a % of total switches)	7.45%	15.30%	14.32%	9.35%

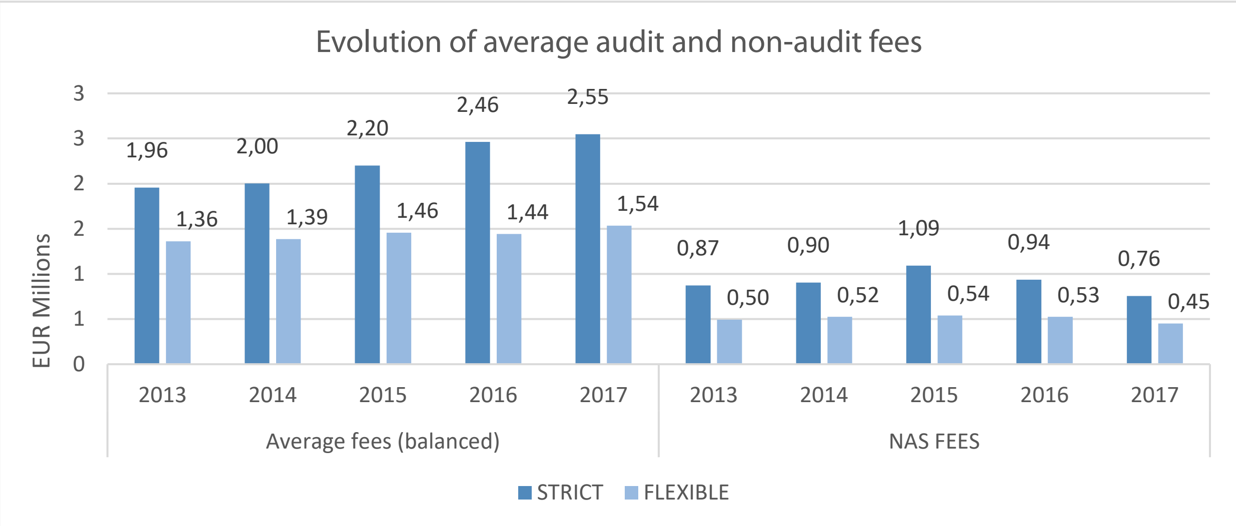
Non-Big 4 to Non-Big 4 (as a % of total switches)	38.04%	48.08%	49.74%	41.45%

Table 10 also provides insight into the types of audit firm switches that took place during the period 2013-2017. It is clear that the **majority of the switches took place between the same types of audit firms** (i.e. from Big 4 to Big 4 and from Non-Big 4 to Non-Big 4). Moreover, no consistent pattern can be observed in the different categories before and after the Audit Reform and between flexible and strict MFR Member states.

c. Evolution of costs in strict vs. flexible MFR implementation environments

The evolution of costs is displayed in Graph 20[69] for both types of MFR regimes. Throughout we discuss nominal changes in costs. In general, we notice that Member States with a flexible implementation of the MFR provision display lower audit and non-audit fees compared to countries with a stricter implementation. Regarding the **average audit fees**, we observe an **increasing trend in both categories**. For example, for the flexible (strict) adopters, in 2013, the average audit fee was equal to EUR 1.4 (2.0) million, which increased to EUR 1.5 (2.5) million in 2017. Overall, the **increase in audit fees is larger** in the **strict Member States**. The **average non-audit fees** increase until 2015 but afterwards drop significantly in types of Member States. The **decrease of non-audit fees** is larger in strict Member States.

Graph 20: Evolution of audit and non-audit fees paid to the incumbent audit firms: strict vs. flexible MFR regimes



5.1.2. Financial sector market segment

In this section, we analyse the differences in Member State implementation of MFR in the financial services segment of the audit market. We calculate all metrics at the Member State level and afterwards use the EU weighted averages for the analyses.

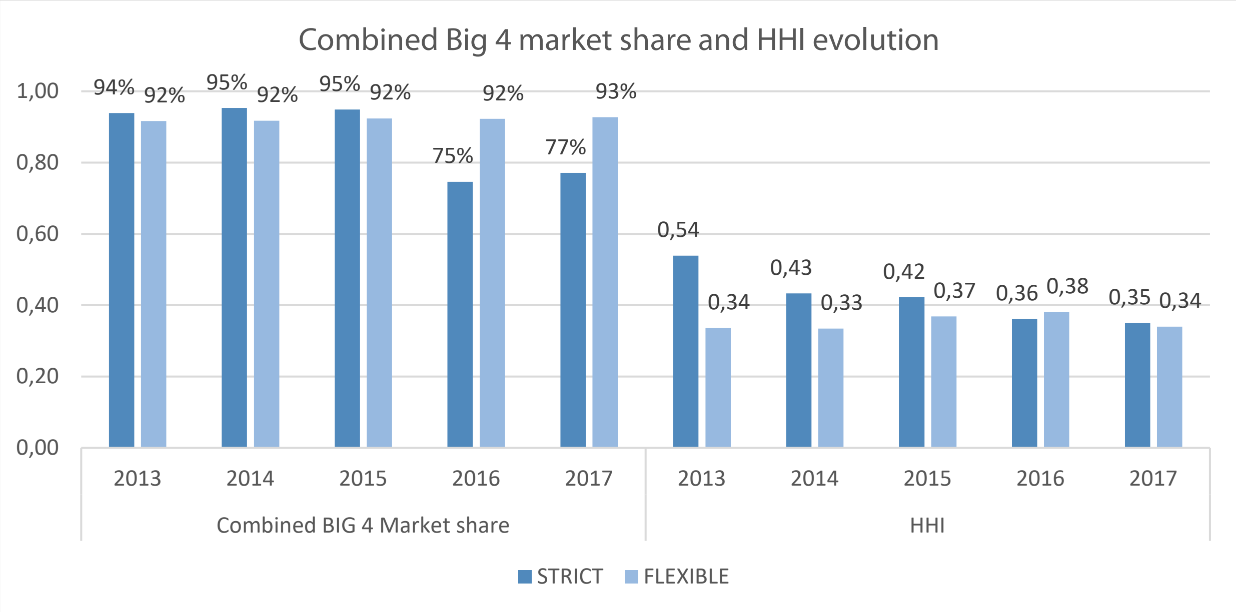
[69] For tabulated results, we refer to Table AII-20.

a. Static measures of competition for strict vs. flexible MFR implementation environments

Graph 21[70] gives an overview of HHI and the combined Big 4 market share for the financial services market segment in flexible vs. strict MFR regimes.

First, we observe that before the implementation **concentration levels in the financial services segment were higher**, on average, in Member States that later on **adopted a stricter regime** regarding MFR provisions. For example, in 2013, the average HHI 0.54 in strict MFR regimes whereas it was 0.34 in flexible MFR regimes. Analysing the evolution over time, we observe that the HHI levels have somewhat fluctuated over time in flexible MFR Member States between 0.33 and 0.38. By contrast **HHI levels decrease** from 2013 to 2017 in **strict** MFR Member states from 0.54 to 0.35, thereby bringing the HHI level at a similar level in strict and flexible MFR Member States in 2017. However, it should be stressed that the largest decline in HHI in the strict MFR Member states is observed in the pre-implementation period from 2013 to 2014.

Graph 21: Evolution of concentration in the financial segment: strict vs. flexible MFR regimes



The evidence on changes in the combined Big 4 market share in the financial services segment of the audit market provides a slightly different picture. The Big 4 market share in this segment was about equal in 2013: on average, 91.6 % for flexible MFR Member States and 93.9 % for strict MFR Member States. After implementation of the Audit Reform, we observe a **rather large drop in Big 4 dominance in countries with a strict MFR regime**. From 2015 to 2016, the average level of the combined Big 4 market share diminished by about 20 % and then increased again slightly, by 2.4 %, in 2017. In contrast, for the flexible MFR Member States we fail to find similar trends in Big 4 auditor dominance. From 2013 to 2017, Big 4 auditors actually gained 1 % in flexible MFR regimes.

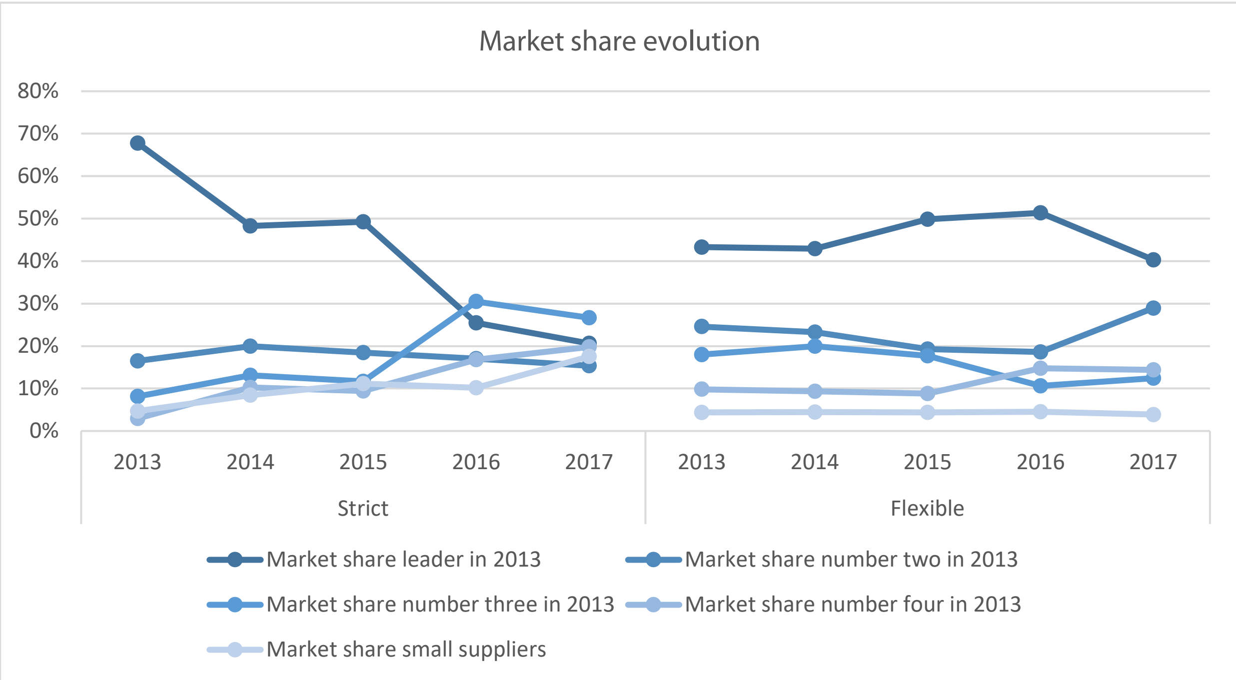
70 For tabulated results, we refer to Table AII-22. Some Member States are missing as we could not construct a balanced sample for these Member States.

Overall, we observe a rather large decrease in HHI and a decrease in the combined Big 4 market share in the financial services segment of the audit market where there are strict MFR regimes. In the flexible MFR segment, we observe no significant changes in HHI and combined Big 4 market share.

Next, we turn to Graph 22[71], which displays the individual **market share evolution** of the four largest suppliers in the financial services segment of the audit market in the flexible and strict MFR regimes, as well as changes in the aggregate market share of the rest of the (small) suppliers. **Market leaders** clearly had **more market power in the financial segment** of the audit market in **strict MFR Member States** in 2013 (68%), as they have a much higher average market share compared to market leaders in flexible Member states (43%). Interestingly, we observe that the **market shares of the largest players in the financial segment of the audit market only converge in strict MFR Member States**. In flexible MFR Member States we see no such convergence as the situation in 2013 and 2017 looks very similar.

In particular, market **leaders lose a large portion** of their market shares in the strict MFR Member States, namely about 48% from 2013 to 2017. In the flexible MFR Member States this is only 3%. In the strict MFR segment the market share losses of the leader resulted in market share gains for the third market player in 2013 (from about 8 % in 2013 to 27 % in 2017), for the fourth market player in 2013 (from about 3 % in 2013 to 20 % in 2017) and for audit firms that were outside the top 4 in 2013 (from 5 % in 2013 to 18 % in 2017). In the flexible MFR segment, only the fourth market player (in 2013) shows a persistent increase in market share (from 10 % in 2013 to 14 % in 2017). The market share of audit firms outside the top 4 even slightly declined (from 4.4 % in 2013 to 3.9 % in 2017).

Graph 22: Evolution of market shares for different types of audit suppliers in the financial segment: strict vs. flexible MFR regimes



[71] For tabulated results, we refer to Table AII-22.

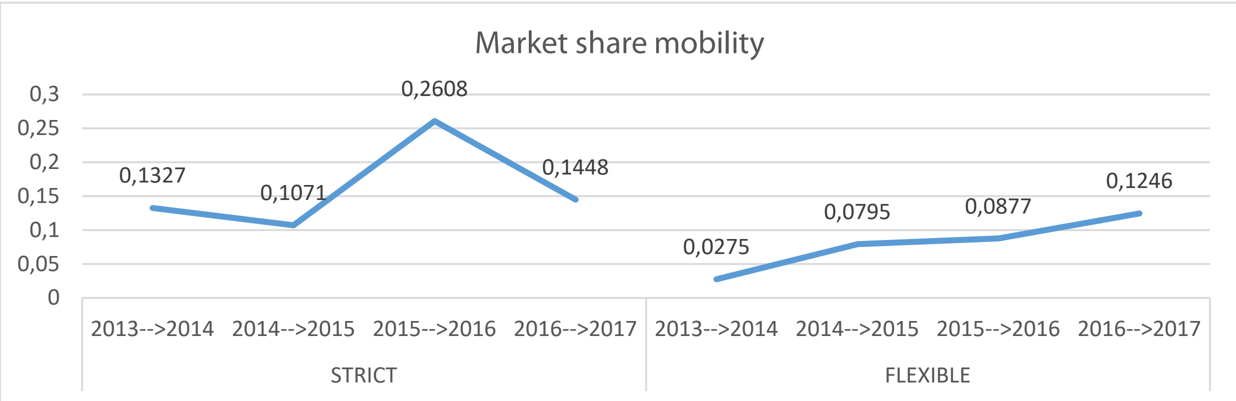
b. Dynamic measures of competition for strict vs. flexible MFR implementation environments

In Graph 23[72], we provide evidence of market share mobility (or the aggregate percentage of market share that shifts between audit suppliers from one year to the next) for the categories of flexible vs. strict MFR Member States.

Echoing the analysis of the full audit market, we find that Member States which adopted a **flexible regime** have relatively **low levels of market share mobility** in the pre-MFR period (i.e. 2.8 % from 2013-2014), but that market share mobility significantly **increased in the post-MFR period** (i.e. 12.5 % from 2016-2017). Overall, this represents a positive change of about 10 %.

For Member States with stricter MFR rules, we find a rather **large market share mobility** rate of 13.3 % from 2013-2014, but in the post-MFR period of 2016-2017, this increases to an average of 14.5 %.

Graph 23: Evolution of market share mobility in the financial sector segment: strict vs. flexible MFR regimes



An analysis of the percentage of financial services firms that switched audit firms in Table 11 (i.e. *percentage of financial services clients having different auditors in t and t-1*) documents a slowly increasing audit firm switch rate in flexible MFR member states, which is similar to our findings in the full audit market (see Table 10, Panel A and B, for strict vs. flexible adopters, respectively).

In **strict** MFR Member States, we document **higher switch rates** than in flexible MFR Member States. In addition, the **switch rate increased** most in strict MFR Member States. As in the case for the full audit market, we note that **most switches occur between similar audit supplier** categories (i.e. from Big 4 to Big 4 or from Non-Big 4 to Non-Big 4). This was particularly true for Member States with a strict MFR regime, where 85.4 % of all switchers went from one Big 4 to another for the period 2016-2017.

[72] For tabulated results, we refer to Table AII-23.

Table 11: % of clients switching in the financial sector segment: strict vs. flexible MFR regimes

	2014	2015	2016	2017
Panel A: Strict				
Percentage of PIE clients having different auditors in t and t-1	16.49%	9.11%	27.40%	24.35%
Big 4 to Big 4 (as a % of total switches)	62.92%	63.63%	86.67%	85.44%
Big 4 to Non-Big 4 (as a % of total switches)	35.42%	7.70%	2.10%	1.50%
Non-Big 4 to Big 4 (as a % of total switches)	0.21%	0.00%	7.09%	10.74%
Non-Big 4 to Non-Big 4 (as a % of total switches)	1.45%	28.65%	4.15%	2.30%
Panel B: Flexible				
Percentage of PIE clients having different auditors in t and t-1	3.98%	6.53%	8.97%	10.10%
Big 4 to Big 4 (as a % of total switches)	30.89%	17.00%	21.30%	29.04%
Big 4 to Non-Big 4 (as a % of total switches)	38.22%	23.72%	5.31%	14.52%
Non-Big 4 to Big 4 (as a % of total switches)	10.21%	6.16%	18.33%	6.38%
Non-Big 4 to Non-Big 4 (as a % of total switches)	20.64%	53.12%	55.06%	50.06%

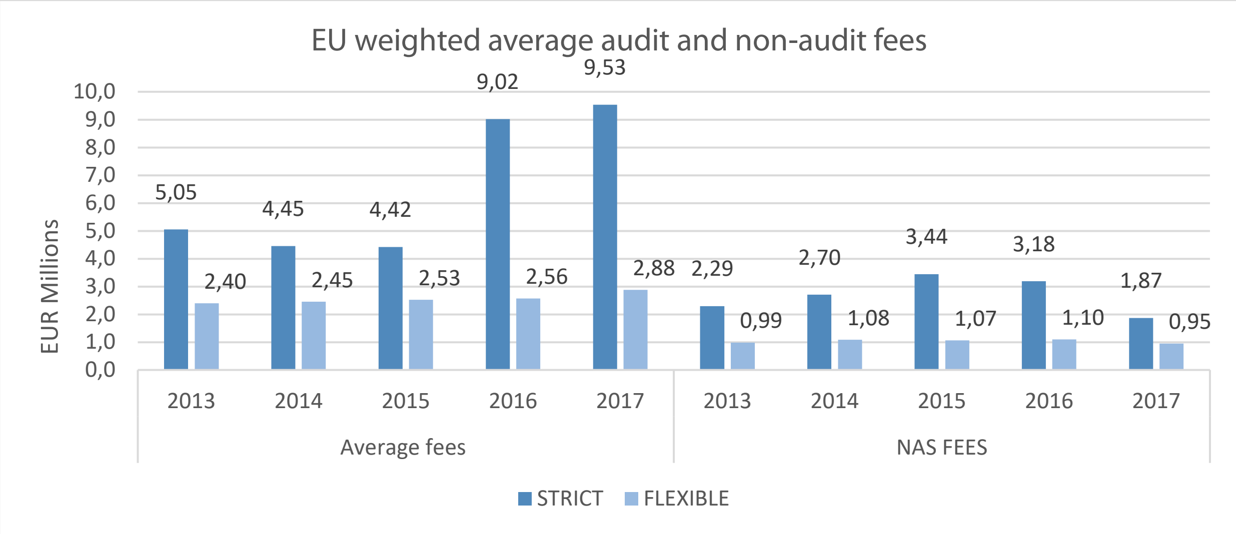
c. Evolution of costs in strict vs. flexible MFR implementation environments

In this section we document differences in cost effects of MFR for financial firms in strict vs. less strict rotation regimes. The evolution of costs for financial sector audit clients is displayed in Graph 24[73] for both types of MFR regimes and expressed in **nominal values**.

Average audit fees are much higher in **strict MFR** Member States and **increased sharply** from 2016 onwards, equalling on average EUR 9.5 million in 2017. In Member States which implemented a flexible MFR regime, the average audit fee only marginally increased from EUR 2.4 million in the pre-MFR period to EUR 2.8 million in 2017.The **average non-audit fees** increase in both strict and flexible MFR Member States until 2015 and 2016 respectively, and then **drop**.

[73] Tabulated results in Table AII-22.

Graph 24: Evolution of average audit and non-audit fees paid to the incumbent auditor in the financial services sector: strict vs. flexible MFR regimes



5.1.3. Conclusions

In this section, we analysed whether audit market concentration, competition and costs evolved differently in Member States that differ in terms of how strict MFR was implemented. To this end, we divided the EU Member States in two categories: (1) **strict** versus (2) **flexible adopters** of the **MFR regime**.

Interestingly, **strict MFR Member States** are characterised by a **higher level of concentration** (as measured by HHI) **before the implementation** of MFR compared to flexible MFR Member States. In the period after the implementation of MFR, we only document a decrease in HHI in strict MFR Member States. Similar patterns are observed for the combined Big 4 market share. The same pattern is observed for the **market segment of financial sector** audit clients, where we observe higher supplier concentration (both in terms of HHI and combined Big 4 market share) in strict MFR Member states than in flexible MFR Member states before MFR-implementation. Note further that there was a **significant drop in both concentration measures in this segment in strict MFR Member States** starting from 2016 onwards, hence this trend started **before the Audit Reform** was in full effect. In flexible MFR Member States, we do not find significant changes before and after MFR implementation.

With regard to the market share evolution of the different audit suppliers in the aggregate EU audit market, we document that the individual **market shares of the largest audit suppliers** in the market **converge** in 2017 **in strict MFR Member States**. In flexible MFR Member States, we find little variation of market shares over time. In the sub-segment of **financial sector** auditees, we observe a similar convergence of market shares in the strict MFR Member States, and financial sector **market leaders lose a significant amount of market share** in the **strict** MFR Member States (around 48 % from 2013 to 2017). Most of the market share losses in the strict MFR Member States are picked up by the third and fourth market players as well as the smaller audit firms. For flexible MFR Member States there is very little market share convergence. We also observe that **market leaders have more market power in flexible MFR Member States in 2017** as compared to market leaders in strict MFR Member States**.**

Dynamic measures of competition show an increasing trend in strict and flexible MFR Member States, with **market share mobility** being relatively **low before the implementation of MFR** (around 3% an

5% for strict and flexible regimes, respectively) and **increasing after the implementation** (to about 6 % and 13 % for strict and flexible regimes, respectively). Switch rates are higher in strict than in flexible MFR Member States, but **increased** significantly in **both regimes** – most of which within similar types of pairs (i.e. Big 4 to Big 4, and Non-Big 4 to Non-Big 4). In the **financial services** sector, a similar trend in market share mobility is visible. Finally, the switch rate is higher in strict MFR Member states and increased in both regimes – from around 16.5 % (4 %) before the implementation of MFR to 24% (10%) after the implementation in strict (flexible) MFR Member States.

Related to costs, we notice that Member States with a strict implementation of the MFR provision display higher audit and non-audit fees compared to countries with a more flexible MFR implementation. Regarding the **average audit fees**, we observe an **increasing trend in both types of Member States** but the increase seems to be larger in strict Member States, whereas **average non-audit fees** increase until 2015 but afterwards drop significantly in both categories. In the segment of financial sector audit clients we also observe that **average audit fees** are much higher in **strict MFR** Member States and **increased sharply** from 2016 onwards. In Member States which implemented a flexible MFR regime, the (much lower) average audit fee only marginally increased. The **average non-audit fees** first increase in both strict and flexible MFR Member States and then **drop after MFR implementation**.

5.2. Joint audits

In this section we focus on the practice of joint audits in the EU. The main research questions we address are:

- whether firms voluntarily choose joint audits and what drives this decision;
- whether joint audits affect competition between audit firms;
- which auditor type PIEs choose as their second auditor in the case of joint audits;
- whether the extension of the MFR period affected the decision of PIEs to engage in a joint audit;
- whether we observe different effects of the Audit Reform on audit fees charged to PIEs which engaged in joint audits vs. those which kept a single auditor.

Currently, joint audits are only mandatory in three EU countries: 1) for all PIEs in France; 2) for banks, insurers and pension funds in Bulgaria; and 3) under certain conditions in Croatia[74]. Thus in all other Member States, joint audits are voluntary for PIEs. In this sense, EU regulation regarding a joint audit requirement is similar in most Member States (except for France). However, Member States do differ with regard to the possibility of using joint audits as a way to extend the mandatory firm rotation period. In Section 2.3 and Table 5 we provide an overview of the rules for each Member State. The countries where joint audits are promoted via an extension of the MFR period are: Belgium, Cyprus (not for banks, though), Denmark, Finland, France, Germany, Slovakia, Spain and Sweden.

In this section we provide evidence at the Member State level on as to whether PIE clients voluntarily choose joint audits. Moreover, in the case of joint audits we also examine which types of auditor combinations are the most prevalent and whether this has changed since the Audit Reform. Note that the descriptive evidence is examined for both the full audit market (5.2.1) and the financial services segment of the audit market (5.2.2) covering the period 2013-2017.

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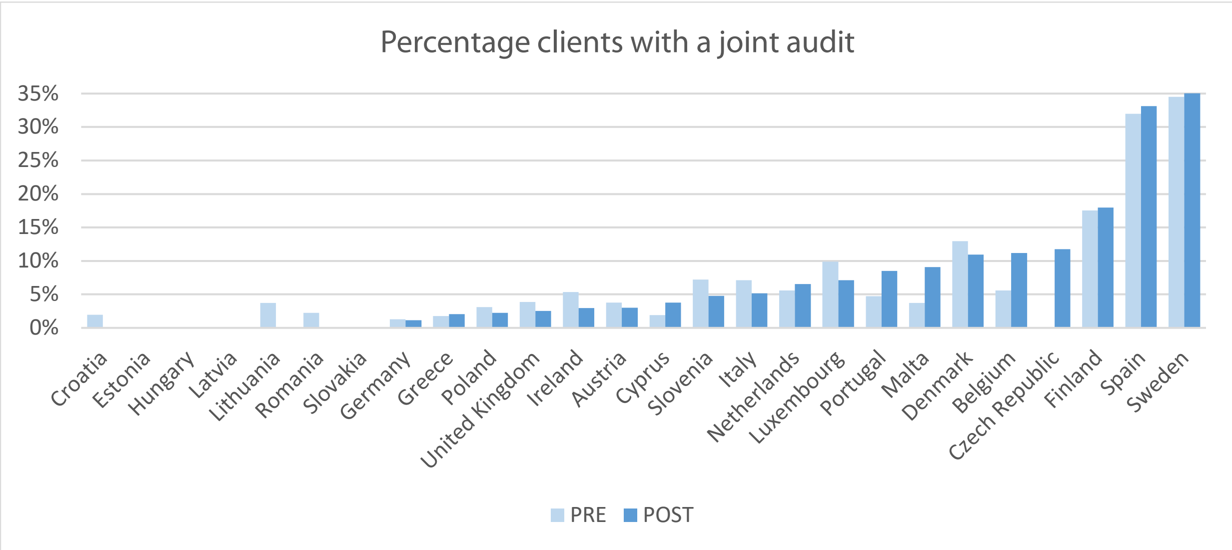
[74] PIEs that fulfil one of the following conditions: (1) employ an average of 5 000 workers during the fiscal year in the Republic of Croatia; (2) have an asset greater than HRK 5 000 million on the last day of the fiscal year, have to engage a statutory audit with at least two mutually independent auditing companies and submit a joint audit report.

5.2.1. Aggregate EU audit market

Graph 25[75] shows for each Member State the percentage of PIEs with a joint audit. We compare the average percentages over the pre-implementation period (i.e. 2013-2015) with the percentages in 2017. In total, **20 Member States have at least one PIE client that engages in a joint audit**, and the average percentage of joint PIE audits in the EU equals 9.1 % in 2017[76] (excluding France). Member States that score high for the percentage of **voluntary joint audits** are Sweden (where 37.6 % of all PIE clients had a joint auditor in 2017), Spain (33.1 %), Finland (18 %), Czech Republic (11.8 %) and Belgium (11.2 %). Note that Sweden, Spain, Finland and Belgium are countries in which joint audits can be used to extend the MFR period. For some countries, the number of voluntary audits has decreased compared to the average for the pre-implementation period. Among others, these include Luxembourg (-2.7 %), Slovenia (-2.5 %) and Ireland (-2.4 %).

Graph 25: Percentage of EU PIEs with a joint audit



In Table 12, we present statistics on how these joint audits are dispersed across different audit firm combinations. More specifically, we look at the percentage of joint audits that combine a Big 4 with another Big 4, a Big 4 with a Non-Big 4 or a Non-Big 4 with another Non-Big 4 auditor. Note that the percentages are calculated for the full audit market: they are not EU weighted averages[77]. Here we notice that the **auditor combinations remain relatively stable** when we look at pre- and post-implementation levels. With the biggest category comprising pairings of Big 4 and Non-Big 4 auditors, the trend seems to increase slightly in the post-implementation period (e.g. 66.4 % in 2013 and 68.3 % in 2017).

[75] For tabulated results, we refer to Table AII-24.

[76] Weighted average; unweighted average is about 6.7%.

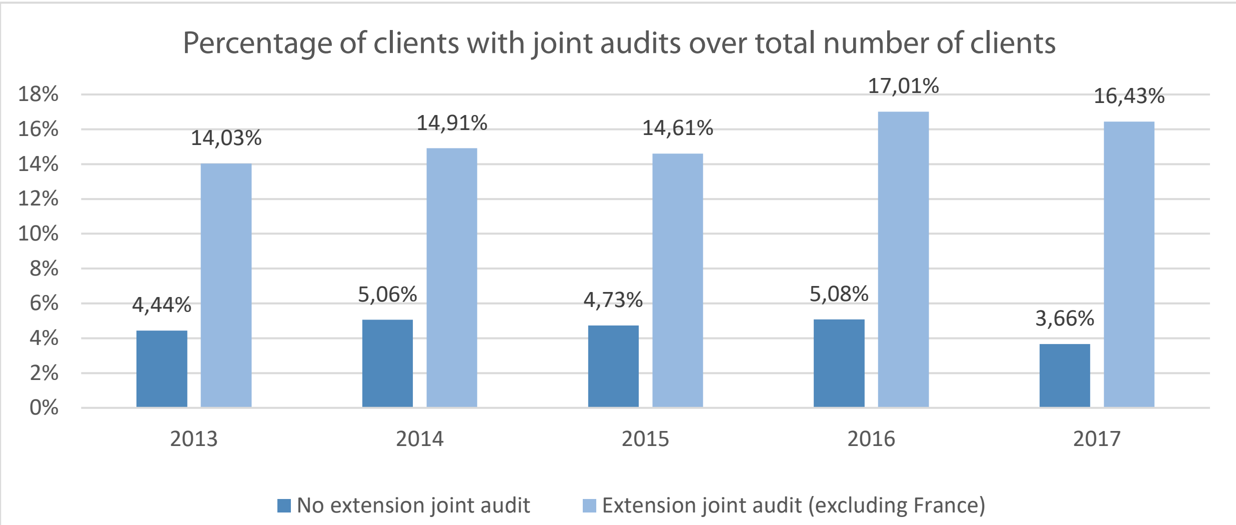
[77] We do this because the number of joint audits is quite low in some countries. As we further divide joint audits into three categories, we could get extreme values in the EU weighted average.

Table 12: Overview of audit firm pairs in joint audits of PIEs in the EU

	2013	2014	2015	2016	2017
All Big 4	15.8%	13.8%	14.5%	15.3%	15.0%
Big 4 and Non-Big 4	66.4%	65.7%	66.8%	66.7%	68.3%
Others	17.8%	20.5%	18.7%	18.1%	16.7%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

We also include the percentage of joint audits over the total number of joint audits to follow its evolution for non-adopting vs. adopting countries of the joint audit extension in Graph 26[78]. We find a **large difference in the joint audit rate between the two categories** of Member States. Note that Member States allowing extension of the MFR period in the case of a joint audit already had a higher joint audit rate before the Audit Reform was implemented. After the Audit Reform, we observe a slight increase (of about 2 %) in the joint audit rate in Member States allowing extension of the MFR period in the case of a joint audit. Member States not allowing the MFR extension experience a decrease in the joint audit rate in 2017.

Graph 26: Evolution of the joint audit rate: Member States allowing extension of the MFR period in the case of a joint audit vs. Member States not allowing extension



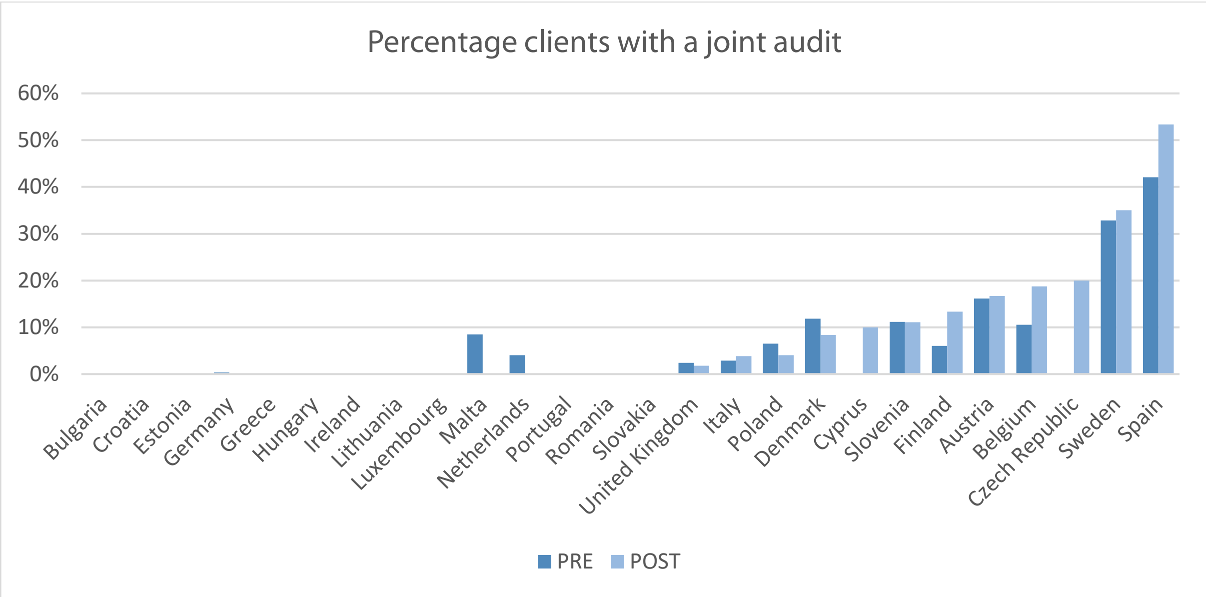
5.2.2. Financial sector market segment

We also look individually at the percentage of financial sector clients with a joint audit for each Member State (see Graph 27[79]). As above, we compare the average pre-implementation (i.e. 2013-2015) percentages with the percentages in 2017. In total, **14 Member States have at least one financial sector client that engages in a joint audit** in the financial services sector, and the average percentage

[78] Tabulated results in Table AII-26.
[79] Tabulated results in Table AII-25.

of joint PIE audits in the EU equals 12.8 %[80] (excluding France). This is higher than for the full audit market. Excluding France, the Member States that score the highest for the number of **voluntary joint audits** in this industry are Slovenia (where 53.3 % of all PIE clients had a joint auditor in 2017), Spain (35 % in 2017), Czech Republic (20 % in 2017), Belgium (18.8% in 2017) and Austria (16.7 % in 2017). For some countries, the number of voluntary joint audits has decreased compared to the average for the pre-implementation period. Among others, these include Denmark (-3.5 %) and the Netherlands (-2.4 %).

Graph 27: Percentage of EU PIEs with a joint audit in the financial sector



In Table 13, we present statistics on how these joint audits are dispersed across different audit firm combinations. As above, the percentages are calculated as EU averages (and not EU weighted averages). Compared to the aggregate PIE market, we find that for the financial services segment there is an **increasing trend in the Big 4–Non-Big 4 combinations**. With a total of 69 % in 2013, this increased to 76.0 % in 2017. Although, it is difficult to associate this increase with the Audit Reform, as in 2015 we also notice a peak (i.e. 73.9 %). When we focus on the Big 4–Big 4 category, we document a significant decrease in this industry, from a total of 20 % in 2013 to 13.5 % in 2017. However, compared to the full audit market, we do notice a positive trend in the Big 4–Non-Big 4 combinations, whereas a Big 4 combined with another Big 4 becomes less frequent in the post-implementation period.

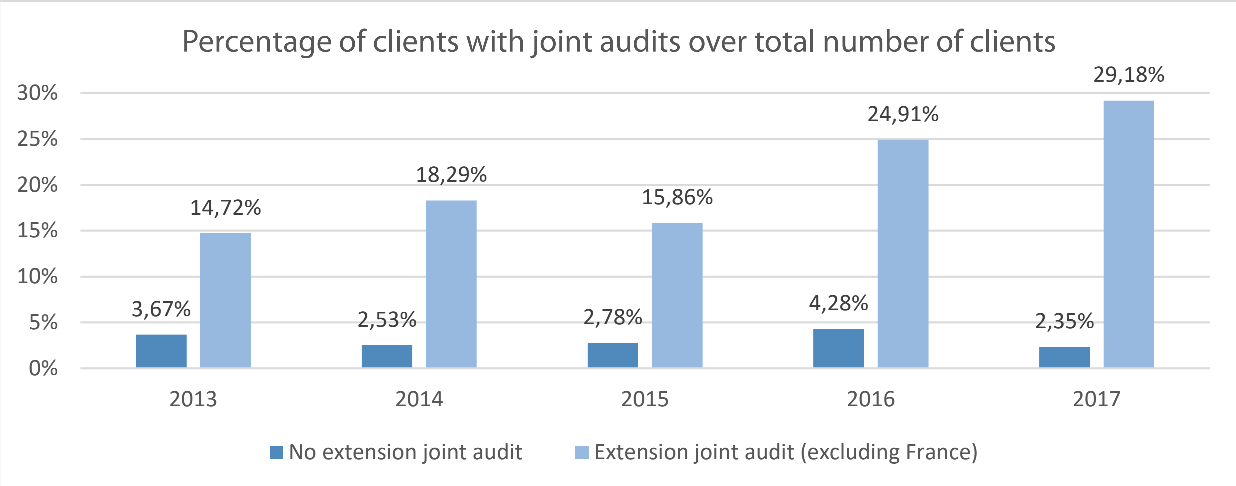
80 Weighted average; unweighted average is about 7.5%.

Table 13: Overview of audit firm pairs in joint audits of PIEs in the financial sector

	2013	2014	2015	2016	2017
All Big 4	20.0%	17.4%	14.4%	14.8%	13.5%
Big 4 and Non-Big 4	69.0%	68.7%	73.9%	71.3%	76.0%
Others	11.0%	13.9%	11.7%	13.9%	10.6%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

Again, we include the percentage of joint audits over the total number of joint audits to follow its evolution for Member States without joint audit extension vs. those with joint audit extension, particularly in the financial sector segment[81]. We find a strong increase in the percentage of joint audits in Member States allowing extension of the MFR period in the case of a joint audit (about +15 %). This increase is much stronger than the increase reported in the aggregate audit market.

Graph 28: Evolution of joint audit rates in the financial sector segment: Member States allowing extension of the MFR period in the case of a joint audit vs. Member States not allowing extension



5.2.3. Conclusions

In this section we focused on joint audits and investigated whether PIEs are voluntarily choosing to opt for an audit provided jointly by two different audit firms and how this choice has changed after the Audit Reform. In total, we find that **20 Member States** have **at least one PIE client** that engages in a **joint audit**, and the average percentage of joint PIE audits in the EU equals 9.1 % before the Audit Reform (excluding France). Interestingly, Member States which had the the **highest percentage of joint audits** before the Audit Reform are also those **which have adopted the joint audit extension**. For the financial services sector, the number of PIEs engaging in joint audits is, on average, higher and increased after the Audit Reform. With regard to the audit firm pairs, we observe that both for the full

[81] Tabulated results in Table AII-27.

audit market as well as the financial sector the typical pairs are a **Big 4 with a Non-Big 4**. For the **financial services segment** we observe an **increasing trend in the Big 4–Non-Big 4 combinations**.

Joint audit rates increased after the Audit Reform in Member States allowing a joint audit extension, whereas it decreased in those which are not. A similar but even stronger pattern is observed for the **financial services segment** in the audit market, where the **joint audit rate almost doubled in Member States which allow a joint audit extension**, but stays trivial and even decreases in those not allowing such an extension.

5.3. Non-audit services

In this section, we investigate how the nominal level of NAS fees evolved over the period 2013-2017 and compare the trends for both Big 4 and Non-Big 4 audit firms. Note that we only investigate NAS that is provided by the incumbent auditor; thus, consulting services provided by other audit firms to the client are not included in the analyses as this information is not publicly available. As the new Regulation included a 70 % cap, we also look into the number of clients that exceed this cap and the ratio of NAS fees to audit fees, on average, for these clients. Related to the 70% cap provision, the Regulation is not retrospective and will, thus, apply the first financial year starting on or after June 2016. In other words, permitted NAS will first be capped as of June 2019 (or January 2020, if the PIE has 31 December as the financial year end).

In addition, we investigate whether or not there is a trend towards audit-only firms. All analyses are conducted for both the aggregate PIE audit market (5.3.1) and the financial segment of the audit market (5.3.2). In this section,we address the following research questions:

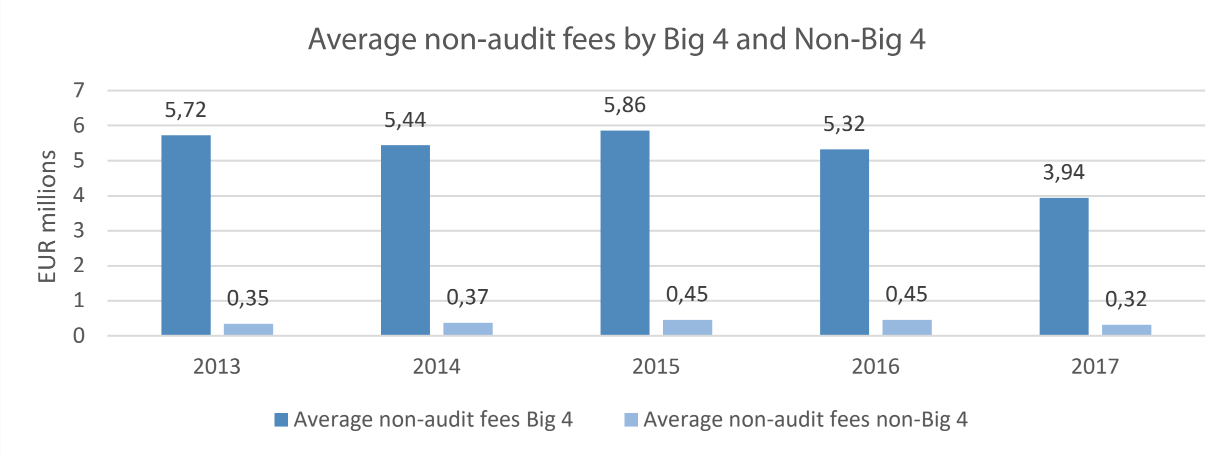
- Do PIEs audited by the non-Big 4 audit firms acquire more non-audit services from their auditor after the reform?
- Do PIEs consider smaller audit firms as a viable supplier of NAS?

5.3.1. NAS provided by the incumbent auditor: aggregate EU audit market

For the evolution of average non-audit fees earned by the incumbent auditor for the Big 4 and Non-Big 4 audit firms, we refer to Graph 29[82]. We find that, for both categories, the **average NAS fee has decreased** compared to the pre-implementation period. For the Big 4 audit firms, this decrease is about 31 % from the for 2013 level (EUR 5.7 million) to the 2017 level (EUR 3.9 million). For Non-Big 4 audit firms, this decrease amounts to 8.7 %, which is significantly smaller than the decrease for the Big 4 audit firms. The drop is primarily visible as of 2017 for both Big 4 and Non-Big 4.

[82] Note that, we take the aggregate EU PIE audit market sample from Audit Analytics for the calculations..

Graph 29: Average non-audit fees earned by the incumbent auditor in the EU PIE market



In Table 14, information related to the NAS fee cap and the provision of non-audit fees is presented. For the *percentage of clients for whom NAS fees exceed 70 % of this year's audit fees*, we mark a **steadily decreasing trend** from 2013-2017, with an average of 13.1 % of clients still exceeding the 70 % NAS fee cap in 2017. Looking at the ratio of NAS to audit fees for those clients whose NAS fees exceed 70 % of audit fees (i.e. *the ratio of non-audit fees over audit fees of clients with NAS >70 % of current year's audit fees*), we notice a **slightly increasing trend**. In the post-implementation period this ratio was, on average, 159 % and 143 % in 2016 and 2017, respectively. For clients whose NAS fees equal less than 70 % of audit fees, we observe a declining trend in the ratio of NAS to audit fees (i.e. *the ratio of non-audit fees over audit fees of clients with NAS <70 % of the current year's audit fees*). Finally, the **number of clients not purchasing non-audit services** from their incumbent auditor **remains fairly stable** after the Audit Reform.

Table 14: Overview of NAS fee caps and provisions of PIEs in the EU audit market

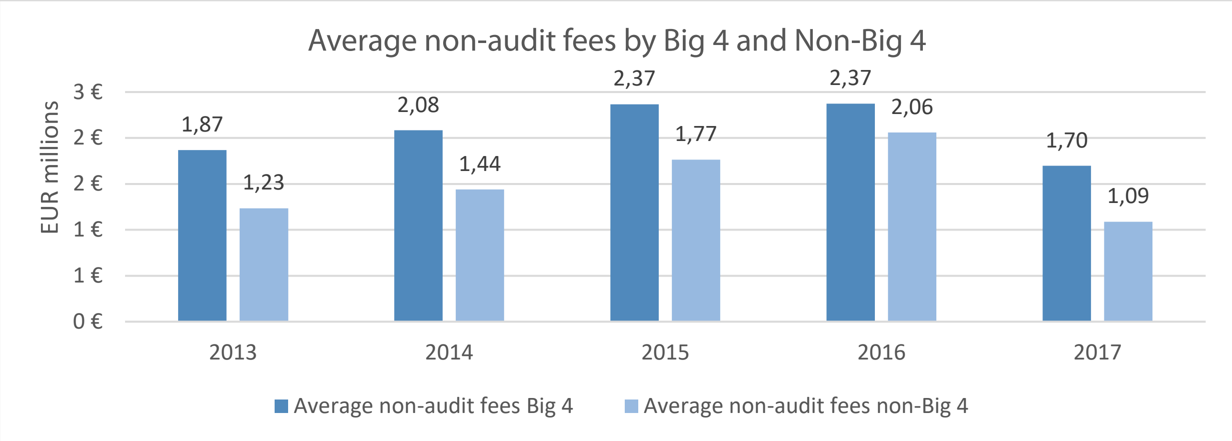
	2013	2014	2015	2016	2017
Percentage of clients for whom NAS fees exceed 70% of this year's audit fees	17.3%	18.1%	17.3%	15.4%	13.1%
The ratio of non-audit fees over audit fees of clients with NAS >70% of current year's audit fees	121.8%	129.2%	137.4%	158.6%	142.8%
The ratio of non-audit fees over audit fees of clients with NAS <70% of current year's audit fees	27.2%	26.2%	26.5%	24.2%	22.6%
Number of firms that exceed NAS criteria from Regulation 537/2014				11.0%	10.5%
Percentage of clients with audit-only services	32.75%	34.12%	34.13%	34.41%	34.46%

We conclude that both the **Big 4 and Non-Big 4 auditors experience decreasing revenues in non-audit fees** received by their audit clients based on our sample from Audit Analytics. However, we still find that in the post-implementation period there are some firms with NAS fees in excess of 70 %. Note that these firms do not violate the rules of Regulation 537/2014 as the 70 % cap will only become effective for most firms in 2019. We do **not observe an increasing trend towards audit-only clients** after the Audit Reform.

5.3.2. NAS provided by the incumbent auditor and its network: financial services market segment

Graph 30[83] presents the evolution of average nominal non-audit fees for the Big 4 and Non-Big 4 audit firms for the financial services segment of the audit market. As in the full audit market, we observe here for both categories a **decrease in the average NAS fee** compared to the pre-implementation period. For the Big 4 audit firms, this decrease is about 9.2 % between 2013 (EUR 1.9 million) and 2017 (EUR 1.7 million). For Non-Big 4 audit firms, the decrease is 11.9 %, which is more than for the Big 4 audit firms.

Graph 30: Average non-audit fees earned by the incumbent auditor in the financial segment market



In Table 15, information related to the NAS fee cap and the provision of non-audit fees can be retrieved for the financial services segment. The *% of client-auditors for whom NAS fees exceed 70% of this year's audit fees* **diminishes** over time, with an average of 14.6 % of clients still exceeding the 70 % NAS cap in 2017. Looking at the **audit-only clients**, we find an **increase in 2017**.

Table 15: Overview of NAS fee caps and provisions of PIEs in the financial segment

	2013	2014	2015	2016	2017
Percentage of clients for whom NAS fees exceed 70% of this year's audit fees	17.7%	18.3%	18.9%	17.3%	14.6%
The ratio of non-audit fees over audit fees of clients with NAS >70% of current year's audit fees	125.2%	119.0%	128.7%	243.7%	142.3%
The ratio of non-audit fees over audit fees of clients with NAS <70% of current year's audit fees	30.6%	29.9%	31.7%	28.3%	26.2%
Number of firms that exceed NAS criteria from Regulation 537/2014				10.7%	12.5%
Percentage of clients with audit-only services	34.67%	36.42%	36.27%	36.10%	39.03%

[83] Note that, we take the aggregate EU PIE financial audit market sample from Audit Analytics for the calculations..

We conclude that for the **financial services** segment, both **Big 4 and Non-Big 4 auditors experience decreasing revenues in non-audit fees** received by their audit clients. When focusing on the 70 % cap imposed by the Regulation, we still find firms that have NAS fees in excess of 70 % of the average audit fees of the last three years in the post-implementation period. For firms with NAS fees below 70 % of average audit fees of the last three years, we see a diminishing ratio of NAS to audit fees as well as an **increase in audit-only clients** in 2017.

5.3.3. Conclusions

In this section, we analysed the **evolution of average NAS fees** (provided by the incumbent audit firms to their audit clients) from 2013-2017 and compared trends between Big 4 and Non-Big 4. Overall, we document a **decreasing trend** in the provision of NAS which is **more pronounced for Big 4 audit firms** (-31 % from 2013 level to 2017 whereas for Non-Big 4 audit firms this was about -9 %). Although we document a decreasing trend in NAS, we do identify some auditees with NAS fees in excess of 70 % of current year's fees. We also pick up an increase in **audit-only clients after the Audit Reform, but only** in the sub-segment of **financial services clients**.

6. MULTIVARIATE EVIDENCE OF THE IMPACT OF THE AUDIT REFORM ON AUDIT FEES

The analyses relating to **audit fees and non-audit fees** in Chapter 4 and Chapter 5 are based on comparing descriptive statistics before and after the Audit Reform. An implication of both analyses is that changes in the mean value of these variables may be driven by **underlying changes in the characteristics of auditees** rather than by the Audit Reform. Therefore, in this chapter we investigate the impact of the Audit Reform on audit fees for non-financial PIEs (6.1) and financial PIEs (6.2) using **multivariate analyses** (i.e. controlling for the underlying auditee characteristics, e.g. size)[84]. Such analyses will allow us to more precisely identify the effects of the Audit Reform on audit fees.

6.1. Multivariate analyses of audit and non-audit fees for non-financial PIEs

In this section, we analyse the effect of the Audit Reform on the costs of external auditing for non-financial PIEs. To this end, we focus on a large component of this cost: **the audit fees** paid by auditees to their statutory auditor. As the Audit Reform imposed a cap on the non-audit services that can be provided by the statutory auditor, we also analyse **non-audit fees**. Finally, we examine the **total fee**, which is the sum of audit fees and non-audit fees paid to the statutory auditor.

For this analysis we match information on audit fees and non-audit fees provided by Audit Analytics Europe with financial information for auditees obtained by Orbis resulting in 18 442 auditee-year observations covering the period 2013-2017. In our multivariate analyses, we take the natural logarithm of (non-)audit fees to control for potential outliers. The variable of interest is ***POSTREFORM***[85], which is an indicator variable equal to one for audit fees paid after the implementation of the Audit Reform and zero otherwise. We control (among other things) for auditee size, profitability, auditor type and whether a joint audit is performed. We also include Member State and industry[86] fixed effects to control for Member State and industry differences. A detailed description of the sample selection and regression models can be found in ANNEX I. METHODOLOGY. For brevity's sake, in this chapter we only report the results for our variable of interest (POSTREFORM). The full set of results can be found in ANNEX II. TABLES OF GRAPHS, Table AII- 28 to Table AII-34.

Table 16 provides the results for the audit fee, non-audit fee and total fee models. The results show a significant increase in audit fees following the Audit Reform (variable: POSTREFORM). In economic terms, the Audit Reform resulted in a modest **3.2 %** increase in audit fees, on average[87]. In contrast, the Audit Reform resulted in a significant decrease in non-audit fees of about **27.5 %.** This result is remarkable as the cap on NAS Fees only becomes (fully) effective in 2019. Implicitly, then, the observed decrease is **anticipatory**. We find **no statistically significant** effect of the Audit Reform on total fees. This implies that although the **total fees** paid by the average auditee **did not change** substantially, the **proportion** of audit fees relative to non-audit fees did change substantially due to an increase in audit fees and a decrease in non-audit fees. Furthermore, this decrease in non-audit fees seems to be offset by the increase in audit fees.

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[84] We split the sample into financial and non-financial PIEs as the balance sheets and profit-and-loss accounts of financial PIEs are substantially different from those of non-financial PIES.

[85] Note that POSTREFORM is a crude proxy for capturing the effect of the Audit Reform as there are countries that have already implemented the new audit legislation prior to or shortly after June 2016.

[86] Based on NACE main sectors.

[87] As the dependent variable is the natural logarithm of audit fees, the percentage change is calculated as follows: (exponent of (estimated coefficient of POSTREFORM as reported in Table AII-28 to table AII-41) – 1)*100.

In addition, we investigate whether the Audit Reform has had different effects on audit/non-audit/total fees for Big 4 auditees vs. non-Big 4 auditees. To this end we perform a split analysis, which is also tabulated in Table AII-29 and Table AII-30, respectively. We only find a **significant increase in audit fees** (+ **3.4** %) for auditees **audited by Big 4 firms**, while we find **an insignificant effect for the non-Big 4 firms**. **Both audit firms types** do, however, experience **a decrease in non-audit fees** paid by their auditees: **-26.7 %** for Big 4 audit firms and **-30.4 %** for non-Big 4 audit firms. Overall, we document a decrease in total fees (**-2.3 %**) paid to Big 4 auditors by the average auditee, while we find no significant change for Non-Big 4 auditors. This shows that the **increase in audit fees is not enough to offset the decrease of non-audit fees for Big 4 audit firms**.

Table 16: Post-Audit Reform differences in fees for non-financial PIEs

	DEPENDENT = AUDIT FEE			DEPENDENT = NON-AUDIT FEE			DEPENDENT = TOTAL FEE		
	% change		t-stat	% change		t-stat	% change		t-stat
POSTREFORM all auditees (N= 18,442)	3.15	***	2.89	-27.53	***	-5.41	Not statistically different from zero		
POSTREFORM Big 4 auditees (N= 12,144)	3.36	**	2.52	-26.73	***	-4.41	-2.7	*	-1.67
POSTREFORM Non-Big 4 auditees (N= 6,298)	Not statistically different from zero			-30.37	***	-3.43	Not statistically different from zero		

Next, we divide the auditees into two different groups: (1) firms that pay their statutory auditor non-audit fees that are lower than or equal to 70 % of the audit fee prior to the implementation of the reform (2015) (**NAS≤70 % fee in 2015**), and (2) firms that pay non-audit fees that are higher than 70% of the audit fee (**NAS >70 % fee in 2015**). While the cap on non-audit fees was not yet in effect during our sample period, firms **that pay fees for non-audit services that are in excess of 70 % of audit fees** may start to **pro-actively decrease the non-audit services acquired** from their statutory auditors. Table 17 shows that non-audit fees decreased after the Reform for both auditees with NAS≤70 % fee **(-16.5%)** and auditees with NAS>70 % fee **(-64.4 %)**, although the non-audit fee decrease is substantially larger in the latter category. Interestingly, **we only find an increase in audit fees** (+**13.9 %**) **for clients that paid non-audit fees in excess of 70 %** in 2015. However, this audit fee increase falls short of offsetting the substantial decrease in non-audit fees as evidenced by a significantly lower total fee (of **-11.1 %**). For auditees whose non-audit fees do not exceed 70 % of audit fees, we find no effect of the Audit Reform on either the audit fee or the total fee.

Table 17: Post-Audit Reform differences in audit fees between firms that pay non-audit fees in excess of 70 % of audit fees to their statutory auditors and those that do not

	DEPENDENT = AUDIT FEE			DEPENDENT = NON-AUDIT FEE			DEPENDENT = TOTAL FEE		
	% change		t-stat	% change		t-stat	% change		t-stat
POSTREFORM NAS <70 % fee in 2015 (N= 15,063)	Not statistically different from zero			-16.47	***	-2.69	Not statistically different from zero		
POSTREFORM NAS >= 70 % in 2015 (N= 3,379)	13.88	***	5.6	-64.37	***	-10.16	-11.13	***	-4.67

We also split the sample into two groups based on the median value (for all Member States) of the maximum tenure period in each Member State. As explained in Section 5.1., the median value of the maximum tenure period is 20 years. Table 18 reports the results. **We find no evidence that total fees (both audit and non-audit) changed following the Audit Reform in both subsamples**. However, we find that **non-audit fees decreased in both subsamples** but that **the decrease is stronger for those Member States which allow a shorter maximum tenure (-36.9%)** than in Member States with a longer maximum tenure **(-23.9%),** in line with the descriptive evidence. We find a small increase in audit fees (+**2.5%)** in Member States with a longer maximum tenure and in Member States with a shorter maximum tenure **(+4.0%**). This increase in audit fees is, however, offset by the decrease in non-audit fees as evidenced by the absence of a statistically significant effect on total fees as indicated above.

Table 18: Post-Audit Reform differences in audit fees between Member States with a maximum tenure of more vs. less than 20 years

	DEPENDENT = AUDIT FEE			DEPENDENT = NON-AUDIT FEE			DEPENDENT = TOTAL FEE	
	% change		t-stat	% change		t-stat	% change	t-stat
POSTREFORM Member States with max 20-year tenure (N= 5,366)	3.98%	*	1.74	-36.87%	***	-4.21	Not statistically different from zero	
POSTREFORM Member States with >=20-year tenure (N= 13,076)	2.53	**	2.04	-23.89	***	-3.88	Not statistically different from zero	

With respect to some of the control variables which are unreported in this chapter but included in ANNEX II. TABLES OF GRAPHS, auditees appointing **joint auditors** paid **higher audit fees** (**53.4** %) and non-audit fees (**173.5 %**) to their auditors, resulting in a higher total fee (**50.7 %**)[88]. This could imply that a joint audit is costly for auditees, but it could also reflect underlying differences, not properly controlled for in our models, between auditees appointing single auditors and those appointing joint auditors. Consistent with expectations, clients audited by a Big 4 auditor paid an audit fee which was **23.9 %** higher than those of non-Big 4 clients. Furthermore, clients audited by a **Member State leader** paid a **premium** of about **16.6** %.

6.2. Multivariate analyses of audit and non-audit fees for financial PIEs

In this section, we separately investigate the effects of the Audit Reform on the cost of external auditing for financial services PIEs. As in the previous section, here we focus on the following three components: (1) audit fees, (2) non-audit fees and (3) total fees.

The audit and non-audit fee data are collected from Audit Analytics Europe and subsequently matched with financial data obtained from Orbis. The total sample consists of 3 722 auditee-year observations covering the period 2013-2017. Note that the financial PIE subsample is smaller than the non-financial PIE subsample. Compared to the non-financial fee model, we exclude the control variable DEBT[89] as

[88] The results of the control variables differ by specification. The effects reported here are calculated based on the first fee model estimation reported in Table AII-28.

[89] We lose about 55% of the sample size (i.e. 2 078 observations) if we include it in the model.

well as the industry fixed effects. The latter are replaced with two indicator dummies, BANKS and INSURANCE, to control for banks and insurance companies, respectively. For more details on methodology, we refer to ANNEX I. METHODOLOGY, whereas for the full set of regression results we refer to ANNEX II. TABLES OF GRAPHS, from Table AII-35 to Table AII-41, as the tables below simply summarise the results. Table 19 provides the results of the audit, non-audit and total fee models. The regression results do not demonstrate a significant increase in **audit fees** following the Audit Reform (i.e. POSTREFORM test variable) for financial sector PIEs. However, we do find that there is a significant **decrease in non-audit fees** (about **-38 %**, on average). In other words, we notice anticipatory behaviour by financial PIEs similar to that observed by non-financial PIEs. When we evaluate the effect on **total fees**, we find no statistically significant effect following the Audit Reform.

Splitting the sample into **Big 4 auditees** and **Non-Big 4 auditees**, we notice different results. In particular, we find that clients of Big 4 auditors did not experience a significant change in audit fees following the Audit Reform (i.e. the percentage change was not statistically different from zero), whereas **Non-Big 4 auditees** did experience a significant **positive change in audit fees** of about **15 %** after the Audit Reform. For **Non-Big 4 auditees** we find no significant effect in terms of non-audit fees, whereas for **Big 4 auditees** we notice a **decrease of about 48 % in non-audit fees** following the new audit legislation. Regarding total fees, the results show different effects in both samples: a **negative change in total fee**s for **clients of Big 4** auditors (**-7.8 %**) and a **positive change in total fees** for **Non-Big 4 auditees** (**+13.5 %**).

Table 19: Post-Audit Reform differences in fees for financial PIEs

	DEPENDENT = AUDIT FEE			DEPENDENT = NON-AUDIT FEE			DEPENDENT = TOTAL FEE		
	% change		t-stat	% change		t-stat	% change		t-stat
POSTREFORM all auditees (N= 3,722)	Not statistically different from zero			-38.37	***	-3.41	Not statistically different from zero		
POSTREFORM Big 4 auditees (N= 2,368)	Not statistically different from zero			-47.64	***	-3.74	-7.78	*	-1.7
POSTREFORM Non-Big 4 auditees (N= 1,354)	14.68	***	3	Not statistically different from zero			13.54	**	2.4

Next, we investigate the following two groups: (1) auditees who paid their statutory auditor non-audit fees lower than or equal to 70 % of the audit fee prior to the Audit Reform (**NAS <70 % fee in 2015**) and (2) auditees who paid non-audit fees in excess of 70% of the audit fee prior to the Reform (**NAS ≥70 % fee in 2015**).

Under the assumption that audit fees would remain at the same level after 2015, causing the second group to violate the 70 % cap introduced under the new regime, we investigate how the cost of external auditing changes for them compared to firms with NAS fees at or below 70 % of audit fees in 2015.

Table 20 shows that the firms with NAS <70 % fee in 2015 are characterized by a significant **decrease in non-audit fees (about -32 %)**. However, **audit fees nor total fees changed significantly** after the Audit Reform. For firms with **NAS ≥70 % in 2015**, **audit fees** have **increased about 13.5 %** and **non-**

audit fees show a significant decrease of about 56 % after the Audit Reform. Again, on average, post-Reform **total fees did not change**.

Table 20: Post-Audit Reform differences in audit fees between financial PIEs that pay non-audit fees in excess of 70 % of audit fees to their statutory auditor and those that do not

	DEPENDENT = AUDIT FEE			DEPENDENT = NON-AUDIT FEE			DEPENDENT = TOTAL FEE	
	% change		t-stat	% change		t-stat	% change	t-stat
POSTREFORM NAS <70% fee in 2015 (N= 2,926)	Not statistically different from zero			-32.16	**	-2.4	Not statistically different from zero	
POSTREFORM NAS >= 70% in 2015 (N= 760)	13.54	*	1.83	-55.87	***	-4.48	Not statistically different from zero	

Finally, we split the sample into two groups based on the median values of the maximum tenure period that is implemented in each Member State (median value is 17.5 years). The evidence (Table 21) shows that **audit fees** have increased only for auditees in countries that applied a **shorter rotation regime** (**+17 %**), whereas **non-audit fees** have only decreased for auditees in countries with **longer rotation periods** (**-50 %**). For **total fees**, we only find a marginal effect for Member States with **longer rotation periods** for financial PIEs (**-8 %**).

Table 21: Post-Audit Reform differences in audit fees between Member States with maximum tenure periods above and below 17.5 years

	DEPENDENT = AUDIT FEE			DEPENDENT = NON-AUDIT FEE			DEPENDENT = TOTAL FEE		
	% change		t-stat	% change		t-stat	% change		t-stat
POSTREFORM Member States with max 17.5y tenure (N= 1,113)	17.35	***.	2.93	Not statistically different from zero			12.41	*	1.95
POSTREFORM Member States with >=17.5y tenure (N= 2,609)	Not statistically different from zero			-50.14	***	-3.89	-7.5	*	-1.75

With respect to several control variables[90], we find that auditees with **joint audits** pay, on average, higher **audit fees** in the financial services sector (**+162 %**). As we argued above in the case of the non-financial services sector, this could mean that a joint audit is costly for auditees, but it could also reflect underlying differences between auditees that are not properly controlled for in our models. Furthermore, **Big 4 clients** pay, on average, higher audit fees (**+9 %**) compared to Non-Big 4 clients in the financial services sector. We also find that within the financial services sector, **banks** pay, on

[90] Included in Annex II.

average **17 %** higher audit fees whereas **insurance companies** pay almost double (**+96 %**) compared to non-bank and non-insurance financial services companies.

6.3. Conclusions

In this chapter we investigated the **effect of the Audit Reform on costs** (i.e. audit fees, non-audit fees, and total fees) using a **multivariate regression analysis** for non-financial and financials PIEs separately. This allows us to more precisely capture the effect of the Audit Reform as we are able to control for (some) underlying changes in the characteristics of auditees and auditors that might be influencing costs (rather than the Audit Reform itself).

The results for **non-financial PIEs** show that even though there is a **positive increase in audit fees (+3.1 %)** and a **strong decrease in non-audit fees (-27.5 %)**, the **total fees did not change** significantly post-Audit Reform. The negative effect on NAS suggests there is already **anticipatory behaviour** by auditees in reducing the provision of non-audit services with their incumbent auditors. When we split the sample up in Big 4 and Non-Big 4, we find that clients of **Non-Big 4** auditors experience a decrease in non-audit fees post-implementation whereas for clients of **Big 4** auditors we document an overall decrease in total fees. More precisely, even though audit fees increased for Big 4 auditees, this increase appears to be insufficient to offset the decrease in non-audit fees for Big 4 audit firms. If we look at auditees who paid **in excess of 70 % NAS (in 2015)**, we observe a substantial **drop in NAS (-64 %)** together with an increase in audit fees but not sufficient to offset the decrease in NAS which results in an overall decrease in total fees. Finally, we look at **'strict' versus 'flexible' regimes** with regards to the **implementation of the MFR**. The **non-audit fees decreased** significantly in both regimes after the Audit Reform but the effect is **stronger** in the countries that allow a **shorter auditor engagement period** (-37 % versus -24 % for strict and flexible adopters, respectively).

If we turn to **financial PIEs**, we depict a solid **decrease in non-audit fees (-39 %)**. When we look at the sub-segment of **Big 4** auditees, we find that the **drop in non-audit fees** is primarily driven by this category of clients **(-48 %)** and **total fees** also decreased post-Reform **(-10 %)**. For clients of **Non-Big 4** auditors, we see a different evolution. Namely, we notice a **significant increase in audit fees (+15 %)** as well as a **significant increase in total fees (+13.5 %)**. If we look at auditees who paid **in excess of 70 % NAS (in 2015)**, we document a reduction in NAS (-56 %) together with an increase in audit fees (+14 %) although the overall effect on total fees is not significantly different from zero. Finally, the results show that the **audit fees increased** in Member States which adopted a shorter audit duration period (i.e., **strict**). For auditees in countries with a longer audit duration period (i.e., **flexible**), we find a significant **reduction in non-audit fees (-50 %)** as well as for the **total fees (-8 %)**.

7. IMPACT OF AUDIT REFORM ON THE DEMAND SIDE OF THE AUDIT MARKET

This Chapter presents some 'early' survey evidence that we have gathered from PIEs in different Member States (details in ANNEX I. METHODOLOGY and ANNEX IV. AUDITEE SURVEY). The goal of the PIE survey was to collect information on the effects of the Audit Reform on auditor choice (i.e. for the statutory audit or for consulting), the tendering procedure, auditor costs and audit quality – as perceived by PIEs. The (online) survey was sent to financial and non-financial PIEs, but given the short time to administer the survey and severe difficulties to get personalised contact information of the PIEs CFOs (which were the recipients of the survey), we ended up with an **extremely low response rate**[91]**.** Drawing any reliable and representative conclusions from these would be inappropriate. As a consequence, we only present some **'preliminary' evidence** from a very limited sample which should not be read as hard conclusions. An interesting venue for further research would be to re-send the PIE survey and collect sufficient responses from a representative sample of PIEs.

7.1. Sample description

In total we received 30 responses from non-financial PIEs that were primarily situated in the following countries: Belgium, Germany, Italy, Netherlands, Sweden, and the UK. For the financial PIE survey, we received a total of 9 individual responses primarily from the following Member States: Denmark, Greece, Spain, Sweden, and Malta. This is clearly **not a representative sample** of the non-financial and financial PIE population in the EU.

7.2. Auditor choice

Regarding to auditor choice, we asked respondents who their statutory auditor was and for the non-financial PIEs we found that some had a Non-Big 4 as their statutory auditor whereas financial PIEs which responded only had a Big 4 as their statutory auditor. Furthermore, **11 out of 22 non-financial PIEs** reported to **consider a Non-Big 4 as their statutory auditor** whereas for the financial PIEs this was not the case. Some reasons for the latter included a lack of industry expertise or global network.

Questions related to which firm they **would consider** for the supply of **consultancy services**, **22 out of 26** respondents from the **non-financial PIE** population reported they would consider a **Non-Big 4** primarily because of **lower audit fees**, the right expertise but also as a result of the new regulation regarding the prohibition of NAS by the statutory auditor. For **financial PIEs**, we only got **1 out of 5** respondents stating it would consider a Non-Big 4 as the supplier of NAS.

7.3. Tendering and switching

13 out of 30 non-financial PIEs engaged in a **tender** procedure to appoint a new statutory auditor following the Audit Reform. For the **financial** PIEs, **7 out of 9** responded to have organised a tendering process. In **most cases**, the firms replied to have had **more than one auditor applying** for the audit mandate.

Furthermore, we report **7 out of 30 non-financial** PIE respondents to have **switched audit firms** as of June 2016. For the **financial** PIEs, we notice that **4 out of 7** respondents have switched statutory auditors following the Audit Reform. **Some** of these claimed that this was on a **voluntary** basis whereas **most** confirmed this happened because it is **mandatory**.

[91] Specifically, 30 responses were received from the non-financial sector and 9 responses from the financial sector.

7.4. Auditor costs

Related to auditor costs, **15 out of 30 non-financial** PIEs confirmed to have experienced **no change** in auditor costs after the Audit Reform, **12 out of 30** stated they did experience a **positive change** in **auditor costs**. Probing for the main causes of this increase, most respondents pointed out that it was related to **higher audit fees** as well as increased requirements in **documentation**.

4 out of 7 financial sector PIEs stated **not** to have experienced an increase in auditor costs after the Reform while **2 out of 7** stated they did, and that this was mainly a result of **higher audit fees** and stricter responsibilities of the **audit committee**.

7.5. Prohibition and capping of NAS

Finally, we asked the respondents whether they reduced the purchase of NAS from their statutory auditor after the Audit Reform. **18 out of 30 non-financial PIEs** did reduce the purchase of NAS from their statutory auditor while for financial PIEs we observe that **8 out of 9 respondents reduced NAS** performed by their statutory auditor. When we inquired which (new) firm was hired to perform the NAS that was previously done by the incumbent statutory auditor, we notice that **most still hired another Big 4** audit firm.

8. SURVEY RESULTS ON THE IMPACT OF THE REFORM ON THE SUPPLY SIDE OF THE MARKET

This chapter includes the results of the responses to a survey sent to the audit leaders of seven different audit firms in all Member States. Via this survey we collected information on the effects of the Audit Reform on audit costs and effort, competition between audit firms, supply of non-audit services and audit quality. Details of the survey are provided in ANNEX I. METHODOLOGY and ANNEX III. AUDIT FIRM SURVEY.

In chapters 4, 5 and 6 we reported results on the evolution costs, competition and concentration in the audit market before and after the Audit Reform based on archival data collected from Audit Analytics Europe and Orbis. While these results are informative, they also have limitations. First, it is not possible to draw causal inferences based on archival data. Second, the results in these chapters only relate to information that is publicly available in these archival data bases and only relate to publicly listed PIEs. Furthermore, they do not provide insight into reasons why certain patterns are observed. By collecting survey information we aim to add additional insight on why we observe certain changes (or not) after the Audit Reform.

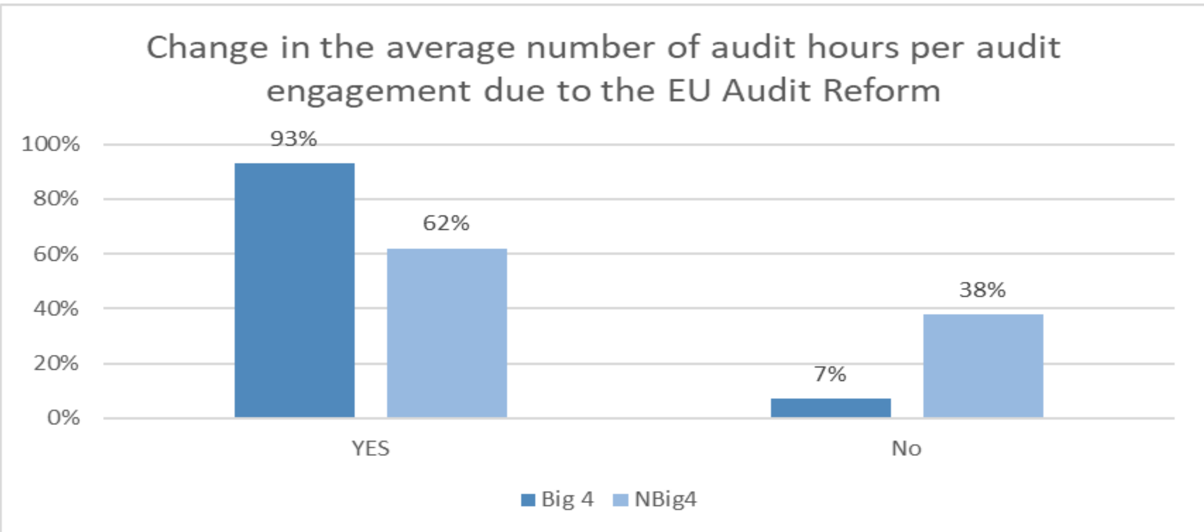
8.1. Details of the survey sample description and response

Our online survey contained questions probing for the experiences by the audit firms related to the effects of the Audit Reform. We distributed the survey to the audit leaders in each Member State (or relelvant geographical area) of seven different audit firms: all Big 4 audit firms (112 audit leaders) and 3 second tier audit firms (68 audit leaders). In total, 180 (local) audit leaders received an invitation to administer our questionnaire. The survey was administered in November-December 2018. 85 usable surveys were returned, 61 from Big 4 firms and 24 from non-Big 4 firms. This is an overall response rate of 47 % (54 % for Big 4 firms and 31% for non-Big 4 firms). In Table AII- 42 a detailed overview of the number of responses by Member States and audit firm type is reported. From the table it is clear that the geographical coverage over Member States and audit firm type is good.

8.2. Effects of the Audit Reform on costs

From Graph 31 it is clear that the vast majority of (local) audit firms experienced an increase in the average number of audit hours spent on audit engagements after the Audit Reform.

Graph 31: Change in the average number of audit hours per audit engagement



According to the respondents, the most important cause for the increase in audit hours is the more **intense contact between the auditor and the audit committee** after the Audit Reform (in ANNEX II. TABLES OF GRAPHS more information on other, less highly rated causes, is reported) and the **biggest increase in audit hours** is observed in the **financial services sector**. This is the case both for Big 4 and Non-Big 4 audit firms. As to reasons why there was an increase, a more intense contact between the statutory auditor and the audit committee was assesesed to be the most important reason. The increase in audit hours was deemed highest for financial services sector clients (see Table 22 below).

Table 22: Information on the increase in audit hours reported by audit firms

	Overall	B4	NB4
Did the average number of audit hours per engagement (for PIE clients) change due to the EU Audit Reform?			
Yes	85%	93%	62%
No	15%	7%	38%
Causes for the increase in audit hours (average of the rating from 0 to 5)			
More intense contact between the statutory auditor and the audit committee	3.1	3.3	2.6
Changes in audit methodology inspired by the Audit Reform	2.0	1.9	2.1
More conservative audit approach	1.6	1.4	2.1
More new audit clients due to mandatory firm rotation	1.6	1.6	1.5
Average ratings on the increase in audit hours rated per industry group			
Financial services industry	3.8	3.9	3.6
Manufacturing industry	2.8	2.8	2.8
Commercial industry	2.6	2.6	2.3
Service industry	2.5	2.5	2.1

Further on cost effects, we also probed for effects of the Audit Reform in **group audits**. Most respondents have clients that are part of a multinational group, and confirm that the Audit Reform resulted in **increased complexities and costs** related to the audit of PIE clients that are within a multinational group. The audit firms indicated that the increased complexity is related to mandatory firm rotation and compliance with new rules relating to prohibition and capping of NAS services, as can be seen from Table 23 below.

Table 23: The impact of the Audit Reform on multinational groups

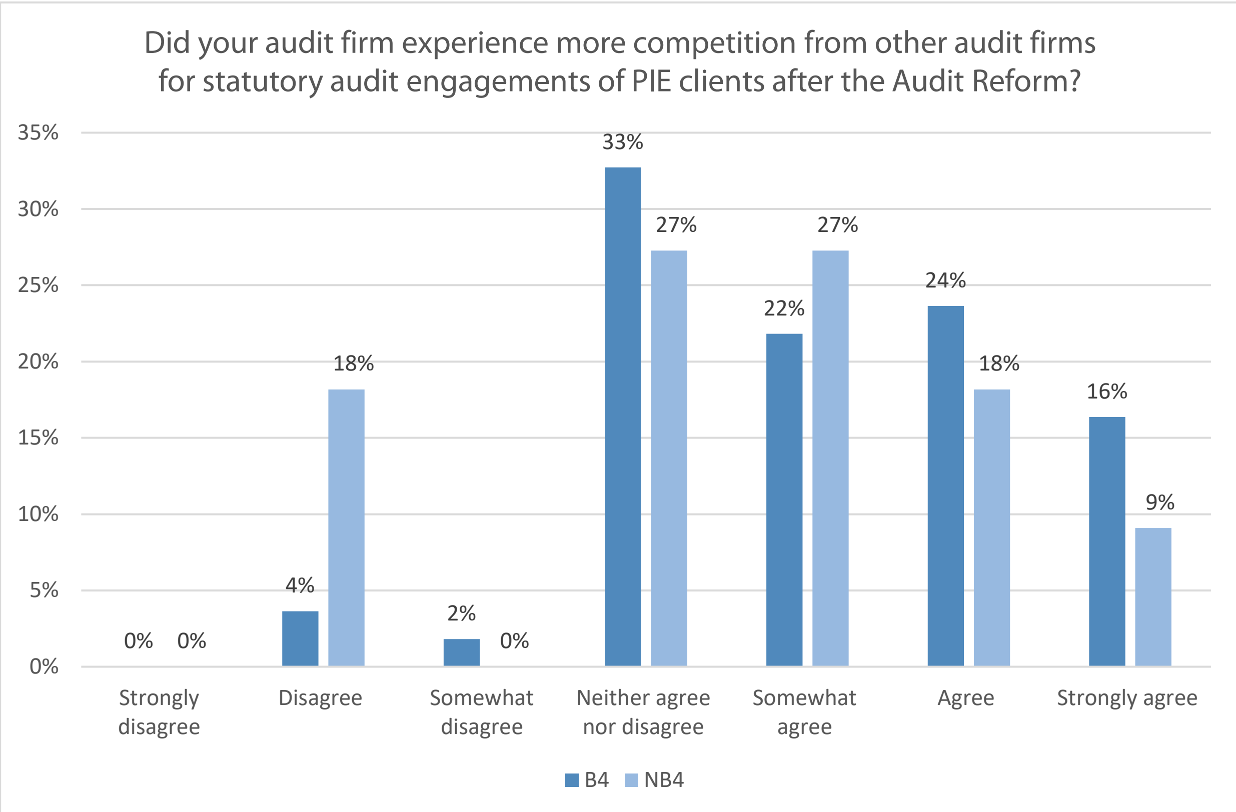
	Overall	B4	NB4
Do you have PIE clients in your portfolio that are part of a multinational group?			
Yes	88%	92%	77%
No	12%	8%	23%

	Overall	B4	NB4
Did the Audit Reform result in increased complexities and costs related to the audit of PIE clients that are within a multinational group?			
Yes	82%	86%	71%
No	18%	14%	29%
The increase in costs for PIE clients within a multinational group is associated with			
The mandatory firm rotation of an entity within the group which affects coordination costs across the group	2.9	3.1	1.9
The alignment (or communication) with the other audit firms that are appointed in the multi-national group	2.5	2.5	2.4
The compliance related to prohibition and capping of consulting services	3.0	3.1	2.5
Increased assessments of auditor independence following the provision of consulting to entities outside the EU	3.0	3.3	2.0

8.3. Effects of the Audit Reform on competition

As to effects of the Audit Reform on auditor competition, most respondents report that there is an effect, whereas about 30 % experience no effect (see graph 32).

Graph 32: Effects of competition



Results on the effects of the Audit Reform on the competitive strategy of audit firms are reported in Table 24. From the table it is clear that about 2/3 of the respondents believe that the **competitive strategy of their audit firm was modified** after the Audit Reform, and this is the case for for Big 4 and non-Big 4 firms. More details as to specific strategies are reported in the table.

Graph 33: Changes in tendering following the audit reform

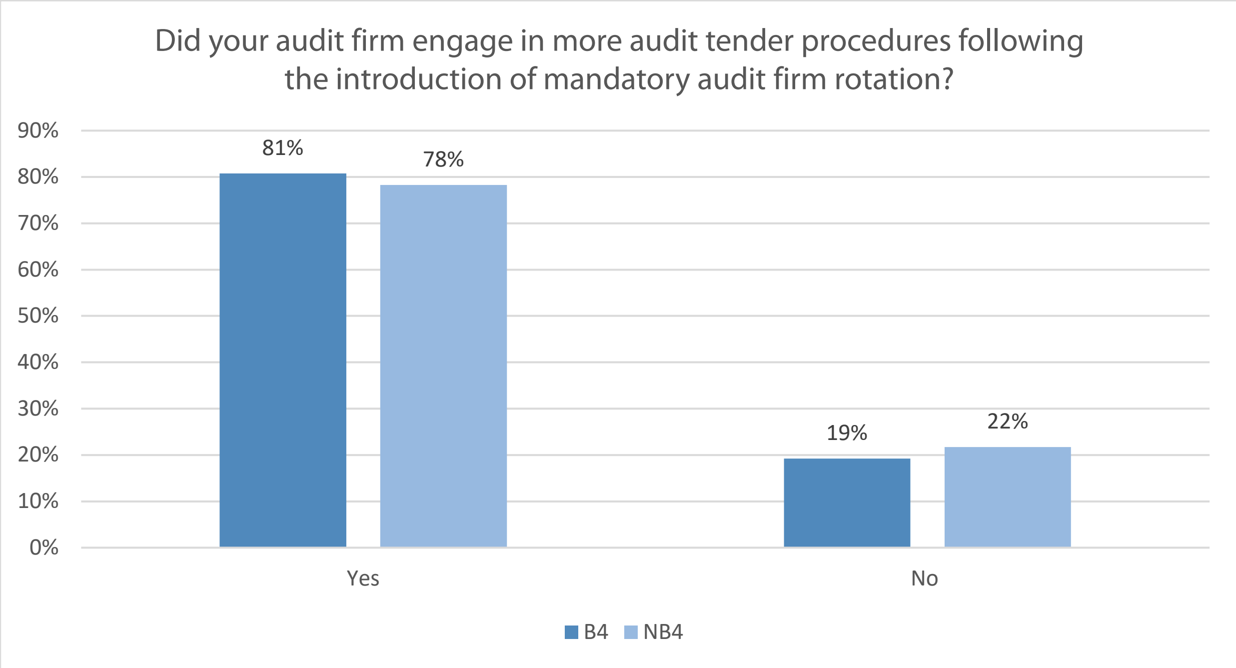


Table 24: Questions about effects on the competitive strategy of audit firms

	Overall	B4	NB4
Was the competitive strategy of your audit firm adjusted/modified after the Audit Reform?			
Yes	67%	67%	65%
No	33%	33%	35%
Does your firm currently devote more effort to the attraction of new clients than before the EU Audit Reform?			
Yes	60%	58%	65%
No	40%	42%	35%
Are more people in your firm involved when developing a (new) client proposal than before the EU Audit Reform?			
Yes	63%	65%	57%
No	37%	35%	43%

	Overall	B4	NB4
Are your teams devoting more time to developing relationships with non-audit clients than before the EU Audit Reform?			
Yes	62%	67%	48%
No	38%	33%	52%

We also asked about the effect of the Audit Reform on audit tendering. About **80 %** of the respondents reports an **increase in the number of tender precedures** their audit firm engaged in after the Audit Reform. The responses are very similar for Big 4 and Non-Big 4 firms (see Graph 33).

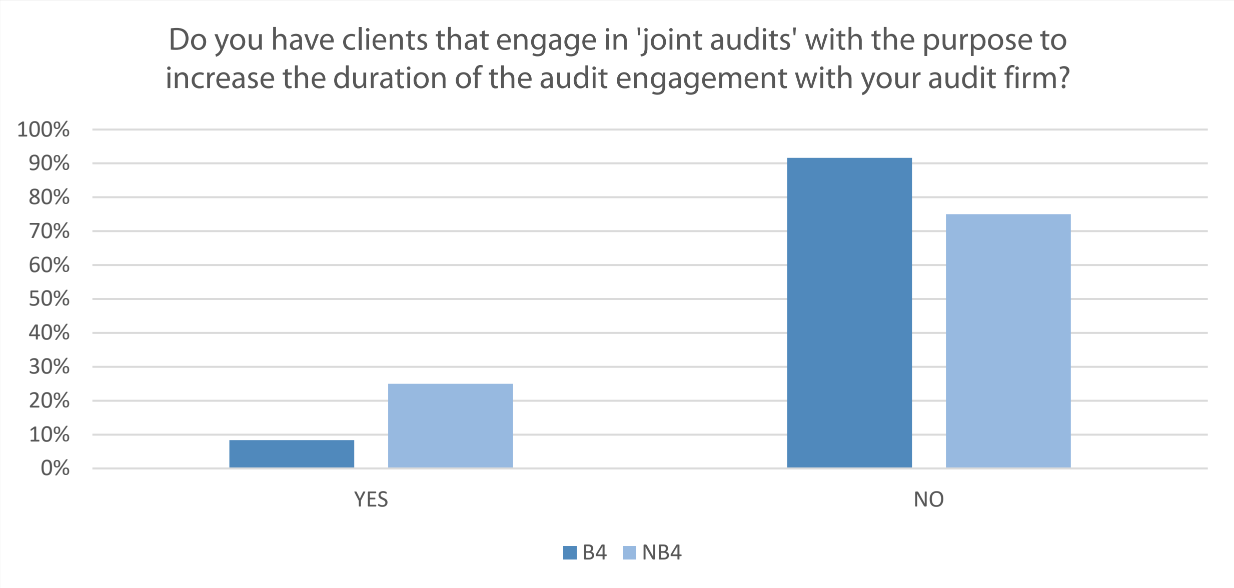
Asking about how audit frims typically compete in a tender procedure, we found that the **quality of the audit team**, **overall audit quality** and **innovative audit methodologies** are considered being the most important competitive assets in tender procedures (Table 25).

Table 25: Question about tender procedure

	Overall	B4	NB4
In general, how does your audit firm typically compete with other audit firms in a tender procedure?			
Price	3.0	2.8	3.4
Overall audit quality	3.9	4.0	3.8
Audit firm reputation	3.8	3.7	4.0
Inspection findings	1.9	2.0	1.6
Quality of the audit team	4.1	4.1	3.9
Innovative audit methodology (digital, big data, etc...)	3.8	4.0	3.4

We also inquired about joint audits and asked whether there are clients that engage in joint audits with the purpose to increase the duration of the audit engagement with your audit firm, but do not find evidence that companies typically do so (Graph 34).

Graph 34: The impact of the joint audit extension of MFR on joint audits



8.4. Effects of the Audit Reform on Non-Audit Services

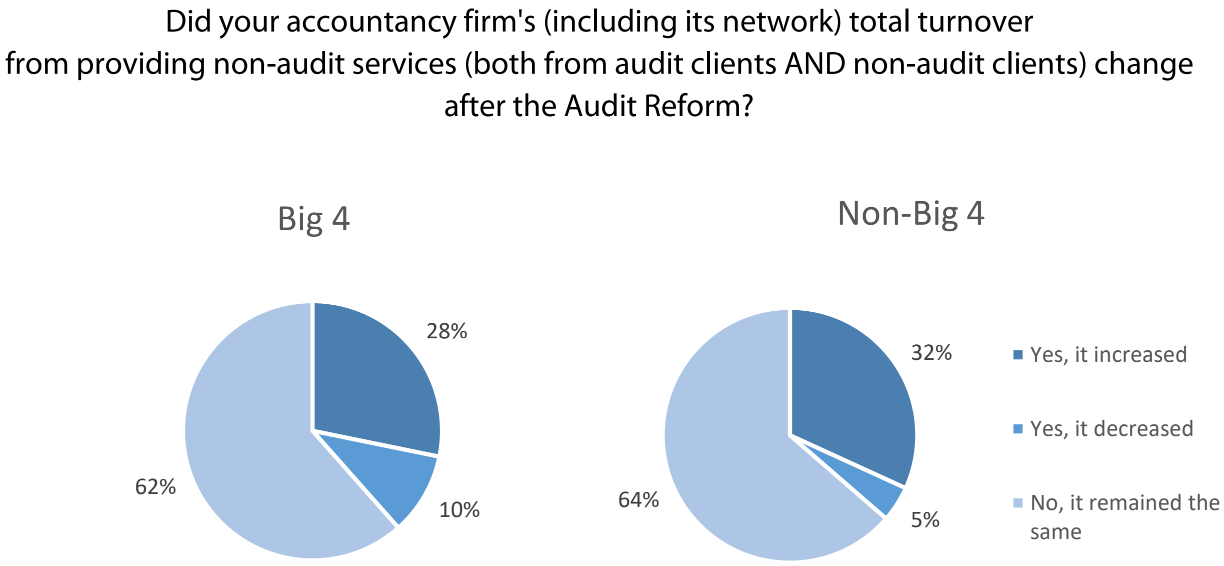
We also included questions relating to NAS. From Table 26 it is clear that the majority of respondents did not experience an effect of the prohibition and capping of NAS on turnover from consulting fees (both from audit and non-audit clients).

Table 26: The impact of the Audit Reform on non-audit services

	Overall	B4	NB4
Did the prohibition of non-audit services (Art. 5 of Regulation 537/2014) have a significant impact on turnover from consulting services provided by your accountancy firm and its network to audit clients?			
Yes	32%	37%	18%
No	68%	63%	82%
Did the prohibition of non-audit services (Art. 5 of Regulation 537/2014) have a significant impact on turnover from consulting services provided by your accountancy firm and its network to NON-audit clients?			
Yes	26%	31%	14%
No	74%	69%	86%
Did the capping of non-audit services (Art.4 of Regulation 537/2014) have a significant impact on turnover from consulting services provided by your accountancy firm and its network to audit clients?			
Yes	13%	21%	0%
No	87%	79%	100%
Did the capping of non-audit services (Art.4 of Regulation 537/2014) have a significant impact on turnover from consulting services provided by your accountancy firm and its network to NON-audit clients?			
Yes	5%	5%	5%
No	95%	95%	95%

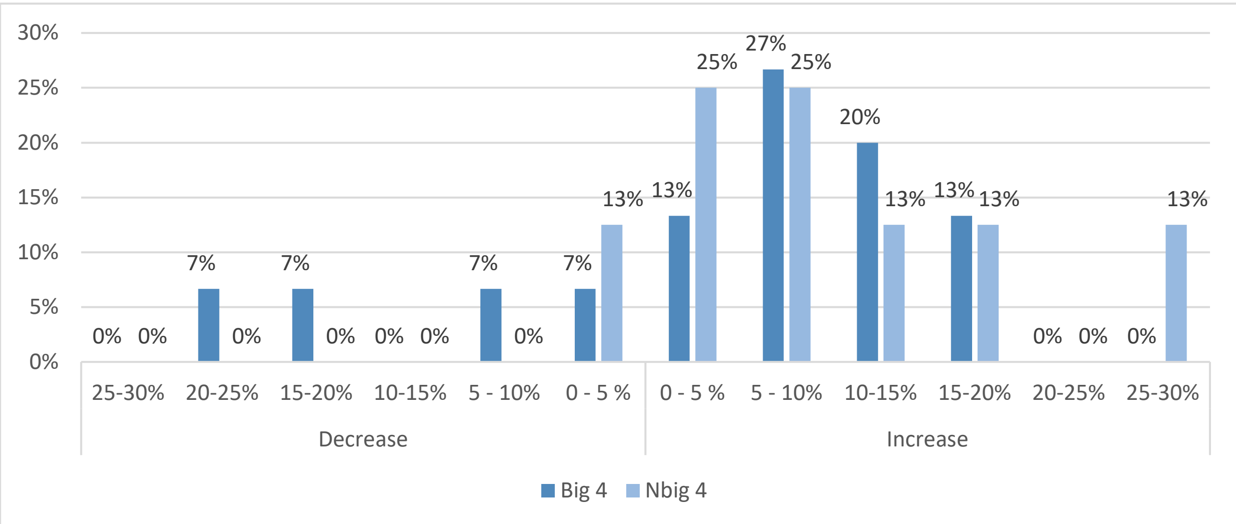
Graph 35 confirms this result, as over 60% of the respondents report no effect on total NAS turnover. Note that about 30% of audit firms report that they even experienced an increased of turnover from consulting fees (both from audit and non-audit clients).

Graph 35: Effect of the Audit Reform on NAS turnover



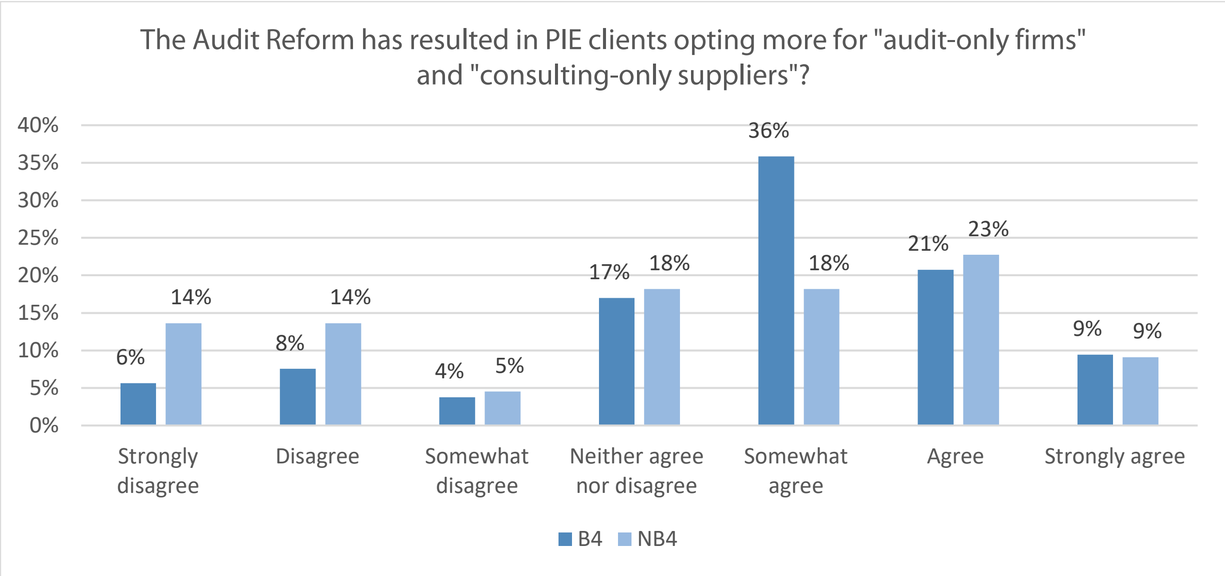
For those firms that did experience a change in turnover from NAS, the order of magnitude is reported in Graph 36.

Graph 36: The percentage effect of the Audit Reform on total turnover from non-audit services



We also asked our respondents whether the Audit Reform resulted in PIE clients opting more for 'audit –only firms'. The results are reported in Graph 37. A majority of audit firms agree that this is the case.

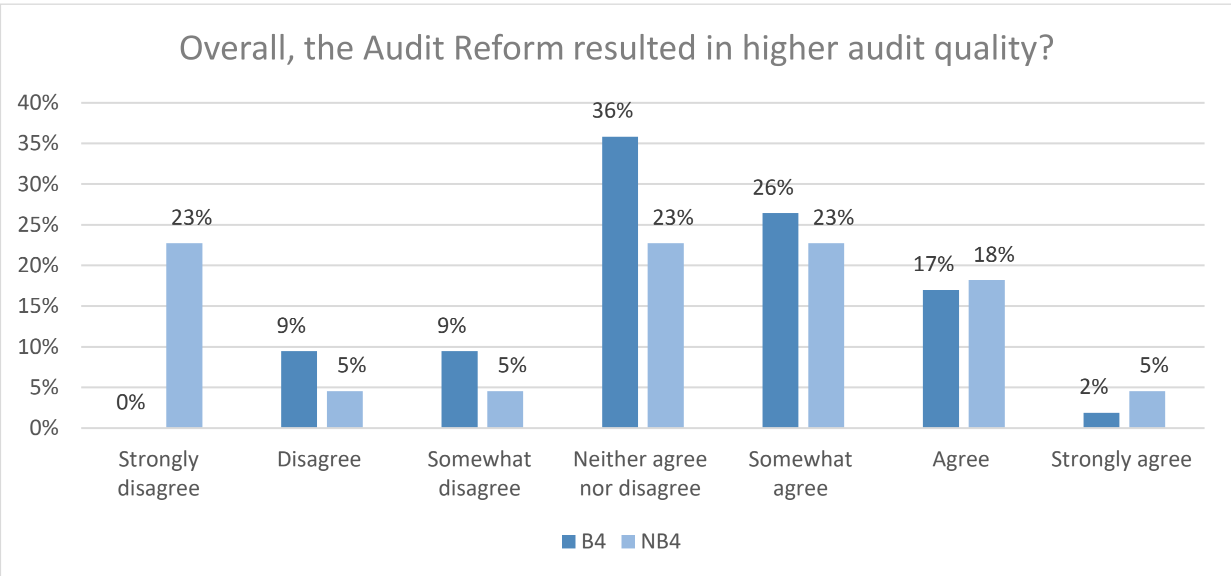
Graph 37: Question about 'audit-only' and 'consulting-only' firms



8.5. Effects on audit quality

Finally, we also asked whether the Audit Reform had an effect on audit quality. The results are depicted in Graph 38. About 45 % of Big 4 and Non-Big 4 respondents believe the Audit Reform resulted in an increase of audit quality. In contrast, more Non-Big 4 (33 %) than Big 4 (18 %) respondents believed that the Audit Reform did not increase audit quality.

Graph 38: Question about effect Audit Reform on audit quality



8.6. Conclusions

In this chapter we presented the results of our audit firm survey which can be seen as complementary evidence to the archival results presented in the prior chapters. The audit firm survey revealed that audit firms experienced **increases in audit hours after the Audit Reform** particularly due to more intense contacts between the statutory auditor and the audit committee. There is also consensus about an **increase of complexities and costs** for audits of PIE clients which are part of a **multinational group**.

The majority of audit firms also experienced **more competition** and an increase in competitive tender procedures in which their audit firm was involved. It also appears that the **competitive strategy** of most audit firms was **modified** after the Audit Reform. While respondents indicated that they compete on price, quality, reputation and innovative audit methodology in a tender procedure, inspection findings do not seem to impact competition.

Finally, most audit-firm respondents indicated that the **prohibition and capping of non-audit services** did **not** have a significant **impact on the turnover** from consulting services to audit and non-audit clients. The latter result seems to contradict the evidence presented in chapters 5 and 6 and the perception of most audit-firm respondents that the Audit Reform resulted in a **higher demand for 'audit-only firms**' and 'consulting-only suppliers' by PIE clients.

9. LIMITATIONS, CONCLUSIONS AND FUTURE RESEARCH SUGGESTIONS

In this study we have presented empirical evidence on concentration, competition and costs in the EU audit market. We have analysed archival audit market data of listed PIEs located in the EU28 before and after the EU statutory Audit Reform (2013-2017), and we report findings derived from an online survey used to collect data directly from EU Audit Firms. Note that we also administered a survey directed to EU PIEs, but cannot draw reliable conclusions due to an extremely low reponse rate.

Limitations

Before presenting our major conclusions, we want to draw atttention to the **limitations** of our study. First, a large portion of the evidence and statistics we presented is based on the most recent market data in Audit Analytics Europe which only includes stock-listed PIEs. This could create a certain bias and leaves non-stock-listed PIEs out of the analysis. Second, we describe the evolution of a vast number of statistics relating to our variables of interest (such as HHI) before and after the Audit Reform. It is impossible to establish a causal relationship between the Audit Reform and the evolution of these statistics after the Audit Reform as other (contemporary) factors than the Audit Reform may also have had an impact on the statistics, such as specific regulations in the Member States themselves. Third, we used proxies to measure market concentration and competition and draw conclusions on this basis. Although we use both static and dynamic measures of competition, each of the proxies we used has limitations and is based on assumptions of how suppliers compete in markets. Fourth, we are discussing the evolution of competition, concentration and costs based on EU weighted averages. Fifth, in some analyses we classify Member States based on a scoring system. We then compare statistics between two 'types of implementation regimes'. However, the outcomes we observe could be driven by individual Member State factors (such as regulations in certain Member States that may be unrelated to the Audit Reform and stricter than the rules followed by other EU countries). In addition, alternative classifications could yield other outcomes and conclusions. Sixth, we perform analyses for both the entire EU market and for certain market segments. A crucial precondition for our conclusions to be meaningful is that the suppliers must actually compete within the identified market segment. Although we stand behind our segmentations, we cannot rule out the possibility that other market segmentations may be more meaningful. Seventh, as mandatory firm rotation leads by definition (or 'by force') to a higher switch rate and subsequently to more market share changes between audit suppliers, the effects reported for market share mobility and the switch rates may not only (or necessarily) reflect increased rivalry and competition among audit suppliers.

Specific conclusions

A **<u>FIRST KEY OBJECTIVE</u>** of the study was to investigate **whether there is a quantifiable result in terms of reduced market concentration and increased competition in the EU audit sector**. To that end the following research questions have been addressed, and we present our findings relating to each of these below:

1.A MARKET CONCENTRATION: Do the most recent market data allow the conclusion that the statutory audit sector in the EU has become less concentrated?

- There is **very little evolution** in **aggregate EU market concentration** measures: on average (weigthed), the **HHI** and the **combined Big 4 market share** of the aggregate EU did not change significantly and the level of aggregate EU market concentration is **still high**.

- The level of (aggregate) market concentration is higher in the largest PIE segment of the EU market than in the smallest PIE segment, but the **aggregate HHI did not change significantly** over time in **either the smallest or largest** PIE segments. The **combined Big 4 audit market share** did **decrease** in the segment of **smallest PIEs.**
- The status quo in aggregate market concentration can be explained by clear **reductions in the level of audit market concentration** as measured by **HHI (combined Big 4 market share) in 13 (14) Member States, but no reductions or even increases in concentration in the other Member States.**
- Although market **concentration is much higher** in the **segment of financial PIEs** (compared to the overall measures across all industries), there is a clear **decrease in HHI (both for large as well as small PIEs)** as well as **combined Big 4 market share (only small PIEs)** in the financial PIE segment.

CONCLUSION 1.A: The aggregate EU market concentration remained fairly constant after the Audit Reform, but audit market concentration in almost half of the Member States as well as the financial segment of the audit market did decrease.

1.B. COMPETITION: Do the most recent market data allow the conclusion that the statutory audit sector in the EU has become more competitive?

- The weighted average individual **market shares of the four biggest players** in the local EU markets show a **converging** trend which can be seen an indication of **increased rivalry** within the group of the four biggest market players.
- There is **an increase** in the weighted average **market share of the group of smaller audit suppliers** across local EU audit markets by 1 percentage point (from approximately 8.5 % over 2013-2016 to 9.5 % in 2017).
- EU weighted average market share mobility as well as auditor switching rates have increased.
- Most of the **switches to Non-Big 4** audit firms concern **smaller PIE clients** (with lower audit fees) and bigger PIEs tend to switch among the Big 4 audit firms.
- The trend of market share convergence among the largest audit suppliers is even stronger in the segment of financial sector PIEs.
- In the financial sector segment, **market leaders lost a substantial portion of market share** to the other market players, market share mobility increased as did auditor switching rates**.**
- Most of the switches to Non-Big 4 audit firms relate to smaller financial PIEs (with lower audit fees) and larger PIEs tend to switch from one Big 4 audit firm to another.
- Market share mobility increased in **16 Member States** after the implementation of the Audit Reform.
- Audit firm respondents across the EU **experience more competition** after the Audit Reform and this is more so for Big 4 audit firms.
- A majority of Big 4 and Non-Big 4 audit firms confirm that their **competitive strategy** was **modified** following the Audit Reform.

CONCLUSION 1.B: Both the archival as well as survey evidence is consistent with increased rivalry and market share mobility in the EU audit market in recent years.

1.C. SMALLER AUDIT FIRMS: How is the current system working for smaller audit firms when applying in tendering procedures for large, public-interest companies?

- The weighted average **market share of the group of smaller audit suppliers** in the EU increased by 1 percentage point (from approximately 8.5 % in 2013-2016 to 9.5 % in 2017).
- Aggregate non-Big 4 market share in the EU increased by about 1.4 %.
- Non-Big 4 market share in the financial sector segment in the EU increased by about 5.2 %.
- 78 % of Non-Big 4 audit firms in the survey engaged in more tender procedures after the Reform.
- In tender procedures, Non-Big 4 firms compete via price, audit firm reputation, overall audit quality, quality of the audit team and innovative audit technology. This strategy is similar in Big 4 audit firms.

CONCLUSION 1.C: The evidence indicates that Non-Big 4 audit firms have gained some market share after the Audit Reform and engage more in tender procedures where they claim to compete on price, quality and technology. The increase is larger in the financial sector segment of the market.

1.D. ENFORCEMENT MEASURES REGARDING COMPETITION: Have enforcement measures been taken by the European Commission (DG Competition) and national competition authorities in this sector, and if so, what conclusions can be drawn?

- We only found indication of a **limited number of enforcement measures** regarding competition in the EU.

CONCLUSION 1.D: There seem to be very few enforcement actions relating to competition in the audit market in the EU, but there is insufficient information available to draw solid conclusions.

A **SECOND KEY OBJECTIVE** of the study was to identify whether there is a material difference in costs for auditees after the Audit Reform? To that end the following research questions have been addressed, and we present our findings relating to each of these below:

2.A. COST EFFECTS: Have audit-related costs changed after the Audit Reform?

- In a descriptive analysis based on panel data, the (weighted) average nominal audit fees paid by PIEs in the EU exhibit an increasing trend over 2013-2017.
- In an univariate analysis based on panel data, average nominal audit fees paid by PIEs increased in 18 Member States.

- In an univariate analysis based on panel data, (weighted) average nominal audit fees only increased from 2016 onwards in the financial sector segment of the market.
- Controlling for multiple other variables (than the Audit Reform) that are affecting the level of audit fees, there is a modest increase in nominal audit fees in the period after the Audit Reform in the non-financial sector (about 3 %), but this is only the case for Big 4 auditees.
- Controlling for multiple other variables (than the Audit Reform) that are affecting the level of audit fees, there is no significant change in nominal audit fees in the period after the Audit Reform in the financial sector; however financial sector PIEs audited by non-Big 4 audit firms do experience a significant increase in audit fees.
- The increase in audit fees is strongest for PIEs that also purchase non-audit fees which exceed 70 % of audit fees in 2015 (and could potentially violate the cap on non-audit fees in the future).

<u>CONCLUSION 2.A</u>: The (weighted) average nominal audit costs increased modestly after the Audit Reform.

2.B. REASONS FOR COST INCREASE: What are the reasons for changes in audit costs after the Audit Reform?

- Audit firms declare that increases in audit hours after the Audit Reform is an important reason for audit cost increase (e.g. due to more intense contact between the auditor and the audit committee).
- Increased complexities for PIEs that are part of a multinational group also contribute cost increase.

<u>CONCLUSION 2.B</u>: The increase in cost is driven by increases in audit hours and increased complexities for auditing multinational groups.

A <u>**THIRD KEY OBJECTIVE**</u> of the study was to investigate the effects are of **specific aspects** of the Audit Reform on market concentration and competition and costs in the EU, and related to this whether there are **inconsistencies in implementation** of the Audit Reform by Member States, and if so, what the consequences are. To that end the following research questions have been addressed, and we present our findings relating to each of these below:

3.A. INCONSISTENCIES: Are there 'inconsistencies' in the implementation of the key parts of the reform in the various Member States and what were the effects on the costs, concentration and competition in the EU audit sector?

- The adoption of the Audit Reform regarding specific requirements has resulted is significant variation between Member States regarding key aspects of the Audit Reform.
- There is significant variation across Member States as to the definition of what a PIE is.
- There are 17 different MFR regimes across 28 Member States.

- There is variation in prohibition (and to lesser extent capping) of non-audit services across Member States.
- The Audit Reform had an impact on costs for PIEs within a multinational group (e.g. due to increased assessments of auditor independence and compliance related to the prohibition and capping of NAS).

CONCLUSION 3.A: The flexibility embedded in the Audit Reform resulted in substantial variation between Member States in the implementation of key aspects of the Audit Reform.

3.B. MANDATORY FIRM ROTATION: Has mandatory firm rotation (MFR) led to increased competition in the market?

- Overall, **Member States with higher levels of concentration** (as measured by HHI) **before the Audit Reform** adopted a **strict MFR regime**. This is also the case in the financial PIE segment of the audit market.
- In the period after the implementation of MFR there is a decrease in HHI and combined Big 4 market share only in strict MFR Member States.
- In the period after the implementation of MFR there is a large decrease in HHI and a **drop in combined Big 4 market share of approximately 20 %** in the **financial sector** segment of the market but only in strict MFR Member States.
- In flexible MFR Member States, we do not find significant changes in market concentration before and after MFR implementation.
- (Weigthed average) individual **market shares of the largest audit suppliers** in the market **converge in strict MFR Member States**. In the sub-segment of **financial sector** PIEs, convergence of individual market shares of the largest audit suppliers is even stronger in the strict MFR Member States.
- In flexible MFR Member States there is no significant convergence of market shares of the largest audit suppliers; also not in the financial segment of the audit market.
- **Market leaders** in the financial sector segment **lose a very significant amount of market share** in the **strict** MFR Member States.
- Market share mobility shows an increasing trend in both strict and flexible MFR Member States.
- Auditor switching rates are higher in strict than in flexible MFR Member States, but **increased** significantly in **both regimes.** Most auditor switching is between similar types of audit firms (i.e. Big 4 to Big 4, and Non-Big 4 to Non-Big 4).
- In an univariate analysis based on panel data, the (weighted) average nominal audit fees paid by PIEs in the EU exhibits an **increasing trend in both strict and flexible MFR Member States** but the increase seems to be larger in strict MFR Member States. A similar pattern is observed based on weighted median audit fees.
- In an univariate analysis based on panel data, the (weighted) average nominal audit fees paid by financial segment PIEs in the EU are much higher in **strict MFR** Member States and **increased sharply** from 2016 onwards.

- Controlling for multiple other variables (than the Audit Reform) that are affecting the level of audit fees, there is a similar increase in nominal **audit fees** in strict and flexible MFR Member States in the non-financial sector. In the financial sector, nominal audit fees increased more in strict MFR Member States.
- In an univariate analysis based on panel data, the (weighted) average **nominal non-audit fees** paid by PIEs in the EU **increase until 2015** but **drop significantly from 2016 onwards in both strict and flexible MFR Member States**. This result is also confirmed in the multivariate analyses.

> CONCLUSION 3.B: In Member States with a relatively strict implementation of MFR, we observe a decrease in HHI and a Big 4 market share, especially in the financial sector segment. There is also convergence of market shares of the large audit suppliers and an increase in the audit firm switch rate. In MFR Member States with a more flexible implementation of MFR, there is no substantial difference in HHI and BIG4 market share before and after the Audit Reform, but we observe an increase in market share mobility and audit firm switch rates. In either regime most audit firm switching is between the same types of audit firms.

3.C. JOINT AUDITS: Has the option of joint audits been taken up in Member States?

- The (weigthed) average percentage of joint PIE audits in the EU equals 9.1 % (excluding France) in 2017 compared to 8.4 % in 2015.
- The average percentage of joint audits is **higher** in the financial sector segment of the audit market and **increased** in that segment after the Audit Reform.
- The typical auditor pair in joint audits are a **Big 4 with a Non-Big 4** for the aggregate audit market as well as the financial sector segment. In the **financial services segment** there is an **increasing trend in the Big 4–Non-Big 4 combinations**.
- **Member States** which had a **higher percentage of joint audits** before the Audit Reform **are typically those which included a joint audit extension (of MFR)**.
- Joint audit rates increased after the Audit Reform in Member States allowing a joint audit extension (of MFR), whereas it slightly decreased in those which are not. A similar but even stronger pattern is observed for the **financial services segmen**t where the **joint audit rate almost doubled in Member States which allow a joint audit extension**, but stays trivial and even decreases in those not allowing such an extension.
- In the samples used in this study, non-financial (financial) PIEs appointing **joint auditors** paid on average 53.4% (162%) **higher audit fees** than those appointing a single auditor, ceteris paribus.
- A vast majority of audit firms confirms that **clients do not engage in joint audits to increase the duration** of the audit engagement.

> CONCLUSION 3.C: There is a slight increase in the joint audit rate in Member States allowing an extension of MFR in case of a joint audit but not in Member States that do not allow such an extension. In the financial sector segment the joint audit rate almost doubled after the Audit Reform but only in Member States allowing for a joint audit extension of MFR.

3.D. NON-AUDIT SERVICES: Has the secondary effect of opening up the market for non-audit services materialised?

- In a descriptive analysis based on panel data, the (weighted) average nominal non-audit fees paid by PIEs decrease since 2016 both in the aggregate EU market as in the financial segment of the market.
- The (weighted) average nominal non-audit fees paid by PIEs decreased in 17 Member States.
- NAS fees paid to the statutory auditor decrease more for PIEs whose NAS fee was higher than 70 % of the audit fee the year prior to the Audit Reform.
- Controlling for multiple other variables (than the Audit Reform) that are affecting the level of non-audit fees, there is a **large descrease of non-audit fees** paid by PIEs to their statutory auditors after the Audit Reform.
- Archival evidence shows an **increase of** '**audit-only clients'** after the Audit Reform, but **only** in the sub-segment of **financial services clients**.
- A vast majority of Big 4 firms confirms that the Audit Reform has resulted in PIE clients opting more for 'audit-only' firms, whereas only half of Non-Big 4 firms have this opinion.
- Most **Non-Big audit firms** state that the increased **restriction on NAS did not impact turnover from NAS** both from audit as well as non-audit clients.

<u>CONCLUSION 3.D</u>: The provision of non-audit services to PIEs by the statutory auditor has decreased. This effect is stronger the higher the NAS fee was relative to the audit fee paid. Archival evidence shows an increase of 'audit-only clients' after the Audit Reform, but only in the sub-segment of financial services clients.

Concluding remarks and future research suggestions

The main objectives of the statutory Audit Reform were to: 1) reinforce auditor independence and professional scepticism; 2) make the top end of the audit market more dynamic; 3) reduce unnecessary burdens on SMEs; 4) improve auditor supervision; and 5) ensure a higher level of transparency in companies' financial information. This study focused on investigating the effects of the Audit Reform on costs, concentration and competition and as such mainly addressed the second and to some extent the first objective of the Audit Reform. The evidence presented is 'early' as the archival data used in the study only covers one year of post Audit Reform data (2017) and one transition year (2016). In addition, the full impact of the Audit Reform will only be observable when all aspects of the regulation are fully effective. However, at a minimum this study documents **changes** in key descriptive statistics regarding **concentration** and **competition** in the EU following the Audit Reform**.** The **aggregate audit market concentration** in the EU is **still high** and **did not decrease that much**, but **auditor switching** and **market share mobility** clearly increased, and in the **financial segment** of the audit market the changes are **more profound** and the market share of the non-Big 4 increased. In addition, a vast majority of survey respondents from both Big 4 and non-Big 4 firms confirmed that their competitive strategy altered following the Audit Reform. The joint occurrence of almost no change in aggregate market concentration and a clear increase in market share mobility and audit firm switching and rivalry illustrates that **fixation on market concentration as an indication of a lack of competition could be misleading**.

The documented **increase in audit firm switching** and **market share mobility** in the EU audit market after the Audit Reform could be seen by critics as an obvious (and in fact 'mechanical') effect of mandatory audit firm rotation. Further investigation is warranted into the future **effects** of increased audit firm switching, both in terms of **costs** and **benefits**. In terms of **audit costs**, there is **no clear expected theoretical (net) effect.** On the one hand, increased rivalry and switching is likely to trigger more start up costs in new audit engagements and higher costs relating to tender procedures, which is corroborated by the empirical evidence presented in the study. Indeed, the analysis of the evolution of audit fees over the period 2013-2017 shows annual **increases** which were already occurring before the Audit Reform suggesting that other contemporary factors (than only the Audit Reform) are (co-) affecting such increases. As to causes, the survey evidence suggests that the increases in audit fees are (amongst others) a result of increased auditor hours on engagements and time spent on increased involvement in tender procedures. On the other hand, increased rivalry and switching between audit firms could also trigger a **downward pressure on the audit fees**. From the survey evidence presented in the study we also learn that pricing is an (albeit not the most) important factor audit firms compete on in tender procedures. Overall, the (multivariate) analysis in this study documents a **'modest' increase of audit fees after the Audit Reform**, which could be the net result of increased audit costs and increased price competition. Future research is necessary to provide a more refined analysis of the cost effects of increased audit firm rivalry once the MFR rules are fully applicable to all PIEs and sufficient data are available.

Increased audit firm rivalry is also expected to generate audit quality effects, which can be seen as **benefits.** Audit firm switching enhances auditor independence and offers a mechanism against potential auditor complacency and too much familiarity with the audit client. In addition, in tender sitations audit firms may compete on audit quality with rivals, which is also expected to be beneficial for audit quality. Note that the survey evidence in the study documents that the most important factors audit firms compete on in a tender are the **quality of the audit team** and **audit firm reputation**. However, rivalry and competition may affect audit quality negatively, if it also puts a **downward pressure on audit pricing**, and as a result less auditor effort than necessary is devoted to audit engagements. When audit pricing becomes too sharp, audit quality could be affected negatively. As it is ex ante not clear what the net effect of increased audit firm rivalry be will on audit quality, further investigation is needed.

The study also documents that the increased **auditor switching** and **market share mobility** comes with **convergence** of the average **market shares of the biggest suppliers** in the (local) audit market segments and market leaders significantly losing market share. This effect is especially profound in the **financial segment of the audit market**, where **market leaders have lost a very substantial portion of market share** and the market has become much more 'dynamic'. Prior research has shown that industry market share leadership is positively associated with audit quality (and pricing) due to the benefits of specialization (see, for example, Reichelt and Wang, 2010). A valid question is **whether the loss of market share by industry leaders (due to mobility) has a negative effect on audit quality**.

The study has illustrated that there is still a considerable degree of flexibility and **variety** in terms of audit regulation across Member States. It is very likely that the costs and benefits of the Audit Reform will differ across **Member States and regimes of implementation**. While this was most likely not the intention of the Audit Reform, it does offer an **opportunity** for future research to examine which regimes are most effective in terms of improving **audit quality**. Questions for future research include:

'Which MFR regime offers the most benefits?'; 'Is joint auditing improving audit quality?'; 'Do audit-only clients issue higher quality financial reporting?' Studying Member State differences in implementation of the Audit Reform and their effects will offer valuable and informative evidence for future EU audit policymaking.

To conclude, this study presented early evidence about increased audit market mobility and dynamics in the EU following the Audit Reform, especially in the financial sector segment. This clearly illustrates that the second objective of the EU Audit Reform, i.e. make the top end of the audit market more dynamic, is being successfully addressed. However further in-depth analyses and study of the full effects of increased market dynamics on audit costs, audit quality and the quality of financial reporting is recommended. Once all provisions of the Audit Reform are fully effective and a richer data set is available, it can be studied whether and under which conditions the observed evolutions in concentration, competition and costs also yield higher audit quality. There is an ongoing need for academic research to inform future EU audit policy.

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ANNEX I. METHODOLOGY

Descriptive analysis of competition, concentration and costs

The quantitative analysis is based on the *Audit Analytics Europe* database which provides auditor-related information, such as audit fees, for European companies with securities trading on a stock exchange from 2013 onwards. We downloaded information on audit fees, total non-audit fees, auditor and auditee identity as well as the auditor's network for the EU28 Member States. Auditee location is determined in Audit Analytics Europe based on the location of the Auditee's headquarters. As the data for 2018 were still incomplete we restrict the sample period to 2013-2017. The data was extracted from Audit Analytics Europe in **October 2018**. After removing observations with missing values for audit fees the total number of companies included in the dataset equals 6 617 resulting in a dataset of 32 638 auditee-auditor-year observations. The distribution of the number of auditee-auditor observations per Member State per year is shown in Table AI-1[92].

Table AI- 1: The number of auditee-auditor observations per Member State per year

	2013	2014	2015	2016	2017
Austria	**75**	**87**	**84**	**80**	**69**
Financial sector	12	16	17	16	15
Non-financial sector	63	71	67	64	54
Belgium	69	136	144	136	130
Financial sector	9	23	23	22	19
Non-financial sector	60	113	121	114	111
Bulgaria	1	3	97	79	69
Financial sector	0	1	34	32	28
Non-financial sector	1	2	63	47	41
Croatia	8	13	18	16	11
Financial sector	0	1	1	2	2
Non-financial sector	8	12	17	14	9
Cyprus	37	67	74	68	55
Financial sector	8	15	16	16	11
Non-financial sector	29	52	58	52	44
Czech Republic	6	13	15	18	19
Financial sector	2	4	5	5	6
Non-financial sector	4	9	10	13	13
Denmark	163	179	186	174	152
Financial sector	44	51	56	51	39
Non-financial sector	119	128	130	123	113
Estonia	3	6	6	6	7
Financial sector	1	1	1	1	1
Non-financial sector	2	5	5	5	6

92 Auditees with more than one auditor (joint audits) are considered multiple times in the tables.

Finland	142	168	176	174	152
Financial sector	12	17	19	21	17
Non-financial sector	130	151	157	153	135
France	1197	1360	1343	1252	1134
Financial sector	128	144	150	146	144
Non-financial sector	1069	1216	1193	1106	990
Germany	478	618	610	583	529
Financial sector	70	97	99	87	77
Non-financial sector	408	521	511	496	452
Greece	16	32	48	46	50
Financial sector	7	10	10	10	10
Non-financial sector	9	22	38	36	40
Hungary	4	17	21	21	16
Financial sector	0	4	5	5	5
Non-financial sector	4	13	16	16	11
Ireland	86	92	97	84	69
Financial sector	8	9	8	7	7
Non-financial sector	78	83	89	77	62
Italy	71	295	331	315	267
Financial sector	16	55	64	61	55
Non-financial sector	55	240	267	254	212
Latvia	18	20	25	19	12
Financial sector	0	0	0	0	0
Non-financial sector	17	18	22	16	10
Lithuania	4	10	15	14	11
Financial sector	1	2	3	3	2
Non-financial sector	4	10	15	14	11
Luxembourg	64	71	73	67	49
Financial sector	12	12	12	11	7
Non-financial sector	52	59	61	56	42
Malta	24	30	31	33	24
Financial sector	8	10	9	10	7
Non-financial sector	16	20	22	23	17
Netherlands	135	158	158	151	130
Financial sector	15	19	22	20	16
Non-financial sector	120	139	136	131	114
Poland	477	693	729	687	553
Financial sector	65	100	105	96	81
Non-financial sector	412	593	624	591	472
Portugal	37	56	56	57	51
Financial sector	8	8	7	8	7

Non-financial sector	29	48	49	49	44
Romania	2	9	16	16	10
Financial sector	1	4	5	5	3
Non-financial sector	1	5	11	11	7
Slovakia	34	40	40	19	8
Financial sector	6	7	7	5	5
Non-financial sector	28	33	33	14	3
Slovenia	9	30	37	25	22
Financial sector	7	12	14	11	10
Non-financial sector	2	18	23	14	12
Spain	201	227	248	243	214
Financial sector	25	29	28	26	23
Non-financial sector	176	198	220	217	191
Sweden	708	760	783	786	694
Financial sector	54	60	56	63	57
Non-financial sector	654	700	727	723	637
United Kingdom	1636	1696	1676	1692	1542
Financial sector	470	491	483	488	450
Non-financial sector	1166	1205	1193	1204	1092
EU Total	**5705**	**6886**	**7137**	**6861**	**6049**
Financial sector	**958**	**1142**	**1163**	**1135**	**1023**
Non-financial sector	**4716**	**5684**	**5878**	**5633**	**4945**

In some analyses we split the sample based on the industry of the auditee. More specifically, we investigate two subsamples: the financial industry and the non-financial industry. In order to determine the industry of each auditee we use the **Nomenclature statistique des Activités économiques dans la Communauté Européenne (NACE)** industry classification. Financial firms are classified in Section K: Financial and insurance activities[93]. As Audit Analytics Europe does not include NACE but the NAICS (North American Industry Classification System) industry classification, we were required to convert the NAICS classifications to NACE-codes[94]. Table AI-1 also presents the number of auditee-auditor observations per Member State per year for the financial sector and the number of auditee-auditor observations per Member State per year for the non-financial sector.

Based on these observations we calculate the measures described below at Member State level. Furthermore, for each of these measures we also calculate the **EU average**; where we first construct a measure at the Member State level or calculate the average of the meausure per Member state and than take the average of that measure over all Member States. As not all Member States are of equal size and some measures; most notably concentration and market share measures; are sensitive to the market size we also construct an **EU weighted average** in which each Member State outcome is weighted based on the size of the Member State's audit market of listed auditees (based on audit fees)

[93] https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF/dd5443f5-b886-40e4-920d-9df03590ff91?version=1.0.

[94] We followed the NAIC to NACE correspondence table found at http://ec.europa.eu/eurostat/ramon/miscellaneous/index.cfm?TargetUrl=DSP_NACE_2_US_NAICS_2007.

relative to sum of the size of all EU28 Member States' audit markets of listed auditees. Finally, for some measures (such as audit fees) we also calculate **auditee average**: the average of all auditees in the sample irrespective of the country they originate from.

The following measures are calculated, where market share of audit firms is based on audit fees:

- **Concentration measures**

We calculate the **Herfindahl-Hirschman index (HHI**) per Member State as the sum of the square of each audit firm's market share. Furthermore, we also calculate the **combined market share of the Big 4 audit firms**.

- **Competition**

We calculate **Market Share Mobility** as the sum of the absolute change in market share of each audit firm from year t to year t+1. As an increase in market share of one firm implies a decrease for another firm, we divide this measure by 2. Furthermore, for each Member State we identify which audit firm is ranked first (the leader), second, third and fourth in 2013. We then track the **market share of these firms** in the years 2013 to 2017. We further construct the **percentage of discontinued auditor-client engagements,** which divides the number of clients per Member State that do not continue their engagement (in t) with their auditor in t-1 divided by the number of auditor-auditee engagements in t-1. Importantly, we do not include clients that discontinue their engagements with their auditor because of bankruptcy or delisting or because they are no longer included in our dataset. Furthermore we construct the **percentage of firms switching from a Big 4 to a (non-) Big4**, and vice versa.

- **Costs**

We calculate the **average audit fee** and **the average non-audit fee per Member State**. As we want to ensure that changes in audit fees are not driven by changes in the composition of auditees in each year we calculate these measures on a balanced panel, meaning that an auditee has to be in our dataset for all years.

Split analyses

In chapter 5 we divide Member States into different groups based on the implementation of the provisions relating to mandatory audit firm rotation and whether joint audits result in an extension of the maximum engagement period. Therefore, we use different sources retrieved in **November 2018** on the implementation of the Audit Reform in the various Member States. We use information found on the website of Accountancy Europe[95] and the European Contact Group[96]. We looked at the Member States based on the following criteria: the maximum initial duration period withut tendering or joint audits; whether the maximum initial period can be extended when using either a tender procedure or a joint auditor. Based on this criteria we calculate the longest engagement period that is possible when an auditee uses tendering and/or joint audits to extend the rotation period. We then calculate the median value of all Member States' maximum total rotation period and split the Member States in two groups based on this median. As in some Member States the regulations are stricter for banks or financial institutions we construct a separate MFR score for the financial industry and the non-financial industry. Note that some restrictions apply only to banks and not the whole non-financial industry. However, in the analyses we use the strictest regulation that is applicable to the non-financial industry.

95 https://www.accountancyeurope.eu/wp-content/uploads/Audit-policy-implementation-state-of-play_October-2018.pdf.

96 http://www.8cld.eu/ECGDashboard/ECG%20Dashboard%20-%20EU%20Audit%20legislation%20-%208%20February%202018%20%20-%20EXTERNAL.pdf.

The scoring of each Member State can be found in Table AI-2 for the non- financial firms and Table AI-3 for the financial firms.

Table AI- 2: Construction of the MFR score for the non-financial sector

	Maximum initial rotation period without joint audits or tendering	Can rotation period be extended using tendering? If so, how long can the rotation period be extended?	Can rotation period be extended using a joint audit? If so, how long can the rotation period be extended?	Maximum total rotation period
Austria	10 years	NO	NO *	10
Belgium	9 years	YES, 9 years	YES, 15 years	24
Bulgaria	7 years	NO	NO	7
Croatia	10 years	Yes, 10 years	YES, 10 years	20
Cyprus	10 years	YES, 10 years	YES, 14 years	24
Czech Republic	10 years	YES, 10 years	NO	20
Denmark	10 years	YES, 10 years	YES, 14 years	24
Estonia	10 years	YES, 10 years	NO	20
Finland	10 years	YES, 10 years	YES, 14 years	24
France	10 years	YES, 6 years	YES, 14 years	24
Germany	10 years	YES, 10 years	YES, 14 years	24
Greece	10 years	YES , 10 years	NO	20
Hungary	10 years	NO	NO	10
Ireland	10 years	NO	NO	10
Italy	9 years	NO	NO	9
Latvia	10 years	YES, 10 years	NO	20
Lithuania	10 years	NO	NO	10
Luxembourg	10 years	YES, 10 years	NO	20
Malta	10 years	YES, 10 years	NO	20
Netherlands	10 years	NO	NO	10
Poland	5 years	NO	NO	5
Portugal	8 or 9 years	YES, 10 years	NO	10
Romania	10 years	YES, 10 years	NO	20
Slovakia	10 years	YES, 10 years	NO	20
Slovenia	10 years	NO	NO	10
Spain	10 years	NO	YES, 4years	14
Sweden	10 years	YES, 10 years	YES, 4 years	20
United Kingdom	10 years	YES, 10 years	NO	20

Table AI- 3: Construction of the MFR score for the financial sector

	Maximum initial rotation period without joint audits or tendering	Can rotation period be extended using tendering? If so, how long can the rotation period be extended?	Can rotation period be extended using a joint audit? If so, how long can the rotation period be extended?	Maximum total rotation period
Austria	10 years	NO	NO *	10
Belgium	9 years	YES, 9 years	YES, 15 years	24
Bulgaria	7 years	NO	NO	7
Croatia	10 years	Yes, 10 years	YES, 10 years	20
Cyprus	9 years	NO	NO	9
Czech Republic	10 years	YES, 10 years	NO	20
Denmark	10 years	YES, 10 years	YES, 14 years	24
Estonia	10 years	YES, 10 years	NO	20
Finland	10 years	YES, 10 years	YES, 14 years	24
France	10 years	YES, 6 years	YES, 14 years	24
Germany	10 years	YES, 10 years	YES, 14 years	24
Greece	5 years	YES , 10 years	NO	15
Hungary	8 years	NO	NO	8
Ireland	10 years	NO	NO	10
Italy	9 years	NO	NO	9
Latvia	10 years	YES, 10 years	NO	20
Lithuania	10 years	NO	NO	10
Luxembourg	10 years	YES, 10 years	NO	20
Malta	10 years	YES, 10 years	NO	20
Netherlands	10 years	NO	NO	10
Poland	5 years	NO	NO	5
Portugal	8 or 9 years	YES, extendable up to 10 years	NO	10
Romania	10 years	YES, 10 years	NO	20
Slovakia	10 years	YES, 10 years	NO	20
Slovenia	10 years	NO	NO	10
Spain	10 years	NO	YES, 4years	14
Sweden	10 years	NO	YES, 4 years	14
United Kingdom	10 years	YES, 10 years	NO	20

We also perform the split analyses based on whether the maximum rotation period be extended using a joint audit or not (in chapter 5.2). The relevant classification can be found in the column 'Can rotation period be extended using tendering? If so, how long can the rotation period be extended?' in Table AI-2 and Table AI-3 above.

Multivariate audit fee models: non-financial sector

For this analysis, we start with the 26,856 auditor-auditees for which we have audit fees available in the period 2013-2017. As we only need one observation per auditee-year for this analysis, we aggregate the fees and non-auditfees of joint audits and retain only one observation leading to a reduced sample of 21,797 observations. To obtain financial information, we need information from the dataset **Orbis**. After matching the Audit Analytics Europe dataset with Orbis and removing observations with missing values for the control variables we obtain a final sample of 18,442 observations.

On this sample, we estimate the following audit fee model:

$$\begin{aligned} LNFEE_t \text{ OR } LNNASFEE_t = {} & \alpha_0 + \alpha_1 * POSTREFORM_t + \alpha_2 * JOINT_t + \alpha_3 * SIZE_t + \alpha_4 * DEBT_t + \alpha_5 * ROA_t \\ & + \alpha_6 * LOSS_t + \alpha_7 * YEAREND_t + \alpha_8 * INITIALYEAR_t + \alpha_9 * BIG4_t + \alpha_{10} * LEADER_t + \\ & \text{country and industry fixed effects} + \varepsilon \end{aligned}$$

The variables are defined as follows:

LNFEE	The natural logarithm of the audit fee paid by the auditee.
LNNASFEE	The natural logarithm of the total non-audit fee paid by the auditee.
POSTREFORM	Dummy variable equal to one if the fiscal year end was after 17 June 2016, zero otherwise.
JOINT	Dummy variable equal to one if there is a joint audit.
SIZE	The natural logarithm of the auditee's total assets.
DEBT	The ratio of long-term debt divided by total assets of the auditee.
ROA	Net income divided by total assets of the auditee.
LOSS	Dummy variable set equal to one if the company reports a loss, and zero otherwise.
YEAREND	Dummy variable set equal to one if the auditee has a December 31st fiscal year-end.
INITIALYEAR	Dummy variable equal to one if one of the auditors is in the first year of tenure with the client, and zero otherwise. For observations in 2013 this variable is always zero.
BIG4	Dummy variable equal to one if the client is audited by one of the BIG4, zero otherwise.
YEAREND	an indicator variable set equal to one if the company has a December year end, and zero otherwise.
Industry	Based on NACE main sectors.

All continuous non-logged variables are winsorized at 1 %. We further perform split analyses based on (i) whether the **audit firm is audited by a BIG4** auditor or not, and (ii) whether **the**

ratio of non-audit fees over audit fees is bigger than 70 % prior to the implementation of the reform (2015).

Multivariate audit fee models: financial sector

For the financial PIE subsample, we have a similar approach. From Audit Analytics we identify 4,639 auditee-year observations all of which are in the financial services industry and for which we have data on audit fees, non-audit fees, and total fees. Afterwards, we match them with financial data from Orbis resulting in a final subsample of 3,722 auditee-year obersvations.

On this sample, we estimate the following audit fee model:

DEPENDENTt = α0+ α1*POSTREFORMt + α2*JOINTt + α3*SIZEt + α4*ROAt +α5*LOSSt α6*YEARENDt + α7*INITIALYEARt+ α8*BIG4t+ α9*LEADERt+ α10*BANKt + α11*INSURANCEt + country fixed effects+ ε

With DEPENDENT:

LNFEE	The natural logarithm of the audit fee paid by the auditee.
LNNASFEE	The natural logarithm of the total non-audit fee paid by the auditee.
LNTOTALFEE	The natural logarithm of the total fee paid by the auditee.

The test and control variables are defined as follows:

POSTREFORM	Dummy variable equal to one if the fiscal year end was after 17 June 2016, zero otherwise.
JOINT	Dummy variable equal to one if there is a joint audit.
SIZE	The natural logarithm of the auditee’s total assets.
ROA	Net income divided by total assets of the auditee.
LOSS	Dummy variable set equal to one if the company reports a loss, and zero otherwise.
YEAREND	Dummy variable set equal to one if the auditee has a December 31st fiscal year-end.
INITIALYEAR	Dummy variable equal to one if one of the auditors is in the first year of tenure with the client, and zero otherwise. For observations in 2013 this variable is always zero.
BIG4	Dummy variable equal to one if the client is audited by one of the BIG4, zero otherwise.
YEAREND	Dummy variable set equal to one if the company has a December year end, and zero otherwise.
BANK	Dummy variable set equal to one if the company is a commercial bank, and zero otherwise.
INSURANCE	Dummy variable set equal to one if the company is an insurance ccompany, and zero otherwise.

Surveys

PIE Survey

In **December 2018,** we sent out two surveys: one to financial sector PIEs and one to non-financial listed PIEs. First, we wanted to send an online survey to **CFOs** of all **financial sector companies** active in the EU28. In order to obtain contact information of the relevant CFOs we contacted the **banking association** of each Member State, but mainly due to the GDPR regulation, it was not possible to get such information. In December 2018, the **European Banking Federation** sent a link of our survey to its members with an invitation to distribute the survey to their members. Second, the email addresses of non-financial sector auditees were obtained from Orbis and the survey was sent to those email addresses. Annex IV reports the survey questions of the Auditee Survey.

Audit Firm Survey

In **November 2018**, we sent out a survey to audit leaders in **7 Audit Firms** (4 Big 4 and 3 non-Big 4) active in the EU28. In order to obtain relevant contact information we asked the **international networks of each** audit firm to distribute the survey among its members. In total, 180 (local) audit leaders received an invitation to administer our questionnaire. The survey was administered in November-December 2018. 85 usable surveys were returned, 61 from Big 4 firms and 24 from non-Big 4 firms. This is an overall response rate of 47 % (54 % for Big 4 firms and 31 % for non-Big 4 firms). Annex III reports the survey questions of the Audit Firm Survey.

Interviews

On the 9 January 2019, we organised a conference call with three persons working in DG Competition at the European Commision, ECN and private enforcement.

The goal of this conference call was to address the following research question: 'Are there inforcement actions taken by national competent authorities, and if so what did they reveal?'. We used a semi-structured interview method.

On 14 December 2018, we had an interview with two persons from Accountancy-Europe. They provided us with useful information on details of the Audit Reform.

We also had calls with representatives of the seven audit firms that participated in the audit firm survey to explain to purpose of the survey and to ask for cooperation in administering the surveys in their network.

We organized a pilot test of the audit firm survey with three audit partners from different audit firms.

ANNEX II. TABLES OF GRAPHS

Table AII-1: Static measures of concentration, competition and costs for the aggregate EU audit market

		2013	2014	2015	2016	2017
		PRE			TRANS	POST
	Concentration					
EU averages	**HHI**	0.3998	0.3289	0.3001	0.3213	0.3278
	Combined B4 market share	88.55%	84.99%	88.00%	87.89%	88.29%
EU weighted averages	**HHI**	0.2686	0.2635	0.2684	0.2653	0.2613
	Combined B4 market share	91.21%	91.36%	91.66%	89.36%	89.79%
	Market share evolution of the ..					
EU averages	**leader 2013**	51.34%	43.92%	40.62%	39.75%	40.57%
	n2 in 2013	24.08%	23.83%	21.66%	20.90%	20.68%
	n3 in 2013	15.89%	16.74%	16.47%	18.10%	18.16%
	n4 in 2013	8.69%	10.43%	10.40%	11.74%	11.97%
EU weighted averages	**leader 2013**	38.86%	37.52%	39.19%	37.10%	34.79%
	n2 in 2013	23.99%	23.95%	22.07%	20.64%	20.86%
	n3 in 2013	17.94%	18.35%	17.99%	19.22%	18.80%
	n4 in 2013	10.84%	11.57%	12.21%	14.72%	16.05%
	Costs [€]					
EU averages	**Average fees**	856,692.02	877,476.66	943,603.82	977,649.61	1,014,003.51
	Average non-audit fees	373,395.52	400,563.64	441,771.27	417,385.38	303,894.77
EU weighted averages	**Average fees**	1,485,623.13	1,534,971.56	1,640,637.19	1,704,472.62	1,794,540.24
	Average non-audit fees	573,102.05	616,155.04	675,469.72	632,109.35	528,002.78

Table AII-2: Dynamic measures of competition for the aggregate EU audit market

		2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017
EU averages	**Market share mobility**	0.0862	0.1170	0.0996	0.1394
	Percentage of discontinued auditor-client engagements (for clients having auditors in t and t-1)	7.75%	10.08%	11.55%	20.62%
	percentage of B4 --> B4 *	50.02%	35.48%	44.74%	54.79%
	percentage of B4 --> NB4 *	17.09%	12.96%	5.46%	8.00%
	percentage of NB4 --> B4 *	6.53%	15.63%	17.44%	7.02%
	percentage of NB4 --> NB4 *	26.36%	35.93%	32.36%	30.19%
EU weighted averages	**Market Share mobility**	0.0323	0.0499	0.0795	0.0756
	Percentage of discontinued auditor-client engagements (for clients having auditors in t and t-1)	6.07%	10.77%	11.97%	12.02%
	percentage of B4 --> B4 *	40.63%	29.35%	37.53%	41.22%
	percentage of B4 --> NB4 *	16.82%	13.69%	8.46%	13.30%
	percentage of NB4 --> B4 *	8.07%	14.01%	12.58%	8.27%
	percentage of NB4 --> NB4 *	33.50%	42.90%	41.43%	37.15%

*Switches as percentage of total switches

Table AII-3: Analysis of auditees changing audit firm types for the aggregate EU audit market

	2014	2015	2016	2017
Percentages of switchers changing firm types				
% of switches from B4 going to NB4	29.27%	31.81%	18.39%	24.40%
% of switches from NB4 going to B4	19.48%	24.61%	23.28%	18.19%
Median audit fees of switchers				
% of switches from B4 going to B4	260.00 €	368.50 €	458.00 €	256.00 €
% of switches from B4 going to NB4	63.80 €	81.50 €	59.84 €	57.82 €
% of switches from NB4 going to B4	50.17 €	50.52 €	46.93 €	43.88 €
% of switches from NB4 going to NB4	11.80 €	11.94 €	17.69 €	14.40 €
% of switchers in each size bracket switching to Non-Big 4 - Auditfees (€)				
0-25000	79.35%	84.76%	85.16%	85.43%
25000-50000	51.52%	61.43%	61.90%	54.79%
50000-75000	72.22%	56.76%	69.57%	63.04%
75000-100000	50.00%	75.00%	66.67%	59.26%
100k-250k	17.65%	49.37%	44.87%	45.10%
250k-500k	26.92%	21.05%	10.71%	24.39%
500k-1000k	13.33%	3.33%	8.57%	11.11%
>1000k	14.81%	5.88%	1.69%	5.26%

Table AII-4: Static measures or concentration, competition and costs for the financial sector

		2013	2014	2015	2016	2017
		PRE			TRANS	POST
	Concentration					
EU averages	**HHI**	0.4673	0.4905	0.4778	0.4702	0.4921
	Combined B4 market share	85.49%	90.83%	91.42%	89.20%	88.91%
EU weighted averages	**HHI**	0.3866	0.3657	0.3855	0.3740	0.3436
	Combined B4 market share	92.23%	92.89%	93.20%	85.73%	87.00%
	Market share of leaders, n2, n3 and n4					
EU averages	**leader 2013**	62.56%	52.06%	50.41%	45.50%	44.15%
	n2 in 2013	23.56%	21.42%	23.58%	23.54%	26.88%
	n3 in 2013	12.27%	19.56%	16.06%	19.58%	16.03%
	n4 in 2013	5.51%	9.22%	8.18%	12.39%	15.46%
EU weighted averages	**leader 2013**	49.36%	44.64%	49.66%	41.79%	33.08%
	n2 in 2013	22.56%	22.24%	19.01%	18.04%	23.97%
	n3 in 2013	15.55%	17.80%	15.82%	18.00%	17.68%
	n4 in 2013	8.11%	9.63%	8.99%	15.54%	16.38%
	Costs [€]					
EU averages	**Average fees**	1,715,726.94	1,732,020.33	1,817,426.77	2,209,625.09	2,362,688.89
	Average non-audit fees	791,193.34	965,014.58	1,152,619.23	1,070,685.07	791,088.67
EU weighted averages	**Average fees**	3,058,194.25	3,087,353.60	3,121,298.98	4,955,656.40	5,320,942.66
	Average non-audit fees	1,311,933.96	1,596,872.92	1,814,015.93	1,871,736.61	1,288,551.26

Table AII-5: Dynamic measures of competition for the financial sector

		2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017
EU averages	**Market share mobility**	0.1185	0.1420	0.1135	0.1055
	Percentage of discontinued auditor-client engagements (for clients having auditors in t and t-1)	5.48%	9.80%	10.66%	19.24%
	percentage of B4 --> B4 *	54.84%	43.29%	59.09%	52.58%
	percentage of B4 --> NB4 *	28.71%	17.41%	3.31%	12.72%
	percentage of NB4 --> B4 *	2.92%	2.79%	9.86%	2.08%
	percentage of NB4 --> NB4 *	13.53%	36.51%	27.74%	32.62%
EU weighted averages	**Market Share mobility**	0.0536	0.0883	0.1422	0.1321
	Percentage of discontinued auditor-client engagements (for clients having auditors in t and t-1)	7.08%	7.35%	14.77%	15.38%
	percentage of B4 --> B4 *	36.53%	22.23%	39.47%	49.27%
	percentage of B4 --> NB4 *	35.58%	16.91%	4.20%	9.58%
	percentage of NB4 --> B4 *	7.41%	4.04%	14.44%	7.89%
	percentage of NB4 --> NB4 *	15.23%	39.86%	38.42%	31.98%

*Switches as percentage of total switches

Table AII-6: Analysis of auditees changing audit firm types for the financial sector

	2014	2015	2016	2017
Percentages of switchers changing firm types				
% of switches from B4 going to NB4	49.34%	43.20%	9.61%	16.28%
% of switches from NB4 going to B4	32.72%	9.20%	27.32%	19.80%
Median audit fees of switchers				
% of switches from B4 going to B4	166.00 €	180.00 €	652.90 €	125.65 €
% of switches from B4 going to NB4	73.67 €	86.10 €	69.95 €	55.00 €
% of switches from NB4 going to B4	28.56 €	87.19 €	33.77 €	33.89 €
% of switches from NB4 going to NB4	6.98 €	12.40 €	17.76 €	9.56 €
% of switchers in each size bracket switching to Non-Big 4 – Audit fees (€)				
0-25000	75%	93.55%	89.29%	82.05%
25000-50000	50%	60%	29.17%	43.48%
50000-75000		100%	62.50%	71.43%
75000-100000	0%	60%	100%	57.14%
100k-250k	25%	33.33%	54.55%	55.56%
250k-500k	50%	33.33%	0 %	0%
500k-1000k	0%	0%	0%	
>1000k	20%	0%	0%	0%

Table AII-7: Split HHI and Combined Big 4 market share per size quintile for non-financial and financial sector

		2013	2014	2015	2016	2017
	HHI					
Non-financial	Smallest size quintile	0.2025	0.1856	0.1957	0.1996	0.1949
	Size quintile 2	0.1757	0.1773	0.1655	0.1670	0.1693
	Size quintile 3	0.2916	0.2680	0.2333	0.2470	0.2539
	Size quintile 4	0.2352	0.2341	0.2374	0.2359	0.2364
	Largest size quintile	0.2981	0.2925	0.2990	0.2937	0.2879
Financial	Smallest size quintile	0.5119	0.4189	0.4188	0.3871	0.3797
	Size quintile 2	0.4058	0.4099	0.3064	0.1936	0.1799
	Size quintile 3	0.6630	0.6348	0.6113	0.6025	0.6723
	Size quintile 4	0.4382	0.4077	0.3924	0.3883	0.3816
	Largest size quintile	0.4363	0.4188	0.4469	0.4269	0.3684
	Combined Big 4 market share					
Non-financial	Smallest size quintile	56.62%	55.61%	58.60%	55.79%	44.78%
	Size quintile 2	61.14%	61.32%	60.65%	58.55%	58.66%
	Size quintile 3	81.44%	81.34%	79.47%	79.89%	79.81%
	Size quintile 4	85.08%	85.65%	85.55%	85.27%	84.60%
	Largest size quintile	93.68%	94.10%	94.46%	91.89%	92.30%
Financial	Smallest size quintile	59.93%	59.38%	62.02%	61.02%	34.16%
	Size quintile 2	66.14%	66.87%	58.87%	52.21%	49.87%
	Size quintile 3	90.14%	89.55%	90.89%	88.34%	92.39%
	Size quintile 4	84.73%	87.51%	87.08%	84.85%	84.55%
	Largest size quintile	92.76%	93.55%	94.23%	86.48%	87.44%

Table AII-8: Herfindahl index for each EU Member State's aggregate market

	2013	2014	2015	2016	2017
COUNTRY	PRE			TRANS	POST
Austria	0.2742	0.2764	0.2500	0.2416	0.2329
Belgium	0.2324	0.2280	0.2385	0.2959	0.2646
Bulgaria	1.0000	0.8739	0.1468	0.4655	0.2958
Croatia	0.6499	0.3716	0.4483	0.8337	0.5488
Cyprus	0.3197	0.2948	0.2959	0.3198	0.3219
Czech Republic	0.8229	0.5981	0.3654	0.3204	0.3608
Denmark	0.2764	0.2318	0.2584	0.3016	0.3969
Estonia	0.9096	0.4053	0.3935	0.3025	0.3637
Finland	0.3549	0.3377	0.3048	0.3772	0.4037
France	0.1928	0.1909	0.1873	0.1904	0.1922
Germany	0.3436	0.3378	0.3429	0.3532	0.3511
Greece	0.3523	0.3002	0.2659	0.2812	0.3410
Hungary	0.6232	0.4742	0.4090	0.3714	0.5447
Ireland	0.2801	0.2947	0.2979	0.2877	0.3025
Italy	0.3538	0.2828	0.2738	0.2664	0.2622
Latvia	0.2600	0.2292	0.1868	0.1797	0.2362
Lithuania	0.3843	0.4030	0.5716	0.4557	0.3761
Luxembourg	0.2669	0.2743	0.2648	0.2520	0.2642
Malta	0.2641	0.2417	0.3646	0.3417	0.4612
Netherlands	0.2898	0.2756	0.2560	0.2685	0.2643
Poland	0.1731	0.1658	0.1652	0.1782	0.1875
Portugal	0.2774	0.2906	0.2912	0.2985	0.2684
Romania	0.5258	0.2213	0.2331	0.2708	0.2964
Slovakia	0.4639	0.3755	0.3237	0.3558	0.4887
Slovenia	0.4274	0.3620	0.3660	0.4067	0.3962
Spain	0.3433	0.3445	0.3304	0.2415	0.2371
Sweden	0.2679	0.2719	0.2919	0.2719	0.2719
United Kingdom	0.2632	0.2565	0.2784	0.2673	0.2482

Table AII-9: Big 4 market share for each EU Member State's aggregate market (expressed in decimals)

	2013	2014	2015	2016	2017
COUNTRY	PRE			TRANS	POST
Austria	0.8383	0.8372	0.8280	0.8239	0.7917
Belgium	0.9617	0.9404	0.9350	0.9200	0.8965
Bulgaria	0.0000	0.0000	0.0373	0.0307	0.0161
Croatia	0.8256	0.5766	0.6621	0.9398	0.9075
Cyprus	0.9689	0.9577	0.9459	0.9585	0.9583
Czech Republic	0.9803	0.9791	0.9752	0.9625	0.9689
Denmark	0.9789	0.9134	0.9550	0.9455	0.9743
Estonia	1.0000	1.0000	1.0000	0.8873	0.9437
Finland	0.9889	0.9828	0.9773	0.9837	0.9760
France	0.7979	0.7988	0.7945	0.7838	0.8020
Germany	0.9504	0.9456	0.9526	0.9561	0.9608
Greece	0.9505	0.9471	0.9146	0.9222	0.8342
Hungary	1.0000	0.9047	0.9035	0.8873	0.9533
Ireland	0.9845	0.9797	0.9834	0.9806	0.9792
Italy	0.9874	0.9796	0.9827	0.9831	0.9855
Latvia	0.8499	0.7929	0.8423	0.8128	0.8107
Lithuania	0.4967	0.7074	0.9729	0.9941	1.0000
Luxembourg	0.9638	0.9663	0.9694	0.9514	0.9483
Malta	0.8132	0.7885	0.8840	0.8540	0.9505
Netherlands	0.9910	0.9741	0.9709	0.9722	0.9713
Poland	0.8140	0.8055	0.7600	0.7836	0.8041
Portugal	0.9539	0.9620	0.9479	0.9515	0.9446
Romania	1.0000	0.3633	0.7823	0.8407	0.8473
Slovakia	0.9454	0.9365	0.9411	0.9927	1.0000
Slovenia	0.9923	0.9759	0.9416	0.9643	0.9442
Spain	0.8971	0.9063	0.8972	0.6533	0.6848
Sweden	0.9053	0.9176	0.9233	0.9166	0.9073
United Kingdom	0.9571	0.9584	0.9598	0.9567	0.9613

Table AII-10: Herfindahl index for each Member State's financial sector

	2013	2014	2015	2016	2017
COUNTRY	PRE			TRANS	POST
Austria	0.2907	0.2916	0.2499	0.2426	0.3413
Belgium	0.3459	0.3206	0.3180	0.2861	0.2397
Bulgaria	0.0000	1.0000	0.2287	0.2899	0.8058
Croatia	0.0000	1.0000	1.0000	0.8048	0.8128
Cyprus	0.8468	0.5984	0.6633	0.6949	0.7332
Czech Republic	0.6154	0.6042	0.5258	0.5410	0.5030
Denmark	0.2591	0.2750	0.4410	0.4461	0.4993
Estonia	1.0000	1.0000	1.0000	1.0000	1.0000
Finland	0.4483	0.3908	0.3731	0.3752	0.3843
France	0.2185	0.2207	0.2247	0.2268	0.2297
Germany	0.6196	0.6235	0.6192	0.6294	0.6195
Greece	0.4275	0.3912	0.3337	0.3754	0.4785
Hungary	0.0000	0.4286	0.6733	0.6713	0.4222
Ireland	0.4956	0.4823	0.5214	0.5469	0.5415
Italy	0.3566	0.3199	0.2687	0.2713	0.2579
Latvia	1.0000	1.0000	1.0000	1.0000	1.0000
Lithuania	0.6498	0.4557	0.5134	0.5502	0.6632
Luxembourg	0.3096	0.3592	0.3437	0.2718	0.3160
Malta	0.7309	0.5031	0.4680	0.3566	0.3511
Netherlands	0.2492	0.2424	0.2457	0.2911	0.2654
Poland	0.4497	0.3890	0.4858	0.5737	0.5302
Portugal	1.0000	0.4147	0.2329	0.2360	0.3508
Romania	0.8422	0.5004	0.5141	0.4984	0.5281
Slovakia	0.3630	0.3611	0.3843	0.4031	0.4018
Slovenia	0.5496	0.5457	0.5894	0.3960	0.3668
Spain	0.2704	0.2447	0.3335	0.3535	0.3543
Sweden	0.2788	0.2817	0.3488	0.3628	0.2905
United Kingdom	0.2632	0.2565	0.2784	0.2673	0.2482

Table AII- 11: Evolution of market share mobility per Member State before and after the Audit Reform (all sectors, expressed in decimals)

	2013 - 2014	2014 - 2015	2015 - 2016	2017 - 2018
COUNTRY	**PRE**			**POST**
Austria	0.0217	0.0569	0.0539	0.1956
Belgium	0.0685	0.0769	0.1362	0.0569
Bulgaria	0.0333	0.4851	0.3146	0.2329
Croatia	0.1450	0.0996	0.1704	0.1199
Cyprus	0.0946	0.0446	0.0561	0.0428
Czech Republic	0.1284	0.1335	0.0655	0.1477
Denmark	0.2003	0.0991	0.1091	0.1233
Estonia	0.2683	0.0277	0.0827	0.3077
Finland	0.0223	0.0672	0.1061	0.0539
France	0.0136	0.0305	0.0317	0.0286
Germany	0.0101	0.0279	0.0202	0.0411
Greece	0.3656	0.1557	0.0989	0.3627
Hungary	0.0606	0.0629	0.1024	0.1731
Ireland	0.0404	0.0347	0.0715	0.1664
Italy	0.1147	0.0629	0.0324	0.0523
Latvia	0.0366	0.2351	0.1370	0.2008
Lithuania	0.1662	0.2219	0.1539	0.4285
Luxembourg	0.0294	0.0362	0.0754	0.1132
Malta	0.0691	0.2818	0.0612	0.1280
Netherlands	0.0302	0.0849	0.0439	0.0441
Poland	0.0610	0.1868	0.0817	0.0833
Portugal	0.1184	0.0783	0.0812	0.1395
Romania	0.0451	0.3622	0.0933	0.0613
Slovakia	0.1252	0.1090	0.0420	0.1334
Slovenia	0.0857	0.0749	0.0504	0.1164
Spain	0.0184	0.0324	0.3463	0.2142
Sweden	0.0187	0.0484	0.0969	0.0519
United Kingdom	0.0231	0.0592	0.0744	0.0830
EU average	**0.0862**	**0.1170**	**0.0996**	**0.1394**
EU weighted average	**0.0323**	**0.0499**	**0.0795**	**0.0756**

Table AII-12: Evolution of average audit fees per EU Member State before and after the Audit Reform (all sectors – balanced panel)

	2013	2014	2015	2016	2017
COUNTRY	PRE			TRANS	POST
Austria	773,366	745,104	788,631	840,270	757,642
Belgium	958,380	1,010,824	996,311	999,744	1,138,553
Bulgaria	22,000	28,000	41,000	64,000	31,000
Croatia	258,662	235,793	293,347	284,782	269,390
Cyprus	357,729	353,931	352,448	355,621	346,655
Czech Republic	671,442	673,190	690,206	697,334	764,221
Denmark	570,621	574,966	499,862	494,510	471,169
Estonia	50,250	61,889	53,410	49,080	67,860
Finland	658,915	620,390	642,291	820,925	793,105
France	2,173,193	2,216,557	2,287,459	2,242,857	2,362,646
Germany	1,574,234	1,579,483	1,727,544	1,802,990	1,885,970
Greece	1,364,926	1,525,065	1,518,142	1,349,000	1,440,833
Hungary	856,857	983,167	1,063,442	1,221,941	1,220,171
Ireland	1,655,652	1,777,097	2,233,497	2,283,551	2,403,359
Italy	1,993,547	1,964,339	2,280,884	1,901,369	2,008,424
Latvia	23,256	23,508	21,587	22,668	27,127
Luxembourg	1,455,605	1,516,674	1,611,587	1,485,550	1,624,774
Malta	103,450	110,617	115,370	131,444	162,199
Netherlands	2,646,585	2,603,043	2,702,032	2,619,129	2,865,394
Poland	51,429	53,061	73,035	85,051	105,222
Portugal	434,993	374,429	391,359	387,476	302,036
Slovakia	273,714	256,286	256,000	246,571	257,286
Slovenia	266,571	268,659	294,969	270,795	270,149
Spain	1,800,958	1,949,566	2,141,634	3,276,046	3,261,733
Sweden	509,353	500,179	514,328	542,680	553,148
United Kingdom	768,303	808,576	943,325	943,505	974,028
EU average	856,692	877,477	943,604	977,650	1,014,004
EU weighted average	1,485,623	1,534,972	1,640,637	1,704,473	1,794,540
Auditee average	1,036,766	1,061,696	1,156,076	1,200,806	1,247,087

Some Member States are missing as we could not construct a balanced sample for these Member States.

Table AII-13: Evolution of average non-audit fees per EU Member State before and after the Audit Reform (all sectors - balanced panel)

	2013	2014	2015	2016	2017
COUNTRY	PRE			TRANS	POST
Austria	649,950	630,743	629,101	1,030,913	552,534
Belgium	365,037	507,095	536,404	525,385	362,517
Bulgaria	0	0	0	0	1
Croatia	0	0	0	0	3,618
Cyprus	52,921	105,128	168,564	341,733	93,431
Czech Republic	309,641	270,696	137,076	381,814	197,169
Denmark	496,434	434,922	386,619	345,528	348,488
Estonia	1	0	9,500	21,500	19,500
Finland	424,268	358,797	347,208	299,162	287,775
France	452,455	510,787	515,848	563,789	531,745
Germany	914,205	897,678	955,674	917,093	645,729
Greece	670,222	687,180	710,625	471,113	723,327
Hungary	748,532	715,716	872,885	889,481	71,150
Ireland	841,859	756,001	1,217,795	1,038,729	595,516
Italy	443,419	641,543	589,399	585,108	557,563
Latvia	0	0	0	0	2,000
Luxembourg	270,723	345,873	293,745	308,174	189,470
Malta	48,569	45,432	60,972	58,001	48,847
Netherlands	795,658	595,706	662,708	430,027	580,359
Poland	29,579	33,749	41,171	38,714	39,641
Portugal	193,619	249,706	210,946	219,943	157,883
Slovakia	17,429	12,571	19,143	19,286	28,143
Slovenia	38,847	86,120	95,688	103,147	88,203
Spain	1,316,624	1,855,105	2,326,281	1,617,916	1,207,789
Sweden	232,273	246,768	263,315	257,129	222,690
United Kingdom	396,020	427,338	435,387	388,336	346,176
EU average	373,396	400,564	441,771	417,385	303,895
EU weighted average	573,102	616,155	675,470	632,109	528,003
Auditee average	454,194	486,830	522,631	476,774	395,951

Some Member States are missing as we could not construct a balanced sample for these Member States.

Table AII-14: Evolution of median audit fees per EU Member State before and after the Audit Reform (all sectors – balanced panel)

	2013	2014	2015	2016	2017
COUNTRY	PRE			TRANS	POST
Austria	193,500	205,700	196,500	250,000	262,500
Belgium	197,550	226,900	239,235	282,120	298,500
Bulgaria	22,000	28,000	41,000	64,000	31,000
Croatia	141,396	156,942	177,857	79,261	104,240
Cyprus	55,533	87,477	77,462	98,029	95,853
Czech Republic	188,284	163,227	243,038	252,963	183,607
Denmark	121,216	106,653	109,140	128,402	118,968
Estonia	50,250	61,889	53,410	49,080	67,860
Finland	195,291	200,000	227,597	251,000	254,500
France	279,000	284,700	308,544	335,796	343,200
Germany	229,000	216,000	237,500	248,500	259,500
Greece	727,600	896,000	971,000	1,058,500	1,108,000
Hungary	674,354	648,685	748,187	1,294,083	1,228,960
Ireland	200,000	200,000	270,000	320,000	263,000
Italy	521,500	557,500	555,598	532,500	658,979
Latvia	7,826	9,225	9,225	9,650	11,000
Luxembourg	483,000	502,000	449,000	413,000	594,000
Malta	42,000	72,000	67,000	75,000	86,000
Netherlands	586,000	521,537	584,000	636,721	669,000
Poland	10,414	10,828	11,830	11,466	14,100
Portugal	154,944	159,872	192,343	185,172	164,218
Slovakia	201,000	193,000	175,000	168,000	213,000
Slovenia	260,265	257,870	298,580	225,895	257,453
Spain	274,000	292,000	250,000	303,000	313,000
Sweden	83,887	77,034	95,647	105,687	112,318
United Kingdom	73,622	83,905	98,953	100,496	99,752
EU average of median	229,747	239,190	257,217	287,628	300,481
EU weighted median	227,216	243,552	256,708	271,113	287,232
Auditee Median	115,627	120,822	137,594	144,748	147,843

Some Member States are missing as we could not construct a balanced sample for these Member States.

Table AII-15: Evolution of median non-audit fees per EU Member State before and after the Audit Reform (all sectors – balanced panel)

	2013	2014	2015	2016	2017
COUNTRY	**PRE**		**TRANS**		**POST**
Austria	94,000	124,500	110,250	132,000	97,000
Belgium	53,500	83,000	100,413	113,526	81,500
Bulgaria	0	0	0	0	0
Croatia	0	0	0	0	0
Cyprus	7,685	3,222	4,244	2,879	0
Czech Republic	0	1,820	4,379	59,547	30,558
Denmark	101,907	70,717	72,322	69,036	61,702
Estonia	0	0	9,500	21,500	19,500
Finland	100,000	101,500	121,500	100,000	83,000
France	18,000	23,250	23,900	23,741	21,500
Germany	67,500	68,000	74,000	47,500	44,500
Greece	119,500	116,500	158,253	54,000	371,164
Hungary	542,854	1,031,409	1,012,632	1,030,771	93,789
Ireland	115,000	100,000	132,000	71,000	100,000
Italy	198,500	232,000	306,000	142,000	324,500
Latvia	0	0	0	0	0
Luxembourg	80,000	53,500	55,000	27,104	40,000
Malta	24,000	23,845	22,000	31,000	38,000
Netherlands	117,000	65,000	74,000	60,000	66,000
Poland	2,232	2,512	2,371	2,293	0
Portugal	16,055	24,500	30,622	15,505	4,157
Slovakia	4,000	4,000	4,000	0	17,000
Slovenia	22,000	54,500	59,414	63,138	88,051
Spain	91,000	90,000	129,000	96,000	90,000
Sweden	29,254	27,127	29,228	25,523	26,234
United Kingdom	26,923	27,277	26,207	24,490	20,247
EU average of median	70,420	89,545	98,509	85,098	66,092
EU weighted median	52,411	57,172	67,652	48,769	56,924
Auditee Median	30,000	29,912	31,000	27,028	24,000

Some Member States are missing as we could not construct a balanced sample for these Member States.

Table AII-16: Evolution of average audit fees per EU Member State before and after the Audit Reform (financial sectors – balanced panel)

	2013	2014	2015	2016	2017
COUNTRY	PRE			TRANS	POST
Austria	2,725,678	2,501,253	2,693,329	2,845,334	2,379,733
Belgium	4,294,818	4,427,939	4,284,592	3,729,494	4,716,366
Cyprus	522,035	530,287	520,646	707,733	630,739
Czech Republic	593,857	555,507	635,357	633,959	724,252
Denmark	201,105	178,344	194,465	185,482	195,739
Estonia	7,500	7,778	9,820	7,160	5,720
Finland	119,828	156,836	173,059	201,182	218,610
France	3,988,549	4,131,164	4,348,926	4,308,026	4,955,103
Germany	3,402,224	3,350,501	3,558,518	3,869,602	3,850,351
Greece	2,226,423	2,439,590	2,388,283	2,010,167	2,026,000
Ireland	965,183	961,950	1,527,554	1,234,681	1,286,089
Italy	1,118,947	1,242,556	1,155,556	1,092,120	1,179,778
Luxembourg	418,812	367,705	394,253	445,527	632,493
Malta	103,619	103,981	112,579	119,253	164,076
Netherlands	7,931,078	7,130,550	7,012,030	6,808,103	8,125,300
Poland	99,297	100,682	244,010	330,391	412,949
Portugal	934,018	863,103	900,546	820,984	584,318
Slovakia	183,000	169,000	178,000	178,750	195,250
Slovenia	226,085	228,191	258,563	233,153	235,778
Spain	6,100,331	6,965,562	7,543,098	16,900,000	17,400,000
Sweden	603,077	656,094	647,421	721,780	804,716
United Kingdom	980,529	1,035,875	1,202,785	1,228,872	1,255,795
EU average	1,715,727	1,732,020	1,817,427	2,209,625	2,362,689
EU weighted average	3,058,194	3,087,354	3,121,299	4,955,656	5,320,943
Auditee average	1,512,564	1,559,068	1,706,289	1,929,847	2,037,200

Some Member States are missing as we could not construct a balanced sample for these Member States.

Table AII-17: Evolution of average non-audit fees per EU Member State before and after the Audit Reform (financial sectors - balanced panel)

	2013	2014	2015	2016	2017
COUNTRY	PRE			TRANS	POST
Austria	2,691,517	2,259,632	2,365,884	4,971,608	2,336,536
Belgium	1,043,190	1,280,817	736,072	916,118	1,347,810
Cyprus	207,174	490,811	711,316	1,750,033	416,310
Czech Republic	14,792	28,735	34,921	138,888	163,664
Denmark	178,241	148,467	154,645	171,566	139,387
Estonia	0	0	0	0	0
Finland	137,941	188,844	238,364	215,546	180,354
France	1,168,378	1,429,534	1,349,120	1,375,682	1,392,418
Germany	1,953,915	1,939,043	2,093,787	2,295,348	1,569,948
Greece	1,263,667	1,300,000	1,326,833	894,333	1,261,850
Ireland	851,423	689,802	1,912,478	832,906	1,691,970
Italy	420,499	654,111	593,556	953,667	778,444
Luxembourg	31,530	31,618	16,652	4,517	45,911
Malta	35,616	52,560	33,572	22,695	30,907
Netherlands	1,407,300	1,040,600	1,078,900	1,067,600	1,228,700
Poland	76,416	93,476	111,729	147,082	189,038
Portugal	637,565	633,667	753,771	855,653	657,734
Slovakia	20,500	12,000	23,750	25,000	36,500
Slovenia	46,616	87,544	103,826	108,576	101,244
Spain	4,409,004	7,918,359	10,700,000	5,790,643	3,032,643
Sweden	309,383	405,257	430,011	477,399	351,407
United Kingdom	501,584	545,443	588,436	540,212	451,176
EU average	791,193	965,015	1,152,619	1,070,685	791,089
EU weighted average	1,311,934	1,596,873	1,814,016	1,871,737	1,288,551
Auditee average	719,117	835,514	934,983	862,357	672,881

Some Member States are missing as we could not construct a balanced sample for these Member States.

Table AII-18: Evolution of median audit fees per EU Member State before and after the Audit Reform (financial sectors – balanced panel)

	2013	2014	2015	2016	2017
COUNTRY	PRE			TRANS	POST
Austria	270,000	314,500	307,000	396,000	440,000
Belgium	3,460,770	3,460,693	3,506,735	3,471,375	5,370,085
Cyprus	49,554	80,060	75,991	98,029	37,541
Czech Republic	593,857	555,507	635,357	633,959	724,252
Denmark	91,851	83,847	77,766	70,513	71,381
Estonia	7,500	7,778	9,820	7,160	5,720
Finland	136,308	144,069	150,000	224,000	219,000
France	195,500	189,000	191,500	208,500	230,500
Germany	318,000	266,000	304,000	321,000	277,000
Greece	2,210,500	2,243,000	2,363,500	2,016,000	2,128,000
Ireland	352,500	352,500	414,425	681,231	764,775
Italy	859,000	1,000,000	1,035,000	1,130,000	850,000
Luxembourg	289,875	169,249	172,459	166,943	205,733
Malta	122,800	96,750	96,750	116,750	97,500
Netherlands	1,570,000	1,649,000	1,999,500	2,598,500	2,665,500
Poland	15,904	18,186	17,469	14,905	16,753
Portugal	674,819	625,006	711,318	604,001	285,536
Slovakia	187,500	174,500	159,500	156,000	193,000
Slovenia	227,730	230,977	287,160	197,000	250,000
Spain	2,240,000	2,347,500	1,884,500	1,989,000	1,699,000
Sweden	107,533	87,598	98,906	108,594	121,760
United Kingdom	30,675	32,023	35,774	36,876	33,185
EU average of median	636,917	642,170	660,656	693,015	758,464
EU weighted median	534,215	624,425	588,728	755,594	730,464
Auditee Median	59,938	67,500	68,899	67,344	66,743

Some Member States are missing as we could not construct a balanced sample for these Member States.

Table AII-19: Evolution of median non-audit fees per EU Member State before and after the Audit Reform (financial sector – balanced panel)

	2013	2014	2015	2016	2017
COUNTRY		PRE		TRANS	POST
Austria	94,000	124,500	168,000	182,500	186,911
Belgium	1,049,500	1,300,000	719,007	1,153,588	1,305,459
Cyprus	94,246	67,623	14,782	34,066	71,269
Czech Republic	14,792	28,735	34,921	138,888	163,664
Denmark	55,245	29,648	26,145	38,816	26,886
Estonia	0	0	0	0	0
Finland	73,843	82,048	179,000	115,000	130,000
France	4,500	7,500	10,000	13,000	10,000
Germany	100,000	101,000	102,000	98,000	65,000
Greece	1,467,000	1,420,500	955,500	875,500	1,202,500
Ireland	319,648	365,308	840,500	500,000	538,000
Italy	250,000	363,000	474,000	451,000	440,000
Luxembourg	0	0	0	0	12,000
Malta	33,000	55,000	22,000	1,298	3,536
Netherlands	706,000	544,500	611,500	608,500	972,500
Poland	4,917	2,632	3,107	3,325	0
Portugal	403,406	297,602	479,606	456,870	166,508
Slovakia	9,000	8,000	10,000	9,000	36,500
Slovenia	23,000	30,000	63,827	50,275	94,101
Spain	1,045,675	1,255,173	651,500	672,000	1,253,000
Sweden	55,965	43,910	60,343	68,961	44,305
United Kingdom	8,589	8,183	7,688	6,760	4,736
EU average of median	264,197	278,857	246,974	248,970	305,767
EU weighted median	211,236	257,812	195,010	233,455	349,509
Auditee Median	14,758	13,954	14,932	13,555	11,000

Some Member States are missing as we could not construct a balanced sample for these Member States.

Table AII-20: Static measures of concentration, competition and costs split based on the MFR split (all sectors)

		2013	2014	2015	2016	2017
		PRE			TRANS	POST
	Concentration					
Rotation period ≥ 20 years	**HHI**	0.2586	0.2533	0.2634	0.2670	0.2625
	Combined B4 market share	90.20%	90.18%	90.67%	90.53%	90.91%
Rotation period < 20 years	**HHI**	0.3069	0.2952	0.2835	0.2604	0.2577
	Combined B4 market share	95.07%	95.08%	94.66%	85.99%	86.51%
	Market share evolution of …					
Rotation period ≥ 20 years	**leader 2013**	38.03%	36.61%	38.94%	38.79%	36.58%
	n2 in 2013	23.11%	23.16%	21.44%	20.27%	22.57%
	n3 in 2013	17.98%	18.12%	17.94%	17.11%	16.84%
	n4 in 2013	11.15%	12.02%	11.89%	14.24%	14.47%
Rotation period < 20 years	**leader 2013**	42.00%	40.38%	39.96%	32.24%	29.57%
	n2 in 2013	27.38%	26.43%	23.99%	21.73%	15.88%
	n3 in 2013	17.78%	19.05%	18.11%	25.29%	24.50%
	n4 in 2013	9.62%	10.15%	13.19%	16.12%	20.67%
	Costs [€]					
Rotation period ≥ 20 years	**Average fees**	1,362,143	1,385,791	1,456,995	1,441,348	1,535,994
	Average non-audit fees	495,166	524,459	538,396	526,306	449,582
Rotation period < 20 years	**Average fees**	1,957,745	2,002,716	2,199,082	2,461,455	2,548,192
	Average non-audit fees	871,087	903,661	1,092,302	936,495	756,597

Table AII-21: Dynamic measures of competition based on the MFR split (all sectors)

	Rotation period ≥ 20 years				Rotation period < 20 years			
	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017
Market share mobility	2.66%	4.63%	5.64%	5.84%	4.99%	6.10%	14.60%	12.55%
Percentage of PIE clients having different auditors in t and t-1	5.09%	8.72%	9.96%	10.40%	9.84%	17.21%	18.09%	16.67%
Big 4 to Big 4 (as a % of total switches)	37.40%	22.51%	25.50%	34.14%	51.47%	49.04%	71.45%	61.58%
Big 4 to Non-Big 4 (as a % of total switches)	17.11%	14.09%	10.43%	14.99%	16.19%	13.41%	3.05%	8.45%
Non-Big 4 to Big 4 (as a % of total switches)	7.45%	15.30%	14.32%	9.35%	11.46%	9.69%	6.73%	5.16%
Non-Big 4 to Non-Big 4 (as a % of total switches)	38.04%	48.08%	49.74%	41.45%	20.87%	27.83%	18.76%	24.80%

Table AII-22: Static measures of concentration, competition and costs split based on the MFR split (financial firms)

		2013	2014	2015	2016	2017
		PRE			TRANS	POST
	Concentration					
Rotation period ≥ 17.5 years	**HHI**	0.3362	0.3344	0.3687	0.3817	0.3398
	Combined B4 market share	91.69%	91.75%	92.42%	92.25%	92.73%
Rotation period < 17.5 years	**HHI**	0.5393	0.4328	0.4222	0.3611	0.3501
	Combined B4 market share	93.87%	95.34%	94.88%	74.66%	77.13%
	Market share evolution of..					
Rotation period ≥ 17.5 years	**leader 2013**	43.27%	42.94%	49.83%	51.38%	40.30%
	n2 in 2013	24.57%	23.31%	19.27%	18.63%	28.96%
	n3 in 2013	17.99%	19.98%	17.71%	10.66%	12.45%
	n4 in 2013	9.81%	9.33%	8.79%	14.79%	14.40%
Rotation period < 17.5 years	**leader 2013**	67.79%	48.27%	49.29%	25.49%	20.62%
	n2 in 2013	16.47%	19.93%	18.45%	17.05%	15.36%
	n3 in 2013	8.14%	13.11%	11.71%	30.47%	26.70%
	n4 in 2013	2.95%	10.27%	9.42%	16.80%	19.79%
	Costs [€]					
Rotation period ≥ 17.5 years	**Average fees**	2,398,903	2,451,759	2,526,238	2,564,405	2,877,301
	Average non-audit fees	988,683	1,081,114	1,066,052	1,099,372	950,255
Rotation period < 17.5 years	**Average fees**	5,054,691	4,449,847	4,417,194	9,020,139	9,533,792
	Average non-audit fees	2,290,818	2,702,478	3,442,897	3,184,549	1,871,775

Table AII- 23: Dynamic measures of competition based on the MFR split (financial sector)

	Rotation period ≥ 17.5 years				Rotation period < 17.5 years			
	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017	2013 - 2014	2014 - 2015	2015 - 2016	2016 - 2017
Market share mobility	0.02754	0.07953	0.08765	0.12463	0.13270	0.10714	0.26084	0.14483
Percentage of PIE clients having different auditors in t and t-1	3.98%	6.53%	8.97%	10.10%	16.49%	9.11%	27.40%	24.35%
Big 4 to Big 4 (as a % of total switches)	30.89%	17.00%	21.30%	29.04%	62.92%	63.63%	86.67%	85.44%
Big 4 to Non-Big 4 (as a % of total switches)	38.22%	23.72%	5.31%	14.52%	35.42%	7.70%	2.10%	1.50%
Non-Big 4 to Big 4 (as a % of total switches)	10.21%	6.16%	18.33%	6.38%	0.21%	0.00%	7.09%	10.74%
Non-Big 4 to Non-Big 4 (as a % of total switches)	20.64%	53.12%	55.06%	50.06%	1.45%	28.65%	4.15%	2.30%

Table AII-24: % of joint audits per Member State (all sectors)

	2013	2014	2015	2016	2017
COUNTRY		**PRE**		**TRANS**	**POST**
Austria	1.37%	4.88%	5.06%	5.41%	3.03%
Belgium	4.62%	4.65%	7.46%	8.87%	11.21%
Bulgaria	0.00%	0.00%	0.00%	1.28%	0.00%
Croatia	0.00%	0.00%	5.88%	6.67%	0.00%
Cyprus	2.78%	1.52%	1.37%	4.69%	3.77%
Czech Republic	0.00%	0.00%	0.00%	5.88%	11.76%
Denmark	11.03%	14.29%	13.50%	11.76%	10.95%
Estonia	0.00%	0.00%	0.00%	0.00%	0.00%
Finland	14.75%	17.02%	20.83%	17.93%	17.97%
France	90.51%	85.87%	85.95%	85.25%	88.55%
Germany	0.84%	1.64%	1.33%	2.28%	1.15%
Greece	0.00%	3.23%	2.13%	0.00%	2.04%
Hungary	0.00%	0.00%	0.00%	0.00%	0.00%
Ireland	4.88%	3.37%	7.87%	6.33%	2.99%
Italy	6.25%	8.61%	6.49%	6.55%	5.18%
Latvia	0.00%	0.00%	0.00%	0.00%	0.00%
Lithuania	0.00%	11.11%	0.00%	0.00%	0.00%
Luxembourg	10.71%	9.38%	9.52%	6.78%	7.14%
Malta	4.35%	3.45%	3.33%	13.79%	9.09%
Netherlands	4.65%	5.33%	6.80%	7.09%	6.56%
Poland	3.03%	2.97%	3.30%	3.35%	2.25%
Portugal	2.78%	3.70%	7.69%	9.62%	8.51%
Romania	0.00%	0.00%	6.67%	6.67%	0.00%
Slovakia	0.00%	0.00%	0.00%	0.00%	0.00%
Slovenia	12.50%	3.45%	5.71%	4.17%	4.76%
Spain	30.46%	33.73%	31.72%	33.52%	33.13%
Sweden	35.48%	33.70%	34.35%	35.83%	37.58%
United Kingdom	4.07%	4.38%	3.15%	4.13%	2.53%
EU Average	**8.75%**	**9.15%**	**9.65%**	**10.28%**	**9.65%**
EU Weighted average	**29.50%**	**27.33%**	**25.60%**	**25.42%**	**26.40%**

Table AII-25: % of joint audits per member state (financial sector)

	2013	2014	2015	2016	2017
COUNTRY	PRE			TRANS	POST
Austria	10.00%	15.38%	23.08%	16.67%	16.67%
Belgium	12.50%	9.52%	9.52%	10.00%	18.75%
Bulgaria		0.00%	0.00%	0.00%	0.00%
Croatia		0.00%	0.00%	0.00%	0.00%
Cyprus	0.00%	0.00%	0.00%	7.14%	10.00%
Czech Republic	0.00%	0.00%	0.00%	0.00%	20.00%
Denmark	7.50%	11.36%	16.67%	13.64%	8.33%
Estonia	0.00%	0.00%	0.00%	0.00%	0.00%
Finland	0.00%	6.25%	11.76%	16.67%	13.33%
France	90.00%	92.19%	92.06%	91.80%	93.33%
Germany	0.00%	1.04%	0.00%	1.16%	0.00%
Greece	0.00%	0.00%	0.00%	0.00%	0.00%
Hungary		0.00%	0.00%	0.00%	0.00%
Ireland	0.00%	0.00%	0.00%	0.00%	0.00%
Italy	7.14%	0.00%	1.59%	3.45%	3.85%
Latvia					
Lithuania	0.00%	0.00%	0.00%	0.00%	0.00%
Luxembourg	0.00%	0.00%	0.00%	0.00%	0.00%
Malta	14.29%	11.11%	0.00%	11.11%	0.00%
Netherlands	7.14%	0.00%	5.00%	5.26%	0.00%
Poland	6.67%	5.32%	7.45%	4.65%	4.05%
Portugal	0.00%	0.00%	0.00%	14.29%	0.00%
Romania	0.00%	0.00%	0.00%	0.00%	0.00%
Slovakia	0.00%	0.00%	0.00%	0.00%	0.00%
Slovenia	16.67%	9.09%	7.69%	10.00%	11.11%
Spain	38.89%	47.37%	40.00%	44.44%	53.33%
Sweden	35.00%	32.56%	30.95%	36.36%	35.00%
United Kingdom	2.62%	3.16%	1.47%	3.61%	1.81%
EU Average	**10.35%**	**9.05%**	**9.16%**	**10.75%**	**10.73%**
EU Weighted average	**25.21%**	**24.02%**	**22.15%**	**24.90%**	**27.39%**

Table AII-26: Static measures of concentration, competition and costs for EU Member States that do and do not allow for a joint audit extension (all sectors)

	2013	2014	2015	2016	2017
% of joint audits (number of clients with joint audits/total number of clients)					
No extension joint audit	4.44%	5.06%	4.73%	5.08%	3.66%
Extension joint audit excluding France	14.03%	14.91%	14.61%	17.01%	16.43%

Table AII- 27: Static measures of concentration, competition and costs for EU Member States that do and do not allow for a joint audit extension (financial sector)

	2013	2014	2015	2016	2017
% of joint audits (number of clients with joint audits/total number of clients)					
No extension joint audit	3.67%	2.53%	2.78%	4.28%	2.35%
Extension joint audit excluding France	14.72%	18.29%	15.86%	24.91%	29.18%

Table AII- 28: Audit fees, non-audit fees and total fees of non-financial PIEs

	DEPENDENT = AUDIT FEE				DEPENDENT = NON-AUDIT FEE				DEPENDENT = TOTAL FEE			
	coefficient		t-stat	p-value	coefficient		t-stat	p-value	coefficient		t-stat	p-value
CONSTANT	-0.286	***	-2.98	0.003	-12.639	***	-27.55	0.000	-0.266	***	-2.74	0.006
POSTREFORM	0.031	***	2.89	0.004	-0.322	***	-5.41	0.000	-0.016		-1.41	0.159
JOINT	0.428	***	23.31	0.000	1.006	***	10.44	0.000	0.410	***	21.73	0.000
SIZE	0.577	***	157.42	0.000	1.061	***	68.70	0.000	0.597	***	161.48	0.000
DEBT	0.000	***	5.18	0.000	0.000	***	3.05	0.002	0.000	***	5.22	0.000
ROA	-0.002	***	-4.35	0.000	-0.004	***	-3.17	0.002	-0.002	***	-4.16	0.000
LOSS	0.172	***	13.78	0.000	0.472	***	6.84	0.000	0.208	***	15.94	0.000
YEAREND	0.154	***	10.71	0.000	0.207	**	2.49	0.013	0.147	***	9.50	0.000
INITIAL	-0.007		-0.37	0.712	-0.663	***	-6.16	0.000	-0.049	**	-2.52	0.012
BIG4	0.214	***	14.74	0.000	0.915	***	10.45	0.000	0.285	***	18.57	0.000
LEADER	0.154	***	10.87	0.000	0.424	***	5.87	0.000	0.177	***	12.01	0.000
Industry fixed effects	Included				Included				Included			
Country fixed effects	Included				Included				Included			
N	**18,442**				**18,442**				**18,442**			
Adjusted R^2	**86.3**				**44.8**				**86.1**			

Table AII- 29: Audit fees, non-audit fees and total fees of non-financial PIEs (Big 4 clients)

	DEPENDENT = AUDIT FEE				DEPENDENT = NON-AUDIT FEE				DEPENDENT = TOTAL FEE			
	coefficient		t-stat	p-value	coefficient		t-stat	p-value	coefficient		t-stat	p-value
CONSTANT	-0.613	***	-5.69	0.000	-12.368	***	-21.42	-0.613	-0.554	***	-4.97	0.000
POSTREFORM	0.033	**	2.52	0.012	-0.311	***	-4.41	0.033	-0.023	*	-1.67	0.095
JOINT	0.362	***	16.87	0.000	0.842	***	8.04	0.362	0.350	***	15.98	0.000
SIZE	0.614	***	160.72	0.000	1.094	***	61.56	0.614	0.629	***	161.43	0.000
DEBT	0.023		0.96	0.339	-0.073		-0.58	0.023	0.043	*	1.89	0.059
ROA	-0.034	***	-4.83	0.000	-0.062	***	-3.32	-0.034	-0.033	***	-4.72	0.000
LOSS	0.155	***	9.89	0.000	0.484	***	5.54	0.155	0.207	***	12.58	0.000
YEAREND	0.179	***	10.22	0.000	0.193	**	2.00	0.179	0.159	***	8.54	0.000
INITIAL	-0.041	*	-1.75	0.080	-0.775	***	-5.59	-0.041	-0.090	***	-3.67	0.000
BIG4												
LEADER	0.138	***	10.01	0.000	0.409	***	5.65	0.138	0.160	***	11.09	0.000
Industry fixed effects	Included				Included				Included			
Country fixed effects	Included				Included				Included			
N	12,144				12,144				12,144			
Adjusted R^2	81.1				35.8				80.1			

Table AII- 30: Audit fees, non-audit fees and total fees of non-financial PIEs (Non-Big 4 clients)

	DEPENDENT = AUDIT FEE				DEPENDENT = NON-AUDIT FEE				DEPENDENT = TOTAL FEE			
	coefficient		t-stat	p-value	coefficient		t-stat	p-value	coefficient		t-stat	p-value
constant	2.158	***	10.73	0.000	-11.359	***	-12.16	0.000	2.160	***	10.54	0.000
POSTREFORM	0.012		0.69	0.491	-0.362	***	-3.43	0.001	-0.016		-0.84	0.399
JOINT	0.604	***	17.75	0.000	0.908	***	4.00	0.000	0.572	***	15.86	0.000
SIZE	0.454	***	57.56	0.000	1.015	***	31.17	0.000	0.490	***	60.36	0.000
DEBT	0.000	***	5.16	0.000	0.000	***	4.04	0.000	0.000	***	5.25	0.000
ROA	-0.002	***	-5.55	0.000	-0.003	***	-3.53	0.000	-0.002	***	-5.07	0.000
LOSS	0.131	***	6.73	0.000	0.320	***	2.87	0.004	0.144	***	7.01	0.000
YEAREND	0.074	***	3.27	0.001	0.089		0.58	0.564	0.090	***	3.49	0.000
INITIAL	0.039		1.38	0.168	-0.365	**	-2.16	0.031	0.010		0.34	0.735
BIG4	0.000		.	.	0.000		.	.				
LEADER	1.382	***	7.27	0.000	2.064	***	2.91	0.004	1.409	***	7.36	0.000
Industry fixed effects												
Country fixed effects												
N	6,298				6,298				6,298			
Adjusted R^2	83.5				35.0				82.6			

Table AII- 31: Audit fees, non-audit fees and total fees of non-financial PIEs with NAS ≤ 70% fee in 2015

	DEPENDENT = AUDIT FEE				DEPENDENT = NON-AUDIT FEE				DEPENDENT = TOTAL FEE			
	coefficient		t-stat	p-value	coefficient		t-stat	p-value	coefficient		t-stat	p-value
constant	-0.200	*	-1.89	0.058	-14.110	***	-27.50	0.000	-0.352	***	-3.23	0.001
POSTREFORM	0.011		0.90	0.370	-0.180	***	-2.69	0.007	0.006		0.45	0.655
JOINT	0.422	***	20.66	0.000	1.190	***	10.88	0.000	0.419	***	19.90	0.000
SIZE	0.578	***	138.63	0.000	1.104	***	63.10	0.000	0.596	***	140.75	0.000
DEBT	0.000	***	5.28	0.000	0.000	***	3.41	0.001	0.000	***	5.32	0.000
ROA	-0.002	***	-4.92	0.000	-0.004	***	-3.54	0.000	-0.002	***	-4.59	0.000
LOSS	0.172	***	12.42	0.000	0.462	***	5.96	0.000	0.197	***	13.75	0.000
YEAREND	0.135	***	8.26	0.000	0.254	***	2.62	0.009	0.139	***	8.00	0.000
INITIAL	0.003		0.15	0.877	-0.535	***	-4.61	0.000	-0.028		-1.33	0.183
BIG4	0.246	***	15.41	0.000	0.784	***	8.07	0.000	0.283	***	16.87	0.000
LEADER	0.145	***	8.86	0.000	0.347	***	4.04	0.000	0.160	***	9.48	0.000
Industry fixed effects	Included				Included				Included			
Country fixed effects	Included				Included				Included			
N	15,063				15,063				15,063			
Adjusted R^2	87.0				45.0				86.8			

Table AII- 32: Audit fees, non-audit fees and total fees of non-financial PIEs with NAS > 70% fee in 2015

	DEPENDENT = AUDIT FEE				DEPENDENT = NON-AUDIT FEE				DEPENDENT = TOTAL FEE			
	coefficient		t-stat	p-value	coefficient		t-stat	p-value	coefficient		t-stat	p-value
constant	-0.333	*	-1.81	0.070	-3.803	***	-2.61	0.009	0.549	**	2.37	0.018
POSTREFORM	0.130	***	5.60	0.000	-1.032	***	-10.16	0.000	-0.118	***	-4.67	0.000
JOINT	0.396	***	9.69	0.000	0.721	***	4.35	0.000	0.392	***	9.06	0.000
SIZE	0.589	***	80.71	0.000	0.696	***	26.54	0.000	0.593	***	80.08	0.000
DEBT	0.003		0.15	0.883	0.014		0.19	0.850	0.014		0.53	0.593
ROA	-0.035	***	-6.53	0.000	-0.038	***	-4.40	0.000	-0.032	***	-8.69	0.000
LOSS	0.185	***	6.66	0.000	0.257	**	2.30	0.021	0.237	***	7.85	0.000
YEAREND	0.188	***	6.54	0.000	0.314	***	2.58	0.010	0.207	***	6.36	0.000
INITIAL	-0.071	*	-1.82	0.068	-1.134	***	-4.43	0.000	-0.154	***	-3.26	0.001
BIG4	0.132	***	3.71	0.000	0.193		1.16	0.245	0.196	***	4.98	0.000
LEADER	0.189	***	6.91	0.000	0.432	***	4.18	0.000	0.194	***	6.54	0.000
Industry fixed effects	Included				Included				Included			
Country fixed effects	Included				Included				Included			
N	**3,379**				**3,379**				**3,379**			
Adjusted R^2	**84.3**				**34.7**				**82.2**			

Table AII- 33: Audit fees, non-audit fees and total fees of non-financial PIEs in Member States with maximum tenure of less than 20 year

	DEPENDENT = AUDIT FEE				DEPENDENT = NON-AUDIT FEE				DEPENDENT = TOTAL FEE			
	coefficient		t-stat	p-value	coefficient		t-stat	p-value	coefficient		t-stat	p-value
constant	-0.057		-0.33	0.744	-13.120	***	-16.06	0.000	-0.363	*	-1.89	0.059
POSTREFORM	0.039	*	1.74	0.083	-0.460	***	-4.21	0.000	-0.010		-0.41	0.682
JOINT	0.484	***	10.98	0.000	0.912	***	4.63	0.000	-0.109	**	-2.05	0.041
SIZE	0.564	***	75.44	0.000	1.195	***	38.30	0.000	0.605	***	78.51	0.000
DEBT	0.019	***	5.22	0.000	0.067	***	7.67	0.000	0.022	***	5.48	0.000
ROA	-0.002	***	-5.89	0.000	-0.004	***	-3.82	0.000	-0.003	***	-5.72	0.000
LOSS	0.171	***	6.84	0.000	0.105		0.83	0.407	0.170	***	6.52	0.000
YEAREND	0.081	*	1.76	0.078	0.018		0.09	0.932	0.063		1.33	0.183
INITIAL	0.004		0.13	0.894	-0.527	***	-3.11	0.002	-0.050		-1.40	0.161
BIG4	0.449	***	14.25	0.000	1.280	***	7.35	0.000	0.520	***	15.95	0.000
LEADER	0.164	***	4.61	0.000	-0.001		-0.01	0.994	0.143	***	3.89	0.000
Industry fixed effects	Included				Included				Included			
Country fixed effects	Included				Included				Included			
N	**5,366**				**5,366**				**5,366**			
Adjusted R^2	**87.9**				**51.0**				**87.7**			

Table AII- 34: Audit fees, non-audit fees and total fees of non-financial PIEs with in Member States with maximum tenure of more than or equal to 20 year

	DEPENDENT = AUDIT FEE				DEPENDENT = NON-AUDIT FEE				DEPENDENT = TOTAL FEE			
	coefficient		t-stat	p-value	coefficient		t-stat	p-value	coefficient		t-stat	p-value
constant	-1.178	***	-6.32	0.000	-17.417	***	-25.13	0.000	-1.511	***	-7.24	0.000
POSTREFORM	0.025	**	2.04	0.041	-0.273	***	-3.88	0.000	-0.019		-1.38	0.167
JOINT	0.409	***	20.63	0.000	1.069	***	9.65	0.000	-0.182	***	-6.82	0.000
SIZE	0.587	***	142.13	0.000	1.026	***	58.05	0.000	0.603	***	137.78	0.000
DEBT	-0.001	***	-2.88	0.004	-0.002	***	-5.60	0.000	-0.001	***	-3.09	0.002
ROA	-0.046	***	-3.93	0.000	-0.089	***	-6.14	0.000	-0.047	***	-4.16	0.000
LOSS	0.156	***	10.90	0.000	0.600	***	7.28	0.000	0.212	***	12.91	0.000
YEAREND	0.168	***	11.26	0.000	0.243	***	2.70	0.007	0.172	***	9.99	0.000
INITIAL	-0.018		-0.86	0.389	-0.732	***	-5.30	0.000	-0.190	***	-6.58	0.000
BIG4	0.118	***	7.41	0.000	0.742	***	7.37	0.000	0.248	***	13.21	0.000
LEADER	0.152	***	10.14	0.000	0.562	***	6.95	0.000	0.179	***	10.37	0.000
Industry fixed effects	Included				Included				Included			
Country fixed effects	Included				Included				Included			
N	13,076				13,076				13,076			
Adjusted R^2	83.4				38.9				79.9			

Table AII- 35: Audit fees, non-audit fees and total fees of financial PIEs

	DEPENDENT = AUDIT FEE				DEPENDENT = NON-AUDIT FEE				DEPENDENT = TOTAL FEE			
	coefficient		t-stat	p-value	coefficient		t-stat	p-value	coefficient		t-stat	p-value
constant	2.312	***	8.67	0.000	-8.604	***	-10.49	0.000	2.683	***	10.92	0.000
POSTREFORM	0.029		0.88	0.380	-0.484	***	-3.41	0.001	-0.022		-0.61	0.545
JOINT	0.963	***	12.09	0.000	1.095	***	3.45	0.001	-0.065		-0.66	0.509
SIZE	0.441	***	41.27	0.000	0.795	***	23.46	0.000	0.445	***	37.73	0.000
ROA	-0.026	***	-4.27	0.000	-0.014		-1.49	0.136	-0.025	***	-4.07	0.000
LOSS	0.254	***	6.38	0.000	0.846	***	4.91	0.000	0.295	***	6.71	0.000
YEAREND	0.573	***	11.97	0.000	0.977	***	4.81	0.000	0.594	***	11.12	0.000
INITIAL	-0.149	***	-2.6	0.009	-0.954	***	-3.5	0.000	-0.212	***	-3.13	0.002
BIG4	0.085	*	1.87	0.061	0.901	***	4.43	0.000	0.271	***	5.18	0.000
LEADER	0.064		1.37	0.172	-0.371	**	-2	0.046	0.079		1.52	0.129
BANK	0.153	**	2.27	0.023	1.271	***	5.48	0.000	0.32	***	4.18	0.000
INSURANCE	0.676	***	9.98	0.000	1.751	***	7.3	0.000	0.799	***	10.41	0.000
Industry fixed effects	No				No				No			
Country fixed effects	Included				Included				Included			
N	**3,722**				**3,722**				**3,722**			
Adjusted R^2	**79.2**				**43.4**				**75.3**			

Table AII- 36: Audit fees, non-audit fees and total fees of financial PIEs (Big 4 clients)

	DEPENDENT = AUDIT FEE				DEPENDENT = NON-AUDIT FEE				DEPENDENT = TOTAL FEE			
	coefficient		t-stat	p-value	coefficient		t-stat	p-value	coefficient		t-stat	p-value
constant	1.7	***	4.6	0.000	-8.378	***	-8.41	0.000	2.11	***	5.85	0.000
POSTREFORM	-0.005		-0.12	0.901	-0.647	***	-3.74	0.000	-0.081	*	-1.7	0.090
JOINT	0.883	***	8.82	0.000	0.941	**	2.5	0.013	0.116		0.97	0.333
SIZE	0.473	***	31.46	0.000	0.862	***	19.43	0.000	0.483	***	28.85	0.000
ROA	-0.975	***	-4.19	0.000	-1.324		-1.56	0.119	-0.887	***	-3.51	0.000
LOSS	0.026		0.38	0.701	0.288		1.1	0.270	0.074		1.03	0.302
YEAREND	0.717	***	10.63	0.000	1.201	***	4.82	0.000	0.755	***	10.15	0.000
INITIAL	-0.221	***	-2.85	0.004	-1.052	***	-2.74	0.006	-0.332	***	-3.6	0.000
LEADER	0.022		0.46	0.643	-0.481	**	-2.56	0.010	0.032		0.63	0.529
BANK	-0.054		-0.63	0.531	0.923	***	3.41	0.001	0.114		1.16	0.244
INSURANCE	0.521	***	6.31	0.000	1.446	***	5.37	0.000	0.661	***	7.26	0.000
Industry fixed effects	No				No				No			
Country fixed effects	Included				Included				Included			
N	2,368				2,368				2,368			
Adjusted R^2	73.9				39.8				69.8			

Table AII- 37: Audit fees, non-audit fees and total fees of financial PIEs (Non-Big 4 clients)

	DEPENDENT = AUDIT FEE				DEPENDENT = NON-AUDIT FEE				DEPENDENT = TOTAL FEE			
	coefficient		t-stat	p-value	coefficient		t-stat	p-value	coefficient		t-stat	p-value
constant	4.724	***	11.06	0.000	-8.703	***	-3.7	0.000	5.244	***	11.85	0.000
POSTREFORM	0.137	***	3	0.003	-0.122		-0.5	0.618	0.127	**	2.43	0.015
JOINT	1.402	***	9.28	0.000	2.553	***	3.76	0.000	0.035		0.2	0.839
SIZE	0.363	***	25.6	0.000	0.654	***	11.12	0.000	0.363	***	24.49	0.000
ROA	-0.019	***	-4.41	0.000	0.003		0.36	0.719	-0.017	***	-4.15	0.000
LOSS	0.254	***	4.77	0.000	1.096	***	4.06	0.000	0.291	***	4.93	0.000
YEAREND	0.247	***	4.52	0.000	0.377		1.05	0.294	0.226	***	3.56	0.000
INITIAL	-0.007		-0.09	0.930	-0.825	**	-2.14	0.033	-0.037		-0.42	0.678
LEADER	0.704	*	1.94	0.052	-1.099	***	-3	0.003	0.718	**	1.99	0.047
BANK	-0.114		-0.79	0.429	0.734		1.14	0.255	0.009		0.05	0.961
INSURANCE	0.617	***	3.83	0.000	1.611	**	2.46	0.014	0.666	***	3.62	0.000
Industry fixed effects	No				No				No			
Country fixed effects	Included				Included				Included			
N	**1,354**				**1,354**				**1,354**			
Adjusted R^2	**80.3**				**28.1**				**70.5**			

Table AII- 38: Audit fees, non-audit fees and total fees of financial PIEs with NAS < 70% fee in 2015

	DEPENDENT = AUDIT FEE				DEPENDENT = NON-AUDIT FEE				DEPENDENT = TOTAL FEE			
	coefficient		t-stat	p-value	coefficient		t-stat	p-value	coefficient		t-stat	p-value
constant	2.928	***	12.52	0.000	-8.534	***	-7.06	0.000	3.074	***	12.44	0.000
POSTREFORM	0.004		0.12	0.905	-0.388	**	-2.4	0.017	0.000		0.01	0.991
JOINT	0.943	***	10.1	0.000	1.242	***	3.37	0.001	-0.131		-1.13	0.259
SIZE	0.432	***	37.54	0.000	0.779	***	20.07	0.000	0.431	***	34.18	0.000
ROA	-0.025	***	-4.32	0.000	-0.019	*	-1.79	0.074	-0.024	***	-4.16	0.000
LOSS	0.264	***	5.84	0.000	0.89	***	4.53	0.000	0.3	***	6.02	0.000
YEAREND	0.588	***	10.74	0.000	1.126	***	4.81	0.000	0.595	***	9.95	0.000
INITIAL	-0.153	**	-2.49	0.013	-0.865	***	-2.91	0.004	-0.218	***	-3.03	0.002
BIG4	0.133	***	2.79	0.005	0.66	***	2.95	0.003	0.27	***	4.92	0.000
LEADER	-0.032		-0.62	0.538	-0.633	***	-2.84	0.004	0.000		-0.01	0.995
BANK	0.087		1.11	0.267	1.013	***	3.59	0.000	0.193	**	2.2	0.028
INSURANCE	0.811	***	10.19	0.000	2.106	***	6.85	0.000	0.925	***	10	0.000
Industry fixed effects	No				No				No			
Country fixed effects	Included				Included				Included			
N	2,962				2.962				2.962			
Adjusted R^2	79.2				40				74.4			

Table AII- 39: Audit fees, non-audit fees and total fees of financial PIEs with NAS >70% fee in 2015

	DEPENDENT = AUDIT FEE				DEPENDENT = NON-AUDIT FEE				DEPENDENT = TOTAL FEE			
	coefficient		t-stat	p-value	coefficient		t-stat	p-value	coefficient		t-stat	p-value
constant	2.052	***	3.74	0.000	0.879		0.89	0.372	3.417	***	6.44	0.000
POSTREFORM	0.127	*	1.83	0.068	-0.818	***	-4.48	0.000	-0.107		-1.45	0.147
JOINT	1.069	***	6.19	0.000	1.236	**	2.09	0.037	0.435	**	2.39	0.017
SIZE	0.451	***	17.69	0.000	0.532	***	10.16	0.000	0.435	***	15.98	0.000
ROA	-0.232	***	-4.01	0.000	0.343		0.84	0.398	-0.203	**	-2.37	0.018
LOSS	0.122		1.41	0.160	0.152		0.59	0.558	0.084		0.91	0.365
YEAREND	0.34	***	3.24	0.001	-0.151		-0.57	0.566	0.348	***	3.02	0.003
INITIAL	-0.169		-1.22	0.222	-1.475	***	-2.76	0.006	-0.284	**	-2.02	0.044
BIG4	-0.12		-0.95	0.344	0.427		1.12	0.263	0.089		0.69	0.491
LEADER	0.264	***	3.06	0.002	0.015		0.06	0.949	0.207	**	2.24	0.025
BANK	0.296	***	2.9	0.004	0.799	***	3.02	0.003	0.382	***	3.3	0.001
INSURANCE	0.238	*	1.87	0.062	0.583	**	2.03	0.043	0.313	**	2.34	0.019
Industry fixed effects	No				No				No			
Country fixed effects	Included				Included				Included			
N	**760**				**760**				**760**			
Adjusted R^2	**78.4**				**45.1**				**75.3**			

Table AII- 40: Audit fees, non-audit fees and total fees of financial PIEs with in Member States with maximum tenure of less than 17.5 years

	DEPENDENT = AUDIT FEE				DEPENDENT = NON-AUDIT FEE				DEPENDENT = TOTAL FEE			
	coefficient		t-stat	p-value	coefficient		t-stat	p-value	coefficient		t-stat	p-value
constant	3.052	***	6.88	0.000	-8.562	***	-5.73	0.000	3.159	***	6.69	0.000
POSTREFORM	0.16	***	2.93	0.004	-0.019		-0.09	0.930	0.117	*	1.95	0.052
JOINT	1.022	***	9.09	0.000	1.557	***	3.88	0.000	-0.074		-0.49	0.622
SIZE	0.44	***	18.62	0.000	0.746	***	11.06	0.000	0.449	***	17.22	0.000
ROA	-0.017	***	-4	0.000	-0.023	***	-2.75	0.006	-0.017	***	-4	0.000
LOSS	0.061		1.02	0.307	0.772	***	2.97	0.003	0.105	*	1.67	0.095
YEAREND	-0.406	***	-3.72	0.000	0.509		0.68	0.499	-0.32	**	-2.35	0.019
INITIAL	-0.08		-1.04	0.301	-0.149		-0.45	0.653	-0.059		-0.69	0.492
BIG4	0.351	***	3.56	0.000	2.037	***	4.85	0.000	0.664	***	5.75	0.000
LEADER	0.148	*	1.92	0.055	0.23		0.82	0.415	0.177	**	2.17	0.030
BANK	0.147		1.12	0.263	1.438	***	3.3	0.001	0.297	**	2.03	0.043
INSURANCE	0.351	***	3.18	0.001	0.936	**	2.23	0.026	0.442	***	3.56	0.000
Industry fixed effects	No				No				No			
Country fixed effects	Included				Included				Included			
N	1,113				1,113				1,113			
Adjusted R^2	89.1				64.8				87.9			

Table AII- 41: Audit fees, non-audit fees and total fees of financial PIEs with in Member States with maximum tenure of more than or equal to 17.5 years

	DEPENDENT = AUDIT FEE				DEPENDENT = NON-AUDIT FEE				DEPENDENT = TOTAL FEE			
	coefficient		t-stat	p-value	coefficient		t-stat	p-value	coefficient		t-stat	p-value
constant	1.516	***	7.51	0.000	-13.398	***	-21.17	0.000	1.282	***	5.84	0.000
POSTREFORM	-0.024		-0.62	0.536	-0.696	***	-3.89	0.000	-0.078	*	-1.75	0.081
JOINT	0.901	***	8.13	0.000	0.767		1.6	0.110	-0.068		-0.52	0.605
SIZE	0.442	***	37.15	0.000	0.819	***	20.76	0.000	0.445	***	33.84	0.000
ROA	-0.03	***	-3.43	0.001	-0.01		-0.82	0.415	-0.028	***	-3.24	0.001
LOSS	0.359	***	6.81	0.000	0.941	***	4.2	0.000	0.406	***	6.92	0.000
YEAREND	0.609	***	11.93	0.000	0.98	***	4.59	0.000	0.627	***	10.99	0.000
INITIAL	-0.218	***	-2.68	0.007	-1.699	***	-4.19	0.000	-0.349	***	-3.55	0.000
BIG4	0.018		0.36	0.722	0.593	**	2.56	0.010	0.17	***	2.94	0.003
LEADER	0.026		0.45	0.650	-0.65	***	-2.79	0.005	0.035		0.56	0.577
BANK	0.061		0.73	0.467	0.864	***	3	0.003	0.208	**	2.16	0.031
INSURANCE	0.851	***	10.17	0.000	2.203	***	7.87	0.000	0.984	***	10.46	0.000
Industry fixed effects	No				No				No			
Country fixed effects	Included				Included				Included			
N	**2,609**				**2,609**				**2,609**			
Adjusted R^2	**71.2**				**32.6**				**64.8**			

Table AII- 42: Number of observations per Member State (audit firm survey)

	Big 4	Non-Big 4	Total
Austria	2	0	2
Belgium	2	3	5
Bulgaria	2	1	3
Croatia	3	0	3
Cyprus	0	0	0
Czech Republic	2	0	2
Denmark	2	1	3
Estonia	1	0	1
Finland	0	0	0
France	3	0	3
Germany	1	2	3
Greece	3	1	4
Hungary	3	1	4
Ireland	1	2	3
Italy	3	2	5
Latvia	2	1	3
Lithuania	3	1	4
Luxembourg	2	1	3
Malta	5	0	5
Netherlands	3	3	6
Poland	1	1	2
Portugal	2	0	2
Romania	1	2	3
Slovakia	3	0	3
Slovenia	4	0	4
Spain	2	1	3
Sweden	1	1	2
United Kingdom	2	0	2
TOTAL	**61**	**24**	**85**

Table AII- 43: Audit Firm Survey: Did your audit firm experience more competition from other audit firms for statutory audit engagements of PIE clients after the Audit Reform?

	Overall	B4	NB4
Agree	**60%**	**62%**	**55%**
Strongly agree	14%	16%	9%
Agree	22%	24%	18%
Somewhat agree	23%	22%	27%
Neutral – Neither agree nor disagree	**31%**	**33%**	**27%**
Disagree	**9%**	**5%**	**18%**
Somewhat disagree	1%	2%	0%
Disagree	8%	4%	18%
Strongly disagree	0%	0%	0%

Table AII- 44: Audit Reform Survey: the Audit Reform has resulted in PIE clients opting more for "audit-only firms" and "consulting-only suppliers"

	Overall	B4	NB4
Strongly agree	9%	9%	9%
Agree	21%	21%	23%
Somewhat agree	31%	36%	18%
Neither agree nor disagree	17%	17%	18%
Somewhat disagree	4%	4%	5%
Disagree	9%	8%	14%
Strongly disagree	8%	6%	14%

Table AII- 45: Audit Reform Survey: Overall, the Audit Reform resulted in higher audit quality?

	Overall	B4	NB4
Strongly agree	3%	2%	5%
Agree	17%	17%	18%
Somewhat agree	25%	26%	23%
Neither agree nor disagree	32%	36%	23%
Somewhat disagree	8%	9%	5%
Disagree	8%	9%	5%
Strongly disagree	7%	0%	23%

Table AII- 46: Audit Reform Survey: The increase in audit quality is a result of (average rates)

	Overall	B4	NB4
Enhanced auditor independence due to the mandatory audit firm rotation regime	2.3	2.0	2.8
Enhanced auditor independence due to the prohibition and capping of consulting services by the incumbent audit firm	2.0	2.0	1.9
More competition between possible suppliers of audit services (related to the statutory audit)	1.8	1.6	2.2
Enhanced audit quality procedures within audit firms	3.2	3.3	3.0
Enhanced communication between audit firms and audit committees	3.6	3.6	3.5
Enhanced communication between audit firms and bank supervisors	2.3	2.5	1.9
Improved supervision of statutory audit firms by National Competent Authorities	3.0	3.0	3.1

Table AII- 47: Audit Firm Survey: The effect of the audit reform on total turnover from non-audit services

	Overall	Big 4	Non Big 4
Did your accountancy firm's (including its network) total turnover from providing non-audit services (both from audit clients AND non-audit clients) change after the Audit Reform (due to the prohibition and capping)?			
Yes, it increased	30%	28%	32%
Yes, it decreased	8%	10%	5%
No, it remained the same	62%	62%	64%
By which percentage did it increase?			
25-30%	4.3%	0%	13%
20-25%	0.0%	0%	0%
15-20%	13.0%	13%	13%
10-15%	17.4%	20%	13%
5 - 10%	26.1%	27%	25%
0 - 5 %	17.4%	13%	25%
By which percentage did it decrease?			
25-30%	0.0%	0%	0%
20-25%	4.3%	7%	0%
15-20%	4.3%	7%	0%
10-15%	0.0%	0%	0%
5 - 10%	4.3%	7%	0%
0 - 5 %	8.7%	7%	13%

ANNEX III. AUDIT FIRM SURVEY

Thank you for agreeing to take part in this important survey that forms an integral component of an independent study commissioned by the European Parliament related to the Audit Reform (i.e. Regulation 537/2014 and Directive 2014/56/EU) which was voted in 2014 and became applicable as of 17 June, 2016. The new EU rules on statutory audit are applicable throughout the European Union and brought significant changes for businesses and their professional service providers. They impact all EU public interest entities and cover several areas, from mandatory audit firm rotation to restrictions on the additional services that can be provided to a business by their statutory audit firm. The goal of this survey is to gain your thoughts and opinion on a couple of aspects of the new Audit Reform and how it has affected your audit firm. This survey should only take less than 10 minutes to complete. Be assured that all answers you provide will be kept strictly confidential. Please, click 'Start' to begin

Q1 Please, name the accounting firm you work for:____________________________________

Q2 Select in which EU Member State your audit firm is located:

List of all 28 Member States is given and respondent has to select one.

Q3 Did the average number of **<u>AUDIT HOURS per audit engagement</u>** (for PIE clients) change due to the EU Audit Reform ? (Note that the question relates to the effects from regulatory changes related to the EU Audit Reform, and NOT to other regulatory changes, such as for example from the PCAOB in the US).

O Yes O No O n/a

Display This Question: If Q3= Yes

Q4 By which percentage did the average number of AUDIT HOURS spent on audit engagements (PIE clients) change?

O Increased with more than 20%
O Increased between 15% and 20%
O Increased between 10% and 15%
O Increased between 5% and 10%
O No significant increase or decrease
O Decreased with more than 20%
O Decreased between 15% and 20%
O Decreased between 10% and 15%
O Decreased between 5% and 10%
O n/a

Display This Question:

If Q4 = Increased with more than 20% Or Q4 = Increased between 15% and 20%

Or Q4= Increased between 10% and 15% Or Q4 = Increased between 5% and 10%

Q5 The increase in average audit hours is **caused by:**
(Rate all that apply by sliding on the stars; if you erroneously clicked the wrong number of stars, you can correct this by sliding backwards and forwards between zero and five)

More intense contact between the statutory auditor and the audit committee ☆☆☆☆☆
Changes in audit methodology inspired by the Audit Reform ☆☆☆☆☆
More conservative audit approach ☆☆☆☆☆
More new audit clients due to mandatory firm rotation ☆☆☆☆☆
More consultation of experts ☆☆☆☆☆
Others: - please specify ☆☆☆☆☆

Display This Question:

If Q4 = Increased with more than 20% Or Q4 = Increased between 15% and 20%

Or Q4 = Increased between 10% and 15% Or Q4 = Increased between 5% and 10%

Q6 Please, rate how significant the increase in average audit effort (hours) was for each of the following industries.
(Rate each industry by sliding the stars; if you erroneously clicked the wrong number of stars, you can correct this by sliding backwards and forwards between zero and five)

Financial services industry ☆☆☆☆☆
Manufacturing industry ☆☆☆☆☆
Commercial industry ☆☆☆☆☆
Service industry ☆☆☆☆☆
Public sector ☆☆☆☆☆

Q7 Did your audit firm experience **more competition** from other audit firms for statutory audit engagements of PIE clients after the Audit Reform?

O Strongly agree
O Agree
O Somewhat agree
O Neither agree nor disagree
O Somewhat disagree
O Disagree
O Strongly disagree

Display This Question: If Q7... = Strongly agree Or Q7 = Agree Or Q7 = Somewhat agree

Q8 The **increase in competition** for statutory audit engagements (PIE clients) following the Audit Reform is due to:
(Select all that apply)

More clients organize tender procedures
More clients engage in joint audits
The enhanced monitoring of audit market concentration by National Competent Authorities
The Mid-Tier audit firms are more than before considered as viable suppliers for statutory audit services to PIE clients
Stricter rules with regards to non-audit services
A more dynamic and open audit market (e.g. the "European passport" for audit firms)
Other - please specify ____

Q9 Was the competitive strategy of your audit firm adjusted/modified after the Audit Reform?

O Yes O No

Q10 Does your firm currently devote more effort to the attraction of new clients than before the EU Audit Reform?

O Yes O No

Q11 Are more people in your firm involved when developing a (new) client proposal than before the EU Audit Reform?

O Yes O No

Q12 Are your teams devoting more time to developing relationships with non-audit clients than before the EU Audit Reform?

O Yes O No

Q13 Are there other new initiatives used to enhance the competitive edge of your firm?

O Yes - please specify ____
O No

Q14 In general, how does your audit firm typically compete with other audit firms in a tender procedure? (Rate all that apply by sliding the stars; you can correct this by sliding backwards and forwards between zero and five)

Price ☆ ☆ ☆ ☆ ☆

Overall audit quality ☆ ☆ ☆ ☆ ☆

Audit firm reputation ☆ ☆ ☆ ☆ ☆

Inspection findings ☆ ☆ ☆ ☆ ☆

Quality of the audit team ☆ ☆ ☆ ☆ ☆

Innovative audit methodology (digital, big data, etc...) ☆ ☆ ☆ ☆ ☆

Other - please specify ☆ ☆ ☆ ☆ ☆

Q15 Did your audit firm engage in more audit tender procedures following the introduction of mandatory audit firm rotation?

O Yes O No O n/a

Display This Question:

If Q2 Select in which EU Member State your audit firm is located: = Belgium Or Republic of Cyprus Or Finland Or Germany Or Denmark Or France Or Slovakia Or Spain Or Sweden

Q16 Do you have clients that engage in "joint audits" with the purpose to increase the duration of the audit engagement with your audit firm?

O Yes O No O n/a

Q17 Did the **prohibition** of non-audit services (Art. 5 of Regulation 537/2014) have a significant impact on **turnover** from **consulting services** provided by your accountancy firm and its network to **audit clients?**

O Yes O No O n/a

Q18 Did the **prohibition** of non-audit services (Art. 5 of Regulation 537/2014) have a significant impact on **turnover** from **consulting services** provided by your accountancy firm and its network to **NON-audit clients?**

O Yes O No O n/a

Q19 Did the **capping** of non-audit services (Art.4 of Regulation 537/2014) have a significant impact on **turnover** from **consulting services** provided by your accountancy firm and its network to **audit clients?**

O Yes O No O n/a

Q20 Did the **capping** of non-audit services (Art.4 of Regulation 537/2014) have a significant impact on **turnover** from **consulting services** provided by your accountancy firm and its network to **NON-audit clients?**

O Yes ONo O n/a

Q21 Did your accountancy firm's (including its network) total turnover from providing non-audit services **(both from audit clients AND non-audit clients)** change after the Audit Reform (due to the prohibition and capping)?

O Yes, it **increased**

O Yes, it **decreased**

O No, it remained the same

Display This Question:

If Q21= Yes, it increased

Q22 By which percentage did it increase?

O 0 - 5%
O 5 - 10%
O 10 - 15%
O 15 - 20%
O 20 - 25%
O 25 - 30%
O 30 - 35%
O 35 - 40%
O More than 40%

Display This Question:

If Q21 = Yes, it decreased

Q23 By which percentage did it decrease?

O 0 - 5%
O 5 - 10%
O 10 - 15%
O 15 - 20%
O 20 - 25%
O 25 - 30%
O 30 - 35%
O 35 - 40%

O More than 40%

Q24 Do you have PIE clients in your portfolio that are part of a multinational group?

O Yes ONo On/a

Display This Question: If Q24= Yes

Q25 Did the Audit Reform result in increased complexities and costs related to the audit of PIE clients that are within a multinational group?

O Yes ONo On/a

Display This Question:If Q25= Yes

Q26 The increase in costs for PIE clients within a multinational group is associated with:
(Select all that apply and for those that apply, rate the cost increase from 1 to 5, where 1 is a very small increase and 5 is a very large increase)

_______ The mandatory firm rotation of an entity within the group which affects coordination costs across the group
_______ The alignment (or communication) with the other audit firms that are appointed in the multinational group
_______ The compliance related to prohibition and capping of consulting services
_______ Increased assessments of auditor independence following the provision of consulting to entities outside the EU
_______ Other - please specify

Q27 The Audit Reform has resulted in PIE clients opting more for "audit-only firms" and "consulting-only suppliers"

O Strongly agree
O Agree
O Somewhat agree
O Neither agree nor disagree
O Somewhat disagree
O Disagree
O Strongly disagree

Q28 Overall, the Audit Reform resulted in **higher** audit quality

O Strongly agree
O Agree
O Somewhat agree
O Neither agree nor disagree
O Somewhat disagree
O Disagree
O Strongly disagree

Display This Question: If Q28 = Strongly agree Or Agree Or = Somewhat agree

Q29 The **increase** in audit quality is a result of
(Rate all that apply by sliding the stars; you can correct this by sliding backwards and forwards between zero and five)

Enhanced auditor independence due to the mandatory audit firm rotation regime	☆☆☆☆☆
Enhanced auditor independence due to the prohibition and capping of consulting services by the incumbent audit firm	☆☆☆☆☆
More competition between possible suppliers of audit services (related to the statutory audit)	☆☆☆☆☆
Enhanced audit quality procedures within audit firms	☆☆☆☆☆
Enhanced communication between audit firms and audit committees	☆☆☆☆☆
Enhanced communication between audit firms and bank supervisors	☆☆☆☆☆
Improved supervision of statutory audit firms by National Competent Authorities	☆☆☆☆☆
Other - please specify	☆☆☆☆☆

Display This Question: If Q28 = Somewhat disagree Or Disagree Or Strongly disagree

Q30 Overall, the audit reform resulted in **lower** audit quality

O Strongly agree
O Agree
O Somewhat agree
O Neither agree nor disagree

Display This Question: If Q30 = Strongly agree Or Agree Or Somewhat agree

Q31 The **decrease** in audit quality is a result of
(Select all that apply)

A decrease in auditor choice due to the mandatory audit firm rotation regime
A higher focus on regulatory compliance by the audit firms rather than on providing valuable assurance services
The prohibition and capping of consulting services by the current audit firm taking away valuable expert knowledge
Other - please specify ____

Display This Question:

If Q28 = Neither agree nor disagree

Or Q30= Neither agree nor disagree

Q32 Overall, the Audit Reform had no effect on the level of audit quality supplied to our audit clients.

O Agree

O Disagree

ANNEX IV. AUDITEE SURVEY

Thank you for agreeing to take part in this important survey that forms an integral component of an independent study commissioned by the European Parliament related to the new Audit Reform (i.e. Regulation 537/2014 and Directive 2014/56/EU) applicable as of June, 2016. The Audit Reform's major aim was to improve audit quality and restore investor confidence in financial information, and brought significant changes for businesses and their professional service providers. The goal is to gain your thoughts and opinions on a couple of aspects of the new Audit Reform and how it has affected your company. This survey should only take less than 10 minutes to complete. Be assured that all answers you provide will be kept strictly confidential. Please, click 'Start' to begin

Q1 The **primary** activity of your business is providing

O Financial services (e.g. commercial bank, postal bank, credit union, mutual fund, etc.)
O Insurance, reinsurance and/or pension funding
O Auxiliary services to financial services and/or insurance activities (e.g. investment bank, broker, insurance settlers, etc.)
O Other

Q2 Your company's (European) headquarter is located in the following EU Member State:List of all 28 Member States is given and respondent has to select one.

Q3 Which audit firm(s) does your company currently engage as statutory auditor(s)?
(Please, select all that apply)

Deloitte
PwC
Ernst & Young
KPMG
Non-Big 4 audit firm - please specify

____

Q4 Did your company organize a tendering procedure to appoint a new statutory auditor (audit firm) or renew the current statutory auditor (audit firm) after June, 2016 (i.e. following the new Audit Reform)?

O Yes
O No

Q5 Did your company change its **statutory auditor (audit firm)** since **June, 2016**?

O Yes
O No

Display This Question:If Q5 = Yes

Q6 The change of statutory auditor (audit firm) was

O Mandatory, this means because of mandatory audit firm rotation
O Voluntary

Display This Question: If Q6 = Mandatory, this means because of mandatory audit firm rotation

Q7 Would your company have switched its statutory auditor (audit firms) in the absence of mandatory firm rotation?

O Yes O No

Display This Question: If Q6 = Yes

Q8 Which of the following statements apply to your company?
(Please, select all that apply)

The newly appointed audit firm brings a fresh perspective, resulting in an increase in audit quality
The rotation of audit firms led to a significant loss of the (new) audit firm's knowledge about your company
The rotation of the audit firms led to a significant increase in audit firm independence (independence from management and the board)
Other

Display This Question: If Q4 = Yes

Q9 How many audit firms placed a bid for the tender?

O Big 4 ____________________

O Non-Big 4 ____________________

Display This Question: If Q5 = Yes

Q10 What were the determining factors when selecting your new statutory auditor (audit firm). Please rate each possibility.

Price ☆☆☆☆☆

Audit quality ☆☆☆☆☆

Innovative audit practices related to digitalization and big data ☆☆☆☆☆

Inspection findings published about the audit firm ☆☆☆☆☆

The quality of the audit team ☆☆☆☆☆

Multidisciplinary expertise present in the audit firm ☆☆☆☆☆

Other - please specify ☆☆☆☆☆

Display This Question: If Q5 = Yes

Q11 Did your company switch

	Big 4 audit firm (PwC, Deloitte, KPMG or EY)	**Non-Big 4 audit firm**
From	O	O
To	O	O

Display This Question: If Q5= No

Q12 Does your company plan to rotate its statutory auditor pre-maturely (i.e. before the maximum mandatory audit firm rotation period) to avoid the (mandatory public) tendering procedure?

O Yes O No

Display This Question: If Q5? = No

Q13 If your company were to change its statutory auditor, would you consider hiring a Non-Big 4 audit firm as statutory auditor?

O Yes O No

Display This Question: If Q13 = Yes

Q14 Why would you consider **a Non-Big 4 firm as statutory auditor?**
(Please, select all that apply)

To have a larger pool of potential audit firms to choose from

To negotiate lower audit fees and hence decrease the audit cost of your firm

To have the current auditor perform consulting services, which would otherwise be impossible in its capacity as statutory auditor

Others - please specify ______________________________

Display This Question: If Q13 = No

Q15 Why would you **NOT consider a Non-Big 4 audit firm as statutory auditor?**
(Please, select all that apply)

It does not possess the necessary industry expertise
It does not have the appropriate global network
It offers lower quality (compared to the Big 4 audit firms)
Others - please specify ______________________________

Q16 Did your company opt for a joint audit (i.e. the appointment of two audit firms as statutory auditors) since June, 2016?

O Yes   ONo

Display This Question: If Q16 = Yes

Q17 What were the reasons to opt for a joint audit?
(Please select all that apply)

The appointment of a joint audit is mandatory for your company

To increase the audit engagement duration with the current audit firm which is performing the statutory audit

To enhance the quality of the statutory audit

To benefit from the expertise of more than one audit firm

To strengthen auditor independence (i.e. reduce the risk of over-familiarity)

Other - please specify ______________________________

Q18 Did the total costs of auditing in your company **increase** as a consequence of the Audit Reform?

O Yes
O No, the total cost decreased
O No, the total costs did not change

Display This Question: If Q18 = Yes

Q19 The increase of the total cost of auditing is driven by the following components:
Rate from least (0) to most (5) important.

Increase of audit fees ☆☆☆☆☆

Increased documentation requirements ☆☆☆☆☆

Increased responsibilities of the audit committee (for instance, reviewing the non-public report of the audit firm to the audit committee) ☆☆☆☆☆

The cost of tendering when selecting a (new) audit firm ☆☆☆☆☆

The mandatory rotation of audit firm ☆☆☆☆☆

Other - please specify ☆☆☆☆☆

Display This Question: If Q18 = No, the total cost decreased

Q20 The decrease of the total cost of auditing is driven by the following components.
Rank from least (0) to most (5) important.

Decrease of audit fees of the current audit firm ☆☆☆☆☆

The process of tendering allowing two audit firms to compete with each other, lowering audit fees for future audit firms ☆☆☆☆☆

Other - please specify ☆☆☆☆☆

Q21 In your opinion, the new Audit Reform resulted in

O Audit services of higher quality
O Audit services of lower quality
O No difference in the quality of audit services

Display This Question: If Q21 = Audit services of higher quality

Q22 The audit services are of a higher quality because:
(Please select all that apply)

Auditor independence is enhanced due to the mandatory audit firm rotation regime
Auditor independence is enhanced due to prohibition and capping of consulting services by the incumbent audit firm
More competition between possible suppliers of audit services (related to statutory audit)
Audit firms now have better internal quality monitoring
There is enhanced communication and reporting between the audit firm and the audit committee
There is enhanced communication between the audit firm and bank supervisors
There is improved supervision of statutory audit firms by National Competent Authorities
Others -please specify ____

Display This Question:If Q21 = Audit services of lower quality

Q23 The audit services are of a lower quality because:
(Please select all that apply)

The audit firm focuses more on regulatory compliance rather than on providing valuable assurance services
My audit firm is no longer allowed to perform certain consulting services and this takes away valuable expert knowledge
Mandatory audit firm resulted in the loss of auditor knowledge about my company
There is a decrease in viable audit firms to choose from due to the mandatory audit firm rotation (and potentially also prohibition of consulting)
Others - please specify ____

Q24 Which firm(s) do you engage for **consulting services**?
(Please, select all that apply)

Deloitte
PwC
Ernst & Young
KPMG
Another (Non-Big 4) audit firm
Another consulting firm
Consulting services are not performed in my company

Display This Question: If Q24 != Another (Non-Big 4) audit firm

Q25 Would you consider hiring a **Non-Big 4** audit firm to provide **consulting services** to your company in the future?

O Yes
O No

Display This Question: If Q25 = Yes Or Q24= Another (Non-Big 4) audit firm

Q26 Which of the following factors influence the decision to hire or consider hiring **a Non-Big 4 audit firm for consulting services**?

Non-Big 4 audit firms charge lower fees for consulting services
Non-Big 4 audit firms possess the right expertise to perform consulting services for your company
The current statutory auditor is not allowed to perform these consulting services anymore (due to the prohibition and/or capping of non-audit services)
Other - please specify ____

Display This Question:If Q25= No

Q27 Which of the following factors influence the decision **NOT to consider** a Non-Big 4 audit firm for consulting services?
(Please, select all that apply)

Your company is not in need of consulting services
You prefer a consulting firm (which is not an audit firm also) to perform consulting services
You prefer a Big 4 firm to perform consulting services
The Non-Big 4 audit firms do not have the required expertise to perform consulting services for your company
Other - please specify ____

Q28 Did the stricter rules on the joint supply of consulting and audit services by the current statutory auditor result in a reduction of consulting services purchased from the statutory auditor?

O Yes O No

Display This Question: If Q28= Yes

Q29 The consulting services which were previously performed by your statutory auditor, are currently performed by:

O A Big 4 audit firm
O A Mid-Tier audit firm (BDO, Grant Thornton, Mazars, Baker Tilly)
Another audit firm
O Another consulting firm
O These consulting services are no longer needed

ANNEX V. GLOSSARY

Archival research Research done by collecting and extracting evidence from sources that are held in archives (be it electronically, in a library, or a repository).

Audit client A client that is audited by an audit firm.

Audit fees Fees that are paid by a client to its statutory auditor for the audit services provided.

Audit market The market that captures the interplay between suppliers of external auditing services and the demand for these services. An audit market can further be refined to include various market segments such as geographical areas, industry specifications, size segments, or others.

Audit market competition The level of competition between audit suppliers in the defined audit market.

Audit market concentration The level of auditor or supplier concentration in the defined audit market.

Audit market segment A particular segment in the audit market. For example, the financial audit market segment is the market segment of financial sector audit clients meeting financial sector audit suppliers.

Audit quality Term that is used to characterize the quality of an individual audit performed.

Audit Reform The new EU audit legislation that is effective as of June, 2016, and includes Directive 2014/56/EU and Regulation 537/2014.

Audit cost The cost an audit client pays for a statutory audit which is typically defined as audit fees (see "Audit fees").

Auditor independence Refers to the independence, both in fact as in appearance, of the external auditor from the audited entity.

Auditor network A globally connected network of member firms and their affiliates operating in multiple countries under a common brand.

Auditor tenure Refers to the length of the auditor-auditee relationship.

Big 4 Refers to the four largest accounting firms and includes: Deloitte, PwC, Ernst & Young and KPMG.

Big 4 dominance A term used to describe the strong presence of Big 4 audit firms in the audit industry, primarily in the large client segment such as publicly listed companies.

Combined Big 4 audit market share The sum of each Big 4 audit firm's market share in the defined audit market.

Herfindahl-Hirschman Index A measure of market concentration that is calculated by squaring the market share of each firm in the market segment and then adding up these squared market shares.

Incumbent auditor	The auditor currently holding the statutory audit mandate in a particular entity.
Joint audit	Is an audit in which financial statements are audited by at least two independent auditors who are jointly responsible. It describes the coordination in the audit planning, joint audit efforts, cross-quality review and control, and the issuance of an audit report and signature by two or more responsible auditors.
Joint audit extension	The Member State Option that is included in Regulation 537/2014 that allows firms to extend the mandatory firm rotation period if they opt for a joint audit.
Leader dethronement	A competition measure capturing whether the industry leader is dethroned by a rival in a defined market segment.
Low-balling	A selling technique whereby the seller offers its services at a lower price than the (realistic) asking price.
Mandatory firm rotation	Refers to the obligation for an audit client to switch its statutory audit firm after a certain period of time. This maximum engagement period is typically stipulated by law.
Mandatory partner rotation	Refers to the obligation for an audit partner to step down as the lead engagement partner of a client firm after a certain period of time. This maximum engagement period is typically stipulated by law.
Market capitalisation	The market value of a firm's outstanding shares (i.e. shares outstanding multiplied by the current market price of one share).
Market share mobility	A competition measure that captures the sum of market share changes of all audit firms in the defined market segment.
Multivariate analyses	Entails the analysis of more than one statistical outcome variable.
Non-audit fees	Fees that are paid by an audit client to its statutory auditor for the non-audit services provided.
Non-audit services	Services other than external statutory auditing services provided by the auditor to its audit clients.
Non-big 4	Refers to the category of audit firms that are not considered to be a Big 4.
Professional scepticism	A term used to define the professional attitude that an external auditor must have in order to perform high quality audits. It refers to an attitude including a questioning mind, being alert to conditions which may indicate possible misstatement due to error or fraud, and a critical assessment of audit evidence.
Quintiles	A statistical term used to define the partitioning data into five equal sizes after the data has been sorted.

Restatement	Refers to the revision and publication of one or more of a firm's previous financial statements and is necessary when it is concluded that a previous statement contains a material inaccuracy.
Spatial economics	The study of how space (distance) affects economic behavior. It is concerned with the allocation of (scarce) resources over space and the location of economic activity. Location often refers to geographical location, but is also used in a broader sense.
Statutory audit	A legally required independent examination of a firm's statutorry accounts in accordance with the applicable audit standards (e.g. ISA's).
Statutory audit market	Is the audit market (see "Audit Market") for statutory audits.
Supplier concentration	Similar to "Audit market concentration".
Switching	Is a term used to describe the event when an auditee changes its statutory auditor.
Systemic risk	Typically used in the context of financial markets whereby an event at the firm level could trigger severe instability or collapse an entire industry or economy.
Audit tendering	Refers to the process whereby an auditee sends invitations to audit firms asking for bids on their statutory audit.
Weighted average	Is an average that results from the multiplication of each component by a factor reflecting its importance in the sample or population.

In this study we execute an in-depth analysis of the evolution of market concentration, competition and costs in the EU market for statutory auditing before and after the Audit Reform. Based on data from archival databases and a survey, we present evidence suggesting that rivalry between the largest audit suppliers increased, as did audit costs, non-Big 4 audit market share, and joint audit rates. Non-audit services (NAS) fees earned by the incumbent auditor decreased.

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