The Real Effects of Statutory Audit and Corporate Reporting Directives on Costs and Risk-taking Behaviour of the EU Banking Sector

Abstract

This paper examines the economic effects of SACORD reporting and disclosure regulation on banks in the EU. We examine the real effects of adopting the regulation on compliance costs. Using difference-in differences estimator, we show EU banks audit fees increase by 30 to 80 percent. Further, we investigate the economic effects of SACORD on banks risk-taking and show that bank risk taking varies negatively with the regulation. Taken together, our evidence suggests though SACORD imposes real costs on banks compliance costs, it induces reduction in banks' risk taking.

1. Introduction

The collapse of Enron, Worldcom, Tyco, Adelphia, Arthur Andersen, and Parmalat, coupled with a string of other high profile corporate and accounting scandals amounting to what Grundfest (2002, p. 1) called "punctuated equilibria" was the catalyst that initiated the enactment of additional audit committee regulation in the United States (US), the European Union (EU) and globally (Fichtner, 2010). A common feature evident in these failed firms is ineffective system of internal control due to weak corporate governance structures leading to financial statement fraud (Rezaee, 2005). Effective financial regulation helps to restore investors' confidence in the capital market and fosters financial and economic stability (Kroszner and Strahan, 2011; Bernanke, 2013).

Following the Enron and other high profile scandals, and in response to calls for more stringent regulation to prevent a replay, the US enacted the Sarbanes-Oxley Act (hereafter SOX) in 2002 to improve the quality and reliability of financial reporting and corporate disclosures in the financial markets and restore public trust and investors' confidence (Iliev, 2010; Klumpes, 2013). Similarly, the European Commission (EC) enacted the Statutory Audit Directive (SAD) (2006/43/EC)[1] and the Company Reporting Directive (CRD)

[1] Directive 2006/43/EC of the European Parliament and of the Council of 17 May 2006 on statutory audits and annual consolidated accounts, amending Council Directives 78/660/EEC and 83/349/EEC and repealing Council Directive 84/253/EEC OJ L 157/87 (Statutory Audit Directive).

(2006/46/EC)[2] in 2006. The main objective of the regulation was to improve the disclosure quality of financial statement information, improve corporate governance and to increase investor confidence, similar to SOX (Coates and Srinivasan, 2014).[3] All EU member states were required to adopt the Statutory Audit Directive and Corporate Reporting Directive (SACORD, hereafter).

The existing literature on impact of regulation focuses largely on the US regulation (e.g. SOX and RegFD). To the best of our knowledge, this is the first study to test the effects of SACORD on the costs and risk-taking of the EU banks.

Examining the regulatory impact of SACORD on EU banks is particularly important for four reasons. First, because the banking sector is overly regulated (Barth et al., 2006), additional regulation could lead to increase in costs for these firms as direct costs could be substantial (Coates and Srinivasan, 2014) and the fixed costs could be burdensome (Zhang, 2007). In 2015, a survey conducted by Pricewaterhouse Coopers (PwC) and Confederation of British Industries (CBI) list increasing regulatory costs as one of the top concerns raised by UK financial services firms (CBI, 2015). HSBC recent consideration to relocate its headquarters from the UK is a case in point of the effects of soaring compliance costs.[4] We thus expect that increase in regulation will increase cost burden of banks. Following the literature (Altunbas et al., 2011; Demirgüc-Kunt and Huizinga, 2010), we use listed banks because they are more investment-oriented and are usually larger, and thus can be a better proxy to test precisely the real effects of improved information quality on large firms.

Second, EU banking sector is an important part of the economy, it accounts for about 3.1 percent of the 2013 GDP compared with 2.9 percent for the US. The banking sector also employs over 2.9 million people compared with 2.1 million people for the US in 2013 (Eurostat, 2015; US Bureau of Economic Analysis, 2015; US Bureau of Labour Statistics,

[2] Directive 2006/46/EC of the European Parliament and of the council of 14 June 2006 amending Council Directives 78/660/EEC on the annual accounts of certain types of companies, 83/349/EEC on consolidated accounts, 86/635/EEC on the annual accounts and consolidated accounts of banks and other financial institutions and 91/674/EEC on the annual accounts and consolidated accounts of insurance undertakings OJ 2006 L224/1 of 16 August 2006 (Amendment to Accounting Directives).

[3] For example, International Accounting Standards Board (IASB) (2010, paragraph OB2) states "The objective of general purpose financial reporting is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders, and other creditors in making decisions about providing resources to the entity."

[4] FT.com (2015). HSBC threatens to move headquarters from UK, April 24.

2015)[5]. Given that banks are integral to the economy provide an advantageous setting to examine the effect of SACORD regulation on bank economic behaviours.

Third, banks' balance sheets relative to non-financial firms reflect significantly higher leverage. Besides banks funding structure, the central role banks' play as liquidity provider and capital allocator in the financial system require that they disclose transparent accounting information to participants outside the bank.[6] Flannery et al. (2004, 2013) assert that banks take risks that are more opaque than non-financial firms but financial regulation tends to reduce their opaqueness. A central unanswered question is the extent to which enhanced financial statement disclosure policies promote or undermine banks risk taking behaviour. Extant studies suggest that bank risk taking responds to changes in financial information (Vauhkonen, 2012; Cohen et al., 2013; Corona et al., 2015). Tellingly, this setting would allow us investigate the effects of improved accounting information on bank risk taking behaviours.

Forth, the adoption of the Financial Services Action Plan (FSAP) in 1999 enhanced the throughout the provision of financial services EU and facilitated cross-border financial intermediation (Kalemli-Ozcan et al., 2010) which according to Posner (2009) altered the global distribution of financial power. To date, most of the available literature on the effects of disclosure regulation on banks focuses on regulatory changes in the US. Leuz and Wysocki (2015) raise concern that research on reporting and disclosure regulation of other jurisdictions has attracted fewer scrutinises, despite the fact that these jurisdictions (e.g., EU) have witnessed major changes in reporting and disclosure regulation. They note that more evidence of reporting and disclosure regulation is needed and suggest that "studying other countries should give us a richer understanding of the many facets of regulatory effects" (Leuz and Wysocki, 2015; p. 95). The focus of this paper is to fill this gap.

The idea that financial regulation is intrinsic to the financial system is discussed extensively in the existing literature (see e.g. Dermine, 2006; Asaftei and Kumbhakar, 2008; and Klomp and Haan, 2012). From the public theory perspective of regulation (Canning and O'Dwyer, 2001; Baker, 2005), the financial services (hereafter FS) sector is strategically important to the economic growth and development of a nation and therefore cannot be allowed an

[5] http://www.bls.gov/cps/industry_age.htm, http://ec.europa.eu/eurostat/web/national-accounts/data/main-tables, http://www.bea.gov/industry/gdpbyind_data.htm

[6] See Beatty and Liao (2014) for a survey of literature.

unfettered rein but makes it a top priority for regulators so as to stabilise and create a better and safer financial system (Acharya, 2009; Zingales, 2009).

There is a growing debate in the literature about whether financial regulations are value adding or not (e.g., Iliev, 2010; Klomp and Haan, 2012). Critics of financial regulations (e.g., Regulation Fair Disclosure (Reg FD), Sarbanes–Oxley Act (SOX), bank capital regulation) have pointed to the negative impact of these regulations, especially on compliance costs of smaller firms (e.g. Duarte et al., 2008; Kamar et al., 2009). In contrast, proponents have argued that the benefits of new financial regulation exceed the anticipated costs (e.g., Daske et al., 2008; Barth et al., 2013).[7]

The debate of the impact of financial regulation is far from settled and existing evidence yield inconclusive inferences about the impact disclosure regulation (e.g., Leuz, 2007; Zhang, 2007). The goal of this study is to provide what is, to the best of our knowledge, the first empirical analysis on the real effects of SACORD regulation by identifying the economic costs of SACORD, as well as its impact on risk-taking behaviour on the banks in the EU.

We use audit fees as a proxy for compliance costs (see e.g. Iliev, 2010; De George et al., 2013) of EU-domiciled public listed banks over the period 2004 to 2013 partitioned on pre-SACORD period (2004 to 2007) and post-SACORD periods (2008 to 2013). Our focus on compliance costs is motivated by the fact that SACORD implementation is likely to impact banks financial reporting costs (see, for example, Hail et al., 2010). Assessing effects of SACORD, the compliance costs give the direct effects measure of SACORD regulation on the banking sector of the economy.

Existing literature (e.g., Keeley, 1990; Matutes and Vives, 1996; Cohen et al., 2013; Vauhkonen, 2012) shows that improved transparency and reliability of accounting information which in turn enables outside stakeholders to better monitor the financial institutions and thus reduce banks' risk taking behaviour. In contrast, empirical evidence (e.g., Arya and Mittendorf , 2011; Corona et al., 2015; Laeven and Levine, 2009) suggests the opposite conclusion. For instance, Bertomeu and Magee (2011) develop an argument to show that increase in financial reporting regulations politically biased and driven by economic downturn may result in more bad loans. Huizinga and Laeven (2012) examine the reason some US banks mortgage backed securities (MBS) were lower than their book value. They

[7] See Coates and Srinivasan (2014) for a recent review of literature

find distressed banks utilize accounting discretion to boost their book values and satisfy capital adequacy requirements and thus undermine accurate disclosure of accounting information.

The extent to which SACORD regulation has reduced or increased banks' risk taking investment activities remains unexplored. In this research, we investigate the impact of SACORD regulation on bank risk taking behaviour.

We employ a difference-in-differences estimation (e.g., Bischof and Daske, 2013; Derrien and Kecskes, 2013; Petacchi, 2015) with firm and year fixed effects, capturing the timing of changes in regulations, and estimating whether or not any measured effects are due to SACORD. The estimation method mitigates potential biases from unobservable factors that might be correlated with audit pricing. The year and firm fixed effects account for unobserved time-invariant differences in audit fees across years and firms. I also control for standard firm-level characteristics (e.g., firm size, leverage, business diversity, profitability, firm growth opportunities and global importance) that could cause affected firms to have different trend over time for reasons unrelated to the audit costs. One of the problems of difference-in-differences estimation is finding a natural control group which is very difficult; we followed Lee et al. (2014) and Dambra et al. (2015) approach and we use listed banks in the US and Canada as control group.

Our study contributes to the growing research on costs and benefits of disclosure regulation. First, in contrast to prior research (e.g, Badertscher et al., 2014; Daske et al, 2013; De George et al., 2013; Iliev, 2010; Kausar et a., 2015), we focus on a single, homogeneous industry that enhances the quality of the inferences. Second, our treatment sample is subject to the same regulation, reporting and auditing mandates and thus becomes easier to isolate the effect of SACORD to a single industry. Third, though several research have studied the effect of disclosure regulation in the banking industry (see Beatty and Liao, 2014 and Bushman, 2014 for a survey of literature), there is no known study on SACORD regulation that was implemented by the EU during the global financial crisis of 2007-2009.

Our first set of empirical results shows that the banks in the EU pay substantially higher audit fees because of the implementation of SACORD regulation. From pre- to post-regulation, the empirical result shows that the economic effects of the regulation on audit fees of EU banks is approximately 30 to 80 percent higher than the publicly listed banks in US and Canada

(control group). The post-regulation increase in audit fees is consistent with regulation increasing the compliance costs of firms. Further, we find that the effects of SACORD on audit fees and total fees of midsize based on market capitalization are about 23 percent and 27 percent respectively higher than midsize banks of control group, a difference that is statistically significant. We document that for small and large banks, the increase in audit fees is not significantly different from control group.

The study provides consistent evidence that the economic effects of SACORD enactment induces the reduction in banks risk taking by 20 and 36 percent. We also find that whilst the effect of SACORD on small banks risk taking is not significantly different from control group, the effect was more pronounced among midsize banks. The risk taking behaviour of large banks decline by approximately 12 to 24 percent while for midsize banks and it declines by about 20 to 38 percent in comparison to the control group. Our results reveal that regulation has a desirable effect on risk reduction of midsize banks, a reduced effect on large banks when compared midsize banks and no effect on small banks.

The paper continues as follows. Section 2 discusses the relevant literature and develops our research questions regarding SACORD. Section 3 explains empirical strategy, sample and data. Section 4 presents empirical results, and Section 5 concludes.

2. Literature review and research question

Following the 2001 to 2002 financial scandals and other high-profile corporate failures, and the enactment of SOX Act in 2002, the EC enacted SACORD with provisions similar to SOX to improve the corporate information environment. In effect, EU standard-setters adopted the SACORD to increase transparency of corporate information. We define transparency as the disclosure of timely and accurate corporate accounting information about the financial performance, position, governance, business model, strategy, risk and value of firm to participants outside the firm which includes regulators, investors, depositors, borrowers, counterparties, policy makers, and competitors. Corporate accounting information has two key objectives. First, it provides investors information to appraise the return potential of investment opportunities, and to monitor their investments (Beyer et al. 2010). Acting as an appraisal objective, improved corporate information is intended to provide prospective stockholders with additional information to evaluate the future stock returns of investment

opportunities and thus leads to improved investors welfare (See Diamond and Verrecchia, 1991). Second, in its monitoring objectives, improved corporate information enhances market discipline of firms. For example, it allows the investors to monitor the use of their investments; therefore increasing the effectiveness of investors to protect their claims, improving the welfare of stockholders (See Lambert et al., 2007; Beyer et al., 2010).

2.1 Summary of the Statutory Audit Directive and the Corporate Reporting Directive (SACORD)

The disclosure and reporting regulation we examine was part of the post-FSAP directives serving the objective of providing rules to ensure the integration in financial markets across Europe through harmonisation. It closely followed the high profile financial reporting scandals like Imar Bank in Turkey and Parmalat in Italy, and the far-reaching effects of SOX on foreign companies reporting under US law and their auditors. SAD was enacted with the objective of creating an European model for auditing and corporate governance and thus improve the accuracy and reliability of corporate disclosures and adequacy of auditing practice. SAD requires member states to establish the Public Oversight Bodies for Statutory Auditors (POBSA) to oversee and regulate auditing, requires greater auditor independence, demands enhanced financial disclosures, and promotes higher corporate responsibility and accountability. CRD was intended to strengthen corporate financial reporting by increasing management accountability, enhance the degree of transparency, reliability and ensure superior financial reporting (Enriques and Gatti, 2007). Regulators expect that the implementation of the Directive will enhance corporate governance in the Union, and hence improve investors' confidence in EU capital markets, enhance the financial statement comparability among member states, as well as facilitates cross-border investments opportunities (UK Legislation, 2008).

2.1 Evidence of regulatory impact on costs and benefits

Many papers in the financial disclosure and reporting regulation literature examine the costs and benefits of increased financial disclosure. To date, empirical studies have mixed evidence and thus do not support a definitive conclusion. Lang and Lundholm (1993) note that increased disclosure leads to improved information environment. Several empirical studies document that mandated financial disclosure regulations (e.g., IFRS, SOX, Regulation FD)

have a positive impact on the corporate information environment and are beneficial to firms. Eleswarapu et al. (2004) investigate whether Reg FD affects NYSE firms trading costs by analysing the trading pattern around earnings announcements. They find a decline in information asymmetry subsequent to the adoption of Reg FD, and the impact is stronger for smaller firms. Chhaochharia and Grinstein (2007) find evidence that SOX regulation is value increasing. Li et al. (2008) analyse the stock price reactions to critical events surrounding the passage of SOX Act and examine if these reaction are related to firm earning management. They find a significant positive abnormal return associated with each SOX event, suggesting that SOX has a net beneficial effect. Daske et al. (2008) show that cost of capital decreased and market liquidity increased by 3 to 6 percent for mandatory adopters of IFRS reporting. Lagoarde-Segot (2009) analyse the impact of financial reforms on informational environment of public firms and finds an increase in information efficiency post International Financial Reporting Standard (IFRS) adoption.

Conversely, several papers empirically argue that increased financial disclosure is costly to firms. Zhang (2007) investigates the economic consequences of SOX Act and finds cost savings of about 1.26 percent for a year's delay in complying with the Act or about $0.34 million for non-accelerated filer firms with capitalization rate of $27 million. Iliev (2010) investigates the effects of SOX Section 404 regulation and find SOX reduced the market value of small firms. Bova et al. (2014) document that high costs of SOX limits smaller firms in the U.S. financing option of going public and make them more susceptible to be acquired. Linck et al. (2009) find a significant increase in pay and overall director costs, particularly among smaller firms' post-SOX regulation. Furthermore, Engel et al. (2007), Marosi and Massoud (2007), Leuz et al. (2008), Ashbaugh-Skaife et al. (2009), Kamar et al. (2009), Gao et al. (2013) and Li (2014) argue that the marginal cost of complying to SOX regulation is higher than the derived benefits and conclude that regulation cost is causing firms to delist from the U.S. stock market. In the same vein, other empirical research documents that increase in financial regulation (mainly Regulation Fair Disclosure and SOX) is associated with increased cost of capital (Gomes et al., 2007; Duarte et al., 2008), increased liquidity costs (Battalio and Schultz, 2011), firm delisting decision (Piotroski and Srinivasan, 2008), deregistration decision (Hostak et al., 2013), firm decision to go dark (Leuz et al., 2008), and reduced benefits of public firms (Gao et al., 2013; Li, 2014).

The costs and benefits of increased statutory audits and corporate disclosures regulation on banks especially during the financial crisis are still largely unexplored (see Goldstein and Sapra, 2012; Bischof and Daske, 2013). Leuz and Wysocki (2015) literature reviews of corporate reporting and disclosure regulations provide the best motivation for this research. They argue that studies on the economic consequences of disclosure and reporting regulation are in its early stages and should be further explored, noting that the research can inform regulatory debates and likewise assist to establish the "differential costs and benefits to firms, which can help us understand how a mandate may differentially affect firms" (Leuz and Wysocki, 2015; p. 21).

The main source of concern for firms with respect to financial regulation relates to the increasing regulatory change alongside its attendant increase in compliance costs, of which auditing fees are an easily measurable component. For example, in the recent global chief executive officer (CEO) survey conducted by PwC, 78 percent of CEOs cite increasing regulation as a main concern and top threat to business growth (PwC, 2015).[8] Similar concerns were raised regarding new regulations and increased compliance costs (Reuters, 2015).[9]

Overall, research suggests that the increased financial regulation (for example, SACORD) could be beneficial to firms (Easley and O'Hara, 2004). However, it could also lead to increased costs on firms because of the increase in compliance costs (Holmstrom and Kaplan, 2003; Hostak et al., 2013). Not surprisingly, HSBC threats to move its head office outside the UK is in response to increasing regulatory costs.[10] Thus, these conflicting views of academia and businesses and the increasing demand to conduct cost-benefit analyses of past regulation (Cochrane, 2014; Posner and Weyl, 2013) create a demand for empirical research to measure the costs of SACORD regulation on banks. Accordingly, we follow this research, and as such use pose three empirical questions as follows:

Q1. Following the Statutory Audit Directive and the Company Reporting Directive introduced in 2008, are the increase in audit costs of banks substantially larger than audit fees of control group and what is the magnitude of the difference?

[8] PwC (2015). State of Compliance Survey 2015. Available at: https://www.pwc.com/us/en/risk-management/state-of-compliance-survey/assets/pwc-2015-state-of-compliance-survey-final.pdf

[9] Reuters (2015). Thomson Reuters Annual Cost of Compliance Survey Shows Regulatory Fatigue, Resource Challenges and Personal Liability to Increase Throughout 2015. Available at: http://www.reuters.com/article/idUSnGNX7FbgwD+1d1+GNW20150513

[10] FT.com (2015) HSBC threatens to move headquarters from UK, April 24.

Q2. Does been a small, midsize or big bank with respect to market capitalisation substantially increase audit costs?

2.2 Corporate reporting and disclosure regulation and bank risk-taking

The intents of SACORD were to improve the transparency, reliability, and quality of corporate reporting. Improved information environment enhances market discipline. Financial economists largely agree with the proposition that outside stakeholders (such as, stockholders, depositors, creditors, regulators or counterparties) rely on disclosed information to gauge risk level and exert disciplinary action on firm's management (Jensen, 1993; Dong et al., 2006; Chen et al., 2007).

Risk taking is essential to business success. Research has likewise demonstrated that whilst some firms are likely to fail because of the risk they take, others firms are expected to thrive without taking excess risk. The general opacity of banks' risk exposures makes it difficult to verify their assets (Diamond, 1989, 1991) and quite often, they lack transparency and liquidity (Greenspan, 1996). Bank public disclosure of the accounting results is a key source of transparency which provides financial information to private sector agents, enabling the agents to better monitor financial institutions, improving resource allocation and enhancing market discipline.

However, there is conflicting evidence in empirical literature that looks at whether improvements in information disclosures result in reducing or exacerbating risk taking among banks. Examining the effect of disclosure regulation in relationship to corporate risk-taking behaviour, one strand of research argues that corporate disclosure regulation such as SOX discourages risk-taking investment activities (e.g., Bargeron et al., 2010; Kang et al., 2010; Cohen et al., 2013). Another strand of the literature finds that improved accounting information may not be efficient in discouraging risk-taking, and coupled with other factors could actually increase risk taking behaviour (Bertomeu and Magee, 2011; Bouvard et al., 2015; Bushman and Williams, 2015).[11] For example, Laeven and Levine (2009) find that the effect of regulation on banks' risk taking behaviour depends on their ownership structure. Houston et al. (2010) study the interaction between creditor rights, information sharing, and bank risk taking and find that stronger creditor rights increases bank risk taking. Similarly,

[11] For a review on financial accounting information and bank risk taking, see Bushman (2014).

Corona et al. (2015) experimental research explored the interaction between information disclosure, interbank competition and bank risk taking and show that improved information disclosure has no effect on bank risk taking under intense competition, but increases bank risk taking behaviour with moderate competition.

In this paper, to the extent that SACORD represents improved corporate disclosure regulation, we use a difference in difference design to investigate the extent to which the adoption of SACORD is associated with banks' risk taking activities. The relevant questions are:

Q3. Is there a significant difference in the risk taking investment behaviour of listed banks in the EU post SACORD?

Q4. Is there a significant difference in the risk taking investment behaviour of large banks compared to small and midsize banks the EU post SACORD?

3. *Research Design, Sample Selection, and Descriptive Statistics*

3.1 Research Design

To provide evidence on the extent to which SACORD regulation is responsible for the increase in audit fees, we implement a difference-in-differences framework (e.g., Clotfelter et al., 2008; Bischof and Daske, 2013; Petacchi, 2015) that captures the timing of threshold change in regulations. If SACORD is responsible for the increase in audit fees, this increase should be concentrated on EU firms that adopted SACORD; otherwise, the increase is not caused by the implementation of SACORD. We expect that the adoption of SACORD should lead to increase of firms' compliance costs because of the increase in the demand for auditing work, the increase in statutory auditor's efforts to become more knowledgeable of the regulation in order to ascertain its appropriate implementation and also manage risk that arises from the adoption. Thus, auditors are likely to increase audit fees in the year of regulatory implementation in order to recover incurred costs.

We classify all observations from 2004 to 2007 as the pre-SACORD period and all observations from 2008 to 2013 as post-SACORD period and estimate the change in audit fees on firms that adopted SACORD comprise our treatment group and firms that never adopted SACORD comprise our control by using a difference-in-differences design. Our

observation started from 2004 to avoid the impact of implementing SOX rule on US firms. The coefficients on the interaction of European banks, post-SACORD and post-2007 financial year represent the difference-in-differences effect of the SACORD regulation on audit pricing discussed later in reference to equation (1).

We address Q2 by using the percentile value of market capitalization of firms. Any bank that the market capitalization is in the lower quartile is classified as 'small bank' and banks that the market capitalization is in the upper quartile are classified as 'big banks'. All other banks that the market capitalization is between the lower and upper quartile are classified as midsize banks for both treatment and control sample. This design holds year and firm effects constant and allows the study of the effect associated with regulatory change on audit fees as size classification of firms change.

The Difference-in-Differences design. The estimations in this study rely on a difference-in-differences analysis, included as one of the "quasi-experimental methods" (Angrist and Pischke, 2010; p.12), commonly used to examine the unique effects of regulatory changes (e.g., Daske et al., 2008; Low, 2009; Dambra et al., 2015; Petacchi, 2015) and to estimates causal relationships (Meyer, 1995). A difference-in-differences analysis combines the simple difference and pre-post comparison evaluation methodology by estimating the change in outcome over time of the treatment and control groups and then taking the difference between these two groups. It assumes that both groups would have identical trajectories over time if the treatment group was not affected by a specific intervention.

To employ the difference-in-differences methodology, we must identify a control group of banks that are not affected by the regulation and use their audit fees payment as the comparison base. The empirical challenge of implementing the difference-in-differences research design is to identify a control group that is not affected by the legislation (Hochberg et al., 2009; Leuz and Wysocki, 2015). Globally, the banking industry is subject to intense regulatory oversight. They also differ in business activities and risks from other sectors and thus require that audit pricing be different from other sector.[12] Tellingly, Leuz (2007, p. 150) discussing impact of SOX on stock returns and firm's decision to go private argues that because SOX regulation applies to all listed US firms, finding "a natural control group of

[12] For a recent review of this literature, see Doogar et al. (2015)

comparable, but unaffected…firms does not exist." In line with this argument, Hochberg et al. (2009) emphasize that the challenge to studying the effect of SOX is the lack of a natural control group of public listed firms that were not affected by SOX legislation. Remarkably, SACORD rules apply to all exchange-traded firms registered EU firms and thus identifying a control group not affected by SACORD regulation has proven to be difficult.

As mentioned earlier, all listed firms in EU and all financial service firms must comply with SACORD regulation and thus the only alternative would be to use firms exempted from certain filing requirements as comparable firms. These firms tend to be relatively small, they are not financial services firms and therefore cannot be considered a natural comparable firm.

Remarkably, extant finance literature recognizes that countries in the EU and other developed economies like the US are exposed to similar underlying economics (Gerakos et al., 2013) and financial regulation (Coates and Srinivasan, 2014), have equivalent institutional arrangements (La Porta et al., 2006), similar other economic conditions (Zhang, 2007; Bargeron et al., 2010).

Bargeron et al. (2010), Lee et al. (2014) and Dambra et al. (2015) study on the effects of financial regulation (SOX, Regulation Fair Disclosure and JOBS Act) on US firms employ samples from other countries such as UK, Canada, Germany, France, etc as control group that are not affected by the US regulation to address the concern of lack of a natural control group of comparable firms. Thus, following their approach, we address the concern of lack of a natural control group of comparable firms by employing samples of a comparable group from two countries: listed banks in the US and Canada to serve as a quasi-natural control group for the empirical studies of SACORD. The US and Canada samples were not exposed to SACORD rule enacted in the EU and thus serve as a control sample for the treatment effect pertaining to the changes in EU regulation we examine.

3.2 Empirical Approach

This section explains our empirical approach. We estimate the following baseline difference-in-differences model to test whether the implementation of SACORD regulation explains the cross-sectional time series variation in changes in audit pricing:

$$Auditfees_{it} = \alpha_t + \theta_i + \beta_1 EUR * PsSACORD_t + \beta_2 FinCrs_{it} + \beta_3\, Revenue_{it} + \beta_4 Nloan/TA_{it} + \beta_5 LTDebt/TA_{it} + \beta_6 Prov/Tloans_{it} + \beta_7 Accru/TA_{it} + \beta_8 ROA_{it} + \beta_9 TobinQ_{it} + \beta_{10} SIFI_{it} + \beta_{11} Loss\_Ind_{it} + \beta_{12} Geo\_Seg_{it} + \beta_{13} IFRS_{it} + \beta_{14} Naudfee_{it} + \beta_{15} Revn\_Grwth_{it} + \varepsilon_{it} \quad (1)$$

Equation (1) is based on models of audit pricing as in Barth et al. (2008), Iliev (2010), Badertscher et al. (2014), and Petacchi (2015). In the model, a_t is fixed year effects and θ_i is fixed firm effects, the coefficient β_1 captures the differential changes in audit fees between the treatment and the control group, and ε_{it} represents the error term. If EU banks are subject to increase in audit fees post-SACORD, then the coefficient β_1 captures the differential changes in audit fees should be positive. EUR and PsSACORD are dummy variables; EUR equals one if the firm is listed in the EU and zero otherwise while $PsSACORD$ is an indicator variable equal one for fiscal years ending after March 30, 2008 and Zero otherwise.[13]

Natural logarithm of audit fees (Auditfees) is audit fees and audit related fees paid to the statutory auditors and used as a proxy for compliance costs (Badertscher et al., 2014; Iliev, 2010). Natural logarithm of sales (Revenue) is a measure of firm size (Petacchi, 2015), leverage (LTDebt/TA) is a proxy for equity risk and financial constraints, and accrual (Accrual/TA) is a proxy for audit complexity (De George et al., 2013). In addition, we measure business risks using net loans to total assets (Nloan/TA) and loan loss provision to total loan booked (Prov/Tloans) (Soedarmono et al., 2013). We use return on assets (ROA) and loss indicator (Loss_Ind), a dummy variable equal to 1 if the firm made loss for the year to proxy for profitability (De George et al., 2013). We include number of geographic segments (Geo_Seg) to control for foreign business operations (De George et al., 2013; Iliev, 2010), we use Tobin's Q (TobinQ) as an indicator variable for firm performance and Revn_Grwth is an indicator for growth opportunities (Badertscher et al., 2014; Kausar et al., 2015). We include systemically important financial institution (SIFI) as a proxy for global importance of the financial institution. We include the natural logarithm of non-audit fees (Naudfee) to control for the influence of non-audit fees on audit pricing (De George et al., 2013). We control for financial crisis (FinCrs) which equals 1 during the period 2007 to

[13] The main effects of EUR and PsSACORD are absorbed by the firm and year fixed effects, and thus not included in the equation above (see Petacchi, 2015).

2009. We also control for the impact of International Financial Reporting Standards (IFRS) with dummy equals 1 from 2005 for countries that have implemented IFRS.

Although these controls are not exhaustive, the use of difference-in-differences estimation model (Xu et al., 2015), the model with an R-squares exceeding 70 to 80 percent (Ghosh and Tang, 2015) and the inclusion of firm fixed and year effects (Adams and Ferreira, 2009; Kalemli-Ozcan et al., 2013) help mitigate concerns of potential omitted variables bias that may affect audit pricing estimation.

The analysis of the difference-in-differences model is robust to firm and year fixed effects that account for any time-invariant and cross-sectional heterogeneity in audit fees and also address potential endogeneity concerns (Adams and Ferreira, 2009; Petacchi, 2015). The estimated standard errors are corrected for heteroskedasticity (Stock and Watson, 2008). Regarding the Big 4 EU audit firms, the control was not included because about 99.9 percent of the sample firms were audited by the BIG 4.

3.3 Sample Selection

We are interested in estimating the extent to which the SACORD regulation has affected compliance costs in banks. To address this, all firm-level annual financial statement data are collected from DataStream database. Where there is missing information in the financial statement data, we extract the missing information from the annual report of firms from Perfect Filing database. We use a ten-year sample period from 2004 to 2013 for all listed banks, giving me four years before the regulatory adoption and six years after the regulatory change both for treatment and control samples. 2004 was chosen as the start of the sample period because, prior to 2004, audit fee data are available only for a small number of banks covered by DataStream and most especially for treatment firms.

Following John et al. (2008), we include in the sample banks that have at least five successive years of data on key accounting variables. We impose filters to exclude from the sample banks that commence operation after 2008 or banks that have missing "audit fees" data up to year 2008. The sample consists of 91 listed banks, of which 50 banks are in the treatment group and 41 banks are in the control group. We identify 555 treated group bank-years and 303 control group bank-years with available DataStream data.

Although the primary focus of this study audit fees, I also investigate audit and non-audit fees (total fees) to provide additional evidence on the impact of SACORD on total fees paid to audit firms as prior research shows a significant positive association between audit fees and non-audit fees (Palmrose, 1986; Schmidt, 2012).

4. Empirical results

4.1 Descriptive Statistics

Table 1, Panel A shows the descriptive statistics on selected firm characteristics for all key variables of interest for treatment and control sample. Observations are from the EU and from the US and Canada banks. Observations from the EU comprises of 555 firm-years. The mean audit fees of £9.7 million for treatment sample is significantly higher than £6.8 million for control sample. The median audit fees of treatment group is not statistically different from the median audit fees of control group. The mean (median) of total fees paid are statistically higher for treated firms. These results show some evidence that mean audit fees and total fees are higher for EU banks post-SACORD, and these differences continue to remain higher and statistically significant. The treatment sample has a higher mean audit fees relative to the control sample but has lower median audit fees, suggesting that the control sample has more banks that pay lower audit fees.

[INSERT Table 1]

Treatment group mean (median) leverage ratios of 0.19 (0.15) are significantly higher than control group ratios of 0.11 (0.08) (LTDebt/TA) and are less likely to report current year losses (Loss_Ind). Treatment firms exhibit significantly higher firm performance and growth opportunities relative to control group (TobinQ and Revn_Grwth). Treatment sample average (median) revenue of £13.6 (£4.6) billion, are significantly higher than £9.6 (£3.2) billion of control sample.

Table 1, Panel B shows summary statistics of treatment and control groups selected variables means for the pre- and post-SACORD periods. To explore the effect of the implementation of SACORD, we compare the average audit costs prior to the adoption and after the implementation. The mean audit fees of treatment group significantly increased by £4.3

million to £11.4 million relative to an increase of £1.7 million for the control group that is not statistically significant. Consistent with Iliev (2010) findings, and relative to control group, firms that are affected by regulation have higher audit costs.[14]

Treatment group average revenue is £11.6 billion before 2008 and increases to £14.9 billion following the adoption of SACORD regulation. In contrast, the control group average revenue increases from £9.2 billion to £9.8 billion over same period. The treatment and control group average performance, as measured by TobinQ and ROA declined significantly between the pre- and post-SACORD sample period. This evidence suggests that something other than SACORD could be responsible for the sharp drop. Ivashina and Scharfstein (2010) point out that banks' lending dropped during the financial crisis and thus a decline in performance. In addition, both treatment and control groups have a statistically higher rate of reporting losses post-SACORD and lower growth opportunities as indicated by the higher decline of Revn_Grwth. The significant decline in Revn_Grwth and TobinQ can also be associated with the 2008 financial crisis (Ivashina and Scharfstein, 2010).

Panel C shows the Pearson correlations among the variables. Auditfees and Revenue are positively and significantly correlated, consistent with the idea that firm size impact on audit pricing. Turning to the correlations among the measures of Audit fees (Auditfees), we find three correlations higher than 0.5. The correlation between Geo_Seg and Revenue is 0.52, the correlation between TobinQ and Prov/Tloans is 0.61 and the correlation between IFRS and EUR*PsSACORD is 0.63. To address the concern of multicollinearity, we tested for multicollinearity and the highest variance inflation factors (VIF) for all explanatory variables is 2.56. Thus, multicollinearity is not an issue in the analysis.

4.2 Q1 Regression Results

We begin our analysis by examining the real effects of SACORD on audit costs in this section. Figure 1, Panel A plots the mean audit fees from 2004 to 2013 for treatment and control group. As can be clearly seen from Panel A, we find a significant increase of audit fees after the implementation of SACORD. The mean audit fees of treatment group in 2007 (2008) were £1.8 million (£4.3 million) higher than the control group and it remained

[14] Iliev (2010) shows that the implementation of SOX Section 404 regulation imposed significant direct costs for firms with audit fees growing by 98 percent

significantly higher post-SACORD. Figure 1, Panel B plots the mean total fees paid to audit firms by treatment and control group, we find that these two panels look similar. We observe a similar increase in total fees paid by treatment group from 2008, been the year of SACORD adoption compared to control group that did not implement the rules. To clearly understand whether the increase in audit fees was caused by SACORD regulation, we examine the effect of the regulation on audit fees.

[INSERT Figure 1, Panel A and B]

Table 2 contains the Q1 results of the regression analyses of the effects of SACORD regulation on audit costs. The dependent variable, Auditfees, represents the natural logarithm of either the audit fees or total fees incurred by the firm. The key variable of interest is the interaction between the indicators for the EU listed banks and post-SACORD adoption period ($EUR * PsSACORD$). The coefficient captures the change in regulation between firms affected by the regulation relative to the control sample. In column (1), we present the baseline OLS specification for audit fees without control variables. The coefficient on EUR∗ PsSACORD is positive (β=0.59) and highly significant (t =8.22). The result suggests that SACORD significantly increase treatment group audit fees by 79.5 percentage points (=$e^{0.585}$-1) following the implementation relative to the control sample.

INSERT Table 2

In column (2), we estimate the effect of SACORD regulation after controlling for other determinants of audit fees. I find that coefficient on the key independent and interaction variable is positive and significant (β=0.26, t-statistic of 3.54). The results suggest that the economic effect of SACORD regulation on audit fees is 29.6 percent (=$e^{0.259}$-1). Using the difference-in-differences pooled estimation approach to compare the audit fees of EU banks and non-EU banks before and after the regulation effective date, which is £2.54 million; 29.6 percent effect implies an increase of £0.75 million for an average EU bank post-SACORD regulation.

In column (3) of Table 2, we examine the effect of Europe banks post-SACORD regulation on total fees paid. Specifically, we regress the interaction indicator variable on total fees without controls but with firm fixed effects and year fixed effects. The coefficient estimate of EUR ∗ PsSACORD dummy is positive and significant at the 1 percent level (β=0.54, t-statistic

of 7.49). The results suggest that the implied effects of SACORD regulation on total fees paid to audit firms is 71.2 percent (=$e^{0.537}$-1).

As the results in column (4) shows after controlling for other firm characteristics, we find similar magnitude to the results in column (2). The results indicate that treatment group exhibit higher total fees than control group, the estimated coefficient on EUR*PsSACORD is 0.23 and significant (t=3.12). The results indicate that total fees is 25.9 percent (=$e^{0.231}$-1) higher than control group and suggest that the increase in total fees is associated with change in regulation. Overall, the results in columns (1) to (4) corroborate with the conjecture that our treatment group compliance costs significantly increase following the regulation.

Following Angrist and Pischke (2009) approach taken in table 3.3.3, we investigate how the control variables affect our estimate of EUR*PsSACORD. The sensitivity of EUR*PsSACORD to incremental addition of control variables is presented in table 3. In panel A, the raw difference of SACORD effects on audit fees between treatment group and control group excluding controls presented in table 2 is 79.5 percent (coefficient on interaction term EUR*PsSACORD is 0.59, t-statistic of 8.22). In table 3, panel B, we report estimates using total fees as dependent variable. We find similar magnitude to the results when we compare panel A and panel B. All regressions control for firm fixed effects and year fixed effects. The remaining rows for panel A and B show the results while adding control variables. The panels show that firm size (Revenue), foreign business operations (Geo_seg), growth opportunities, and accounting regulation (IFRS) controls are important variables when assessing the magnitude of EUR*PsSACORD.

INSERT Table 3

4.3 Q2 Audit Fees of Small, Midsize and Large Banks

In Table 4, we examine the effect of the implementation of regulation on 'small banks' using natural logarithm of audit fees and total fees as dependent variables. We classify small banks as banks with market capitalization less 25 percentile of total sample market capitalization,

'large banks' as banks with market capitalization above 75 percentile market capitalization of the sample firm-years and 'midsize banks' as banks with market capitalization between 25 percentile and 75 percentile of market capitalization of the sample firm-years.

INSERT Table 4

In Table 4, columns (1) to (3), using natural logarithm of audit fees as dependent variable, the results suggest that, after controlling for other factors, the difference in audit fees of midsize treatment group and control group is significant. As the results shows, the magnitude of effect is only significant for midsize banks (0.20, t-statistic of 2.36), it is not significant for small banks and large banks. Turning to column (5), using natural logarithm of total fees as dependent variable, we find the implied effect of Post-SACORD on audit fees of midsize banks is 26.9 percent (0.24, t-statistic of 3.21).

Our results for large banks are mixed. Using audit fees as dependent variable, we find that the audit costs interaction variable EUR*PsSACORDLgBK is not significant. However, in column (6), we find that the interaction variable EUR*PsSACORDLgBK for large banks is significant only at 10 percent between treatment group and control group (0.13, t-statistic of 1.81), the real effect of increase is approximately 14 percent. Thus, there is at best weak evidence suggesting an increase in total costs for large EU banks post-SACORD. Overall, our results from the cross-sectional analyses in columns (1) to (6) reveal some interesting findings. Our findings indicate that midsize EU banks, depending on the dependent variable, incur average increase in audit fees of approximately 23-27 percent post-SACORD relative to the control group while large banks incur an average increase in total costs of approximately 14 percent.

The audit fees of EU banks with market capitalization below the 25 percentile are not significantly different from control group. Possible explanation reason could be that banks within this threshold experience little or no increase in audit fees because they won price concessions following the global financial crisis (e.g, see McCann, 2010; Whitehouse; 2010). Krishnan and Zhang (2014) indicate that during the financial crisis, banks were able to negotiate lower audit fees. In addition, the smaller banks could have an agreement with the auditors to maintain the status quo on audit fees or reduce audit costs till improvement in profitability of the firm following the economic downturn witnessed during this period of unprecedented financial instability which coincides with the introduction of SACORD.

For the large banks (EUR*PsSACORDLgBK), a possible explanation could be that because these banks pay high audit fees, they can easily bargain on the audit fees. The findings are consistent with the theory of Titman and Trueman (1986) and Thornton and Moore (1993) that large firms have significant relative bargaining power and are more likely to pay lower audit fees. Moreover, an increase in audit fees of large banks can be resisted through threats to move to other audit firms.

4.4 Specification Tests

The implementation of SACORD regulation coincides with the recent global financial crisis and economic recession. Consequently, to address the concerns that concurrent events are not driving the results, I repeated the tests using one period selected randomly (2004, 2006, 2010 2012, 2013) as the supposed implementation period of SACORD rule. We skipped 2005 International Financial Reporting Standards (IFRS) was implemented in 2005. The rest of the model specification is the same as in equation (2). If SACORD is driving the results, then the measured effects should become insignificant or weaker when these hypothetical implementation years are used. We thus provide further robustness tests to address the concerns that the change in audit fees is concentrated around 2008 (i.e., the year SACORD was implemented) and the results are not driven by concurrent events.

In untabulated analyses, we show that rerunning the test with the supposed implementation period, the measured effects around SACORD were insignificant or weaker. The estimation for 2004 as hypothetical implementation period of SACORD shows no evidence of the effects of SACORD on audit fees on treatment group given the lack of significance on the coefficient on $EUR * PsSACORD$ (-0.12, t-statistic of -1.25). The result for 2006 as supposed implementation period of SACORD shows that the coefficient on $EUR * PsSACORD$ is insignificant for audit fees (-0.109, t-statistic of -1.50). With 2010 as the implementation year of SACORD rule, the coefficient on $EUR * PsSACORD$ is insignificant (0.07, t-statistic of 1.61). The result of using 2012 shows no evidence of the effects of SACORD on audit pricing on treatment group given the lack of significance on the $EUR * PsSACORD$ variable (0.04, t-statistic of 1.02). Finally, using 2013 as the supposed implementation year of SACORD, the coefficient on $EUR * PsSACORD$ is not significant (0.06, t-statistic of 1.46). Overall, our tests provide additional support that confounding events were not responsible for the year

2008 results. It shows that year 2008 gives the strongest result and provides evidence that the regulatory change is the main driving force to the effects.

4.5 Q3 and Q4 regression

4.5.1 The Model

The previous section provides evidence consistent with SACORD imposing real costs on firms. Banking theory suggests that information disclosure regulations affect banks risk-taking behaviour (Dong et al., 2006; Chen et al., 2007). In this section, we analyse the effects of SACORD on banks risk taking behaviour. We estimate the regression using difference-in-differences model and we include firm fixed effects to control for unobserved firm-specific trends in bank risk taking and the firm-year fixed effects to control for unobserved time varying post treatment trends at the firm level in risk taking. Specifically, the basic regression model for Q4 and Q5 analyses is:

$$\begin{aligned} RISK1_{it} = {} & \alpha_t + \theta_i + \beta_1 EUR * PsSACORD_t + \beta_2 FinCrs_{it} + \beta_3 Revenue_{it} \\ & + \beta_4 LTDebt/TA_{it} + \beta_5 ROA_{it} + \beta_6 Dep/TA_{it} + \beta_7 TobinQ_{it} + \beta_8 IFRS_{it} \\ & + \beta_9 Revn\_Grwth_{it} + \beta_{10} MV/BV_{it} + \beta_{11} Prov/Tloan_{it} + \beta_{12} NPL/Tloan_{it} \\ & + \beta 13_{13} CFO_{it} + \varepsilon_{it} \end{aligned} \tag{2}$$

where RISK1 in equation (2) is a proxy for measuring bank risk taking investment behaviour (Boubakri et al., 2013). We include deposits scaled by total assets (Dep/TA) to control for market power and firm growth opportunities (MV/BE). Other controls are defined in section 3.2.

RISK1 is the volatility of firm's return on assets (ROA) over four corresponding years as in Boubakri et al. (2013). To verify the robustness of the inferences, we estimate three alternative risk taking measures (RISK2, RISK3 and RISK4). Following Boubakri et al. (2013), RISK2 is defined as the difference between the maximum and the minimum of return of assets (ROA) over four corresponding years moving window, and RISK3 is equal to the volatility over four corresponding years moving window of the difference between a firm's ROA and the average ROA across all listed banks used. Adapting Choy et al. (2014) approach, RISK4 is defined as is the standard deviation of earnings before interest, tax,

depreciation, and amortization (EBITDA) scaled by total assets, measured over the prior 4 years. Thus, a lower value of RISK1, RISK2, RISK3 or RISK4 which is a composite measure of bank risk taking behaviour indicates that the bank is more stable.

4.5.2 Is there a significant difference in the risk taking investment behaviour of listed banks in the EU post SACORD?

INSERT Table 5

In Table 5, we examine the likelihood of banks reducing their risk taking behaviour as a result of the implementation of SACORD. The overarching message from the difference-in-differences results presented in column (1) in Table 6 is that the increase in information disclosure induced by the introduction of SACORD is associated with reduction in bank risk taking behaviour. The coefficient of EUR.PsSACORD for RISK1 is negative and highly significant at the 1 percent level ($\beta = -0.22, t - statistics = -3.60$). The result shows that risk appetite of banks reduced by approximately 20 percent (1-e-$^{0.22}$) more in the EU than control group after the introduction of SACORD. Thus, the evidence supports the claim that increase in disclosure regulation plays a role in mitigating increased risk taking decisions (e.g., Bargeron et al., 2010). The coefficient of the interaction variable for the model in column (3) is positive but is not significant. The coefficient of the interaction variable of interest in columns (2) and (4) is significantly negative, suggesting that SACORD adoption is associated with reduction in bank risk taking. The evidence suggests that banks risk taking declined for treatment group relative to the control group. All in all, the results show that banks risk activities decreased by approximately 20 percent (1-e-$^{0.22}$) to 36 percent (1-e-$^{0.45}$) relative to control group.

INSERT Table 6

4.5.3. Is there a significant difference in the risk taking investment behaviour of large banks compared to small and midsize banks the EU post SACORD?

Our analysis so far has focused on the risk taking investment behaviours of listed banks in general. Next, we examine the risk taking behaviour of banks classified as large, midsize and small of treatment group relative to control group. In Table 6, columns (1) to (4) show that the coefficient of interaction variable of interest, though positive, is not significant for small banks. The results suggest that the risk appetite of smaller banks in the EU does not significantly differ from small banks in the control group. This finding is consistent with empirical findings in Bhagat et al. (2015) that small banks are associated with low risk taking and thus their risk taking appetite would not be affected by change in regulation.

INSERT Table 7

INSERT Table 8

Table 7 and 8 show the regression results of midsize and large banks risk taking behaviour. The coefficients of the interaction variable of interest for the model in columns (1), (2) and (4) are negative and highly significant at the 1 percent level whilst the interaction variable in column (3) of Tables 8 and 9 is not statistically significant. Collectively, the evidence suggests that increase reporting and disclosure regulation reduces risk taking of midsize and large EU banks post-SACORD compared to control group. Interestingly, we compare the coefficients of the interaction variable of midsize and large banks and find that the coefficient of midsize banks is almost twice of the coefficient of the large banks. These results, therefore, suggest that large firms engage in more risk taking activities. Possible explanations could be that these large banks operate on the premise that because they are "too big to fail" (TBTF), they can take on more risk than the smaller banks. This is consistent with Bhagat et al. (2015) finding that large banks engage in more risk taking activities. Along the same lines, the Federal Reserve Bank of Dallas President and CEO expresses concern that the large banks "…enjoy subsidies relative to their non-TBTF competitors. They are thus more likely to take greater risks in search of profits, protected by the presumption that bankruptcy is a highly unlikely outcome" (Fisher, 2013).

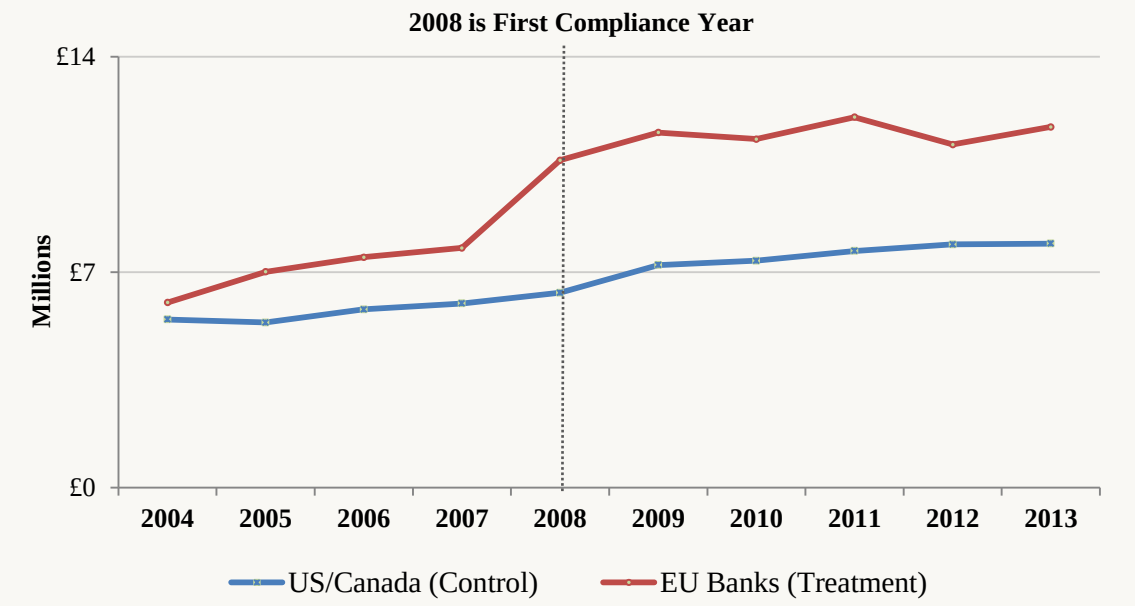
5. Conclusion

In this paper, we estimate the effects of SACORD regulation on firms audit pricing using the difference-in-differences estimation. Our results show that the economic effects of SACORD

rule on audit fees of banks in the EU are approximately 26 to 30 percent higher than control group. This is consistent with prior research that financial regulation increases compliance costs. Second, we find that bank risk taking activities decreased by approximately 20 to 36 percent when compared to control group. We document that whilst the implementation of SACORD caused midsize and large banks to reduce their risk taking behaviour compared to the control group, the impact on risk taking behaviour of small banks relative to control group is not significant. Finally, we provide evidence of a significant decrease in bank risk taking induced by the adoption of SACORD regulation relative to control group.

Appendix A

Panel A: Annual Average of Audit Fees: US/Canada and EU Banks



Panel B: Annual Average of Total Fees: US/Canada and EU Banks

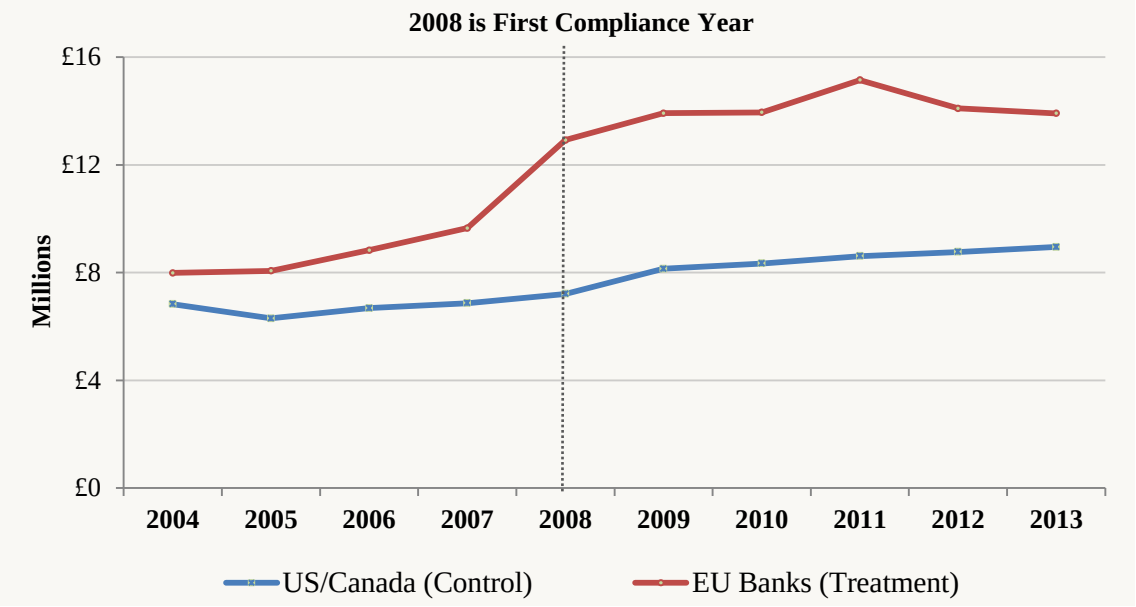


Figure 1. Audit fees annual means

Table 1

Panel A: Summary statistics for treatment and control groups

		Treatment					Control					Difference	
Variable	**Units**	**Q1**	**Mean**	**Median**	**Q3**	**Std. Dev.**	**Q1**	**Mean**	**Median**	**Q3**	**Std. Dev.**	**Mean**	**Median**
Auditfees	£'000	854	9,678	2,835	13,073	14,580	1,165	6,821	2,862	7,077	10,955	2,857***	-27
TAudFees	£'000	1,357	11,853	3,982	15,502	17,251	1,237	7,775	3,135	8,624	12,243	4,078***	847**
Naudfee	£'000	204	2175	709	2789	3787	38	952	181	688	1729	1,223***	528***
Revenue	£'mill	1,546	13,600	4,627	15,800	18,600	975	9,605	3,249	9,403	17,000	3,995***	1,378***
Mktcap	£'mill	2,094	13,400	6,302	17,200	18,900	2,485	17,100	5,034	16,200	27,500	-3,700**	1,268
FinCrs	Integer	0.00	0.30	0.00	1.00	0.46	0.00	0.31	0.00	1.00	0.46	-0.01	0.00
Nloans/TA	Ratio	0.53	0.62	0.65	0.75	0.20	0.53	0.62	0.64	0.71	0.14	0.00	0.00
LTDebt/TA	Ratio	0.07	0.19	0.15	0.23	0.17	0.03	0.11	0.08	0.12	0.15	0.08***	0.07***
Prov/Tloans	Ratio	0.00	0.01	0.01	0.01	0.03	0.00	0.01	0.00	0.01	0.01	0.00**	0.00
Accru/TA	Ratio	0.00	0.01	0.00	0.01	0.02	0.00	0.01	0.00	0.01	0.01	0.00	0.00
ROA	Ratio	0.00	0.01	0.01	0.01	0.02	0.00	0.01	0.01	0.01	0.01	0.00	0.00
TobinQ	Ratio	0.99	1.05	1.01	1.05	0.13	0.99	1.03	1.03	1.07	0.07	0.02**	-0.02*
Revn_Grwth	Ratio	-0.05	0.06	0.04	0.16	0.19	-0.05	0.04	0.02	0.12	0.15	0.02	0.02*
SIFI	Integer	0.00	0.08	0.00	0.00	0.27	0.00	0.03	0.00	0.00	0.17	0.05***	0.00***
Loss_Ind	Integer	0.00	0.09	0.00	0.00	0.29	0.00	0.10	0.00	0.00	0.30	-0.01	0.00
Geo_seg	Integer	1.10	1.11	1.10	1.39	0.30	0.69	0.90	0.69	0.69	0.39	0.21***	0.41***
IFRS	Integer	1.00	0.90	1.00	1.00	0.30	0.00	0.09	0.00	0.00	0.28	0.81***	1.00***
Firm-Years						**555**					**303**		

Panel B: Primary variable descriptive statistics of the sample pre-SACORD and post-SACORD

		Treatment Group					Control Group				
Variable	**Units**	**Pre-**	**Std. Dev.**	**Post-**	**Std. Dev.**	**Diff.**	**Pre-**	**Std. Dev.**	**Post-**	**Std. Dev.**	**Diff.**
Auditfees	£'000	7,104	11,658	11,394	16,028	-4,290***	5,660	8,240	7,409	12,078	-1,749
TAudFees	£'000	8,659	13,377	13,983	19,134	-5,324***	6,668	9,295	8,336	13,482	-1,668
Naudfee	£'000	1,555	2,657	2,589	4,336	-1,034***	1,008	1,797	924	1,697	84
Revenue	£'mill	11,600	16,300	14,900	19,900	-3,300**	9,242	16,000	9,789	17,500	-547
Mktcap	£'mill	14,400	18,800	12,700	18,900	1,700	18,500	28,200	16,400	27,200	2,100
FinCrs	Integer	0.25	0.43	0.34	0.48	-0.09**	0.27	0.45	0.33	0.47	-0.06
Nloans/TA	Ratio	0.62	0.21	0.61	0.20	0.01	0.62	0.13	0.61	0.14	0.01
LTDebt/TA	Ratio	0.19	0.17	0.19	0.17	0.00	0.12	0.16	0.10	0.14	0.02
Prov/Tloans	Ratio	0.01	0.03	0.01	0.03	-0.01**	0.00	0.00	0.01	0.01	-0.01***
Accru/TA	Ratio	0.01	0.02	0.01	0.02	0.00*	0.01	0.01	0.01	0.01	0.00**
ROA (%)	Ratio	1.31	1.48	0.38	2.89	0.93***	0.83	0.68	0.50	1.04	0.33***
TobinQ	Ratio	1.09	0.13	1.02	0.13	0.07***	1.09	0.07	1.01	0.04	0.08***
Revn_Grwth	Integer	0.16	0.17	-0.01	0.16	0.17***	0.14	0.13	-0.01	0.14	0.15***
SIFI	Ratio	0.00	0.00	0.14	0.35	-0.14***	0.00	0.00	0.04	0.21	-0.04***
Loss_Ind	Integer	0.00	0.07	0.16	0.36	-0.15***	0.02	0.14	0.14	0.35	-0.12***
Geo_seg	Integer	1.10	0.30	1.11	0.29	-0.01	0.93	0.42	0.88	0.38	0.05
IFRS	Integer	0.75	0.43	1.00	0.00	-0.25***	0.00	0.00	0.13	0.34	-0.13***

Panel C:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Auditfees	1.00															
2. EUR*PsSACORD	0.14	1.00														
3. FinCrs	0.01	0.05	1.00													
4. Revenue	0.88	0.14	0.04	1.00												
5. Nloan/TA	-0.53	-0.04	0.01	-0.49	1.00											
6. LTDebt/TA	-0.26	0.12	0.04	-0.18	0.39	1.00										
7. Prov/Tloans	-0.13	0.10	0.09	-0.11	0.14	0.26	1.00									
8. Accru/TA	-0.13	0.08	0.08	-0.15	0.11	0.13	0.22	1.00								
9. ROA	-0.16	-0.12	-0.09	-0.12	-0.02	0.16	-0.04	-0.15	1.00							
10. TobinQ	-0.32	-0.16	-0.06	-0.29	0.11	0.16	0.61	0.08	0.31	1.00						
11. SIFI	0.41	0.24	-0.18	0.38	-0.26	-0.08	-0.02	-0.04	-0.06	-0.13	1.00					
12. Loss_Ind	0.08	0.15	0.14	0.03	0.01	0.01	0.19	0.32	-0.41	-0.18	0.06	1.00				
13. Geo_seg	0.47	0.19	-0.01	0.52	-0.31	-0.12	-0.12	-0.10	-0.03	-0.10	0.25	-0.02	1.00			
14. IFRS	0.08	0.63	0.04	0.14	-0.02	0.18	0.06	0.04	0.01	0.02	0.12	0.01	0.26	1.00		
15. Naudfee	0.44	0.14	-0.01	0.44	-0.22	0.05	0.02	-0.03	0.01	-0.12	0.19	0.02	0.27	0.17	1.00	
16. Revn_Grwth	-0.09	-0.28	-0.02	-0.03	0.03	0.06	-0.10	-0.04	0.21	0.18	-0.13	-0.27	0.03	0.05	-0.01	1.00

Panel A in Table 1 presents the summary statistics for the treatment and control groups. The difference column reports the difference in means and median between the treatment and control groups and is tested for significance using a two-tailed t-test and the Wilcoxon rank test respectively. The sample has 555 treatment and 303 control group firm-year observations. Panel B presents the descriptive statistics of the pre-SACORD and post-SACORD for the two sample groups. Test statistics are computed using a t-test (two-tailed test) for a significant change in means. Panel C presents the Pearson correlations. All variables are as defined in appendix B. *, ** and *** indicate difference in means or medians significant at the 10%, 5%, and 1% level, respectively, assuming independence.

Table 2

Multivariate analysis of audit fee differences between EU banks and control group

This table presents SACORD effect on audit fees and total fees. All OLS regressions are estimated with the model defined in equation (3). The dependent variables are the Natural logarithm of Audit Fees and Total Fees. In estimating (1) to (4), EUR*PsSACORD is an interaction dummy variable equals to one if the bank is EU and the period is from 2008 to 2013. I include year and firm fixed effects to control for any fundamental differences in audit fees across years and firms. Implied audit fee increase refers to the effect of implementing SACORD regulation on mean banks in EU in £ thousands. All other variables are also defined in the Appendix B. Statistically significance denoted as ***, **, and * for 1%, 5% and 10% respectively (using a two-sided test). The models are estimated by difference-in-differences with standard errors that are robust to heteroskedasticity.

Dependent Variable	Ln(Audit Fees)		Ln(Total Fees)	
Estimation Type	(1) OLS	(2) OLS	(3) OLS	(4) OLS
Intercept	14.747***	5.408***	14.999***	5.941***
	[541.92]	[4.60]	[546.30]	[5.69]
EUR*PsSACORD	0.585***	0.259***	0.537***	0.231***
	[8.22]	[3.54]	[7.49]	[3.12]
FinCrs		-0.050		-0.050*
		[-1.53]		[-1.69]
Revenue		0.581***		0.529***
		[7.83]		[8.58]
Net Loan/TA		0.031		-0.137
		[0.11]		[-0.76]
LTDebt/TA		-0.120		-0.062
		[-0.37]		[-0.21]
Prov/Tloans		-0.355		0.136
		[-0.15]		[0.09]
Accrual/TA		0.060		-0.046
		[0.09]		[-0.06]
ROA		-0.472		-0.960
		[-0.35]		[-0.93]
TobinQ		-0.536*		-0.647*
		[-1.72]		[-1.69]
SIFI		0.091		0.119**
		[1.48]		[2.35]
Loss_Ind		0.054		-0.015
		[0.82]		[-0.30]
Geo_seg		0.945***		1.315***
		[3.50]		[6.94]
IFRS		0.110**		0.034
		[2.43]		[0.73]
Naudfee		0.010		0.042***
		[1.49]		[4.95]
Revn_Grwth		-0.183*		-0.155*
		[-1.85]		[-1.78]
Number of observations	844	843	844	843
R-squared	0.019	0.720	0.027	0.736
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Implied costs	79.5%	29.6%	71.2%	25.9%
Change in audit fees (£'000)	2,541	2,541	3,657	3,657
Implied audit fee increase (£'000)	2,019	753	2,602	948

Table 3

Regression Estimates of Audit fees and Total fees Using Alternative Controls

Panel A: **Audit fees Sensitivity Tests**

	Coefficient on EUR*PsSACORD	t-statistics	R2
Raw difference	0.585	8.22	0.019
and FinCrs	0.582	8.15	0.019
and Revenue	0.357	5.11	0.752
and Net Loan/TA	0.356	5.11	0.754
and LTDebt/TA	0.354	5.07	0.761
and Prov/Tloans	0.344	4.97	0.755
and Accrual/TA	0.344	4.96	0.756
and ROA	0.343	4.92	0.757
and TobinQ	0.319	4.66	0.761
and SIFI	0.304	4.30	0.763
and Loss_Ind	0.301	4.31	0.765
and Geo seg	0.302	4.34	0.724
and IFRS	0.291	4.25	0.704
and Naudfee	0.293	4.27	0.706
and Revn_Grwth	0.259	3.54	0.720

Panel B: **Total fees Sensitivity Tests**

	Coefficient on EUR*PsSACORD	t-statistics	R2
Raw difference	0.537	7.49	0.027
and FinCrs	0.536	7.47	0.027
and Revenue	0.320	4.78	0.767
and Net Loan/TA	0.319	4.76	0.772
and LTDebt/TA	0.317	4.72	0.776
and Prov/Tloans	0.308	4.70	0.776
and Accrual/TA	0.308	4.70	0.776
and ROA	0.308	4.56	0.776
and TobinQ	0.273	3.98	0.772
and SIFI	0.252	3.61	0.775
and Loss_Ind	0.252	3.61	0.775
and Geo seg	0.254	3.64	0.706
and IFRS	0.251	3.57	0.703
and Naudfee	0.259	3.88	0.724
and Revn_Grwth	0.231	3.12	0.736

Table 4

Multivariate analysis of audit fees and total fees of small midsize large banks and control group

This table presents SACORD effect on audit fees and total fees using the difference-in-differences approach. Banks with market capitalization greater than the 75 percentile of total sample market capitalization are classified as 'large banks' and while banks with market capitalization below 25 percentile are classified as small banks. Banks with market capitalization between 25 percentile and 75 percentile are classified as mildsize banks. The dependent variable is the natural logarithm of Auditfees and TAudfees. EUR*PsSACORDSmBK is a dummy variable equal 1 for the interaction of post-SACORD, market capitalization below 25 percentile and is an European bank respectively. EUR*PsSACORDMsBK and is a dummy variable equals 1 for the interaction of post-SACORD, market capitalization of between 25 percentile and 75 percentile and is an European bank respectively. EUR*PsSACORDLgBK and is a dummy variable equals 1 for the interaction of post-SACORD, market capitalization above 75 percentile and is an European bank respectively. All other variables are also defined in the Appendix B. I include year and firm fixed effects to control for any fundamental differences in audit fees across years and firms. Robust t-statistics are reported in brackets, with significance denoted as ***, **, and * for 1%, 5% and 10% respectively.

	Ln(Audit Fees)			Ln(Total Fees)		
Intercept	4.144***	4.911***	4.340***	4.879***	5.700***	5.076***
	[3.75]	[4.55]	[3.88]	[4.49]	[5.65]	[4.63]
EUR*PsSACORDSmBK	0.098			-0.037		
	[0.85]			[-0.36]		
EUR*PsSACORDMsBK		0.204**			0.238***	
		[2.36]			[3.21]	
EUR*PsSACORDLgBK			0.090			0.130*
			[1.21]			[1.81]
FinCrs	-0.056*	-0.059*	-0.060*	-0.060**	-0.058*	-0.060*
	[-1.68]	[-1.74]	[-1.77]	[-2.08]	[-1.87]	[-1.91]
Revenue	0.695***	0.639***	0.691***	0.637***	0.563***	0.621***
	[10.03]	[9.22]	[9.76]	[10.03]	[9.07]	[9.75]
Net Loan/TA	0.028	0.067	0.060	-0.110	-0.101	-0.107
	[0.10]	[0.25]	[0.22]	[-0.61]	[-0.58]	[-0.58]
LTDebt/TA	-0.081	-0.027	-0.067	0.005	0.029	-0.021
	[-0.25]	[-0.08]	[-0.20]	[0.02]	[0.10]	[-0.07]
Prov/Tloans	-0.524	-0.075	-0.711	-0.045	0.516	-0.273
	[-0.22]	[-0.03]	[-0.33]	[-0.03]	[0.34]	[-0.20]
Accrual/TA	-0.167	0.192	-0.016	-0.102	0.140	-0.092
	[-0.23]	[0.29]	[-0.02]	[-0.12]	[0.18]	[-0.11]
ROA	-1.109	-1.203	-1.443	-1.900*	-1.553	-1.844*
	[-0.80]	[-0.89]	[-1.06]	[-1.82]	[-1.63]	[-1.84]
TobinQ	-0.735**	-0.686**	-0.828**	-0.912**	-0.747**	-0.920**
	[-2.17]	[-2.30]	[-2.46]	[-2.48]	[-2.14]	[-2.40]
SIFI	0.167***	0.171***	0.125**	0.178***	0.194***	0.129***
	[3.04]	[3.13]	[2.43]	[3.73]	[4.12]	[2.70]
Loss_Ind	0.059	0.053	0.064	-0.008	-0.018	-0.004
	[0.86]	[0.75]	[0.94]	[-0.15]	[-0.34]	[-0.08]
Geo seg	0.760***	0.736***	0.720***	1.079***	1.138***	1.125***
	[2.99]	[2.80]	[2.70]	[5.13]	[5.30]	[5.06]
IFRS	0.148***	0.144***	0.152***	0.077	0.061	0.069
	[2.96]	[2.92]	[2.91]	[1.56]	[1.35]	[1.43]
Naudfee	0.010	0.010	0.009	0.041***	0.042***	0.041***
	[1.40]	[1.42]	[1.24]	[4.60]	[4.97]	[4.46]
Revn_Grwth	-0.356***	-	-0.346***	-0.321***	-0.227***	-0.289***
	[-3.95]	[-3.23]	[-3.83]	[-4.34]	[-3.13]	[-3.98]
Number of observations	843	843	843	843	843	843
R-squared	0.754	0.740	0.757	0.769	0.749	0.767
Firm fixed effects	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES
Implied costs	Nil	22.6%	Nil	Nil	26.9%	13.9%

Table 5

This table reports the regression results for the risk taking behaviour of banks post-SACORD. The dependent variable RISK1 is the volatility of ROA over four corresponding years. RISK2 is the difference between the maximum and the minimum of ROA over four corresponding years. RISK3 the volatility over four corresponding years of the difference between the bank ROA and the average ROA across all listed banks in Europe. RISK4 is the volatility of EBITDA scaled by total assets, measured over four corresponding years. EUR*PsSACORD dummy variable set to one if the bank is an European bank and the period is from 2008 financial year. The models are estimated by difference-in-differences with standard errors that are robust to heteroskedasticity. Statistically significance denoted as ***, **, and * for 1%, 5% and 10% respectively.

	RISK1	RISK2	RISK3	RISK4
Intercept	-1.367	-1.407	-4.167	-0.779
	[-0.49]	[-0.22]	[-1.24]	[-0.3]
EUR*PsSACORD	-0.220***	-0.448***	0.067	-0.273***
	[-3.60]	[-3.50]	[0.70]	[-3.66]
FinCrs	-0.014	-0.035	-0.505**	0.029
	[-0.35]	[-0.39]	[-13.41]	[0.67]
Revenue	0.088	0.129	0.337**	0.089
	[0.63]	[0.41]	[2.00]	[0.69]
LTDebt/TA	-1.354*	-2.832*	-1.139	-1.024*
	[-1.81]	[-1.66]	[-1.28]	[-1.67]
ROA	-38.362***	-78.001***	-36.754***	-34.798***
	[-7.70]	[-7.65]	[-5.99]	[-9.04]
Dep/TA	-0.241	-0.574	1.193	-0.104
	[-0.33]	[-0.34]	[1.36]	[-0.13]
TobinQ	0.964	1.462	-0.328	0.379
	[0.94]	[0.64]	[-0.27]	[0.36]
IFRS	0.091	0.199	0.258**	0.094
	[1.49]	[1.48]	[2.51]	[1.63]
Revn_Grwth	-0.180	-0.397	-0.233	-0.271*
	[-1.61]	[-1.65]	[-1.37]	[-1.85]
MV/BV	-0.020	-0.040	-0.038***	-0.024
	[-1.48]	[-1.39]	[-2.68]	[-1.55]
Prov/Tloans	6.775**	14.605**	-2.355	13.185***
	[2.54]	[2.54]	[-0.48]	[4.16]
NPL/Tloans	3.786**	7.966*	3.599**	3.449*
	[1.99]	[1.93]	[2.61]	[1.66]
CFO/TA	-5.086	-9.295	-8.053	-3.948
	[-1.20]	[-1.04]	[-1.60]	[-1.22]
Number of observations	801	801	801	780
R-squared	0.59	0.58	0.29	0.53
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes

Table 6

This table reports the regression results for the risk taking behaviour of 'big banks' post-SACORD. EUR*PsSACORDSmBK is a dummy variable equals 1 if the bank is an European bank, the market capitalization is below 25 percentile of sample market capitalization and the period is from 2008 financial year. The dependent variable RISK1 is the volatility of ROA over four corresponding years. RISK2 is the difference between the maximum and the minimum of ROA over four corresponding years. RISK3 the volatility over four corresponding years of the difference between the bank ROA and the average ROA across all listed banks in Europe. RISK4 is the volatility of EBITDA scaled by total assets, measured over four corresponding years. The models are estimated by difference-in-differences with standard errors that are robust to heteroskedasticity. Coefficients marked with ***, **, and * are significant at the 1%, 5%, and 10% level, respectively.

	RISK1	RISK2	RISK3	RISK4
Intercept	0.216	1.848	-4.502	1.201
	[0.08]	[0.29]	[-1.39]	[0.47]
EUR*PsSACORDSmBK	0.087	0.224	0.162	0.094
	[0.78]	[0.93]	[1.28]	[0.77]
FinCrs	-0.003	-0.012	-0.504***	0.041
	[-0.09]	[-0.14]	[-13.47]	[0.99]
Revenue	-0.030	-0.116	0.356**	-0.057
	[-0.21]	[-0.36]	[2.23]	[-0.43]
LTDebt/TA	-1.458**	-3.052*	-1.148	-1.151*
	[-2.01]	[-1.84]	[-1.30]	[-1.97]
ROA	-37.430***	-75.962***	-36.455***	-33.651***
	[-7.42]	[-7.36]	[-5.93]	[-8.23]
Dep/TA	-0.312	-0.710	1.252	-0.192
	[-0.43]	[-0.44]	[1.48]	[-0.24]
TobinQ	1.150	1.861	-0.300	0.586
	[1.14]	[0.84]	[-0.25]	[0.56]
IFRS	0.046	0.106	0.262**	0.042
	[0.76]	[0.79]	[2.60]	[0.75]
Revn_Grwth	-0.023	-0.074	-0.273*	-0.078
	[-0.24]	[-0.35]	[-1.95]	[-0.63]
MV/BV	-0.013	-0.025	-0.039***	-0.015
	[-1.04]	[-0.95]	[-2.90]	[-1.10]
Prov/Tloans	7.366***	15.819***	-2.483	13.961***
	[2.71]	[2.66]	[-0.51]	[4.04]
NPL/Tloans	3.431*	7.203*	3.544**	3.027
	[1.88]	[1.82]	[2.64]	[1.54]
CFO/TA	-5.217	-9.593	-8.149	-4.110
	[-1.22]	[-1.07]	[-1.62]	[-1.25]
Number of observations	801	801	801	780
R-squared	0.67	0.65	0.28	0.62
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes

Table 7

This table reports the regression results for the risk taking behaviour of 'small banks' post-SACORD. EUR*PsSACORDMsBK is a dummy variable equals 1 if the bank is an European bank, the market capitalization is between 25 percentile and 75 percentile of sample market capitalization and the period is from 2008 financial year. The dependent variable RISK1 is the volatility of ROA over four corresponding years. RISK2 is the difference between the maximum and the minimum of ROA over four corresponding years. RISK3 the volatility over four corresponding years of the difference between the bank ROA and the average ROA across all listed banks in Europe. RISK4 is the volatility of EBITDA scaled by total assets, measured over four corresponding years. The models are estimated by difference-in-differences with Standard errors are adjusted for heteroskedasticity and t-statistics are reported below the coefficients in parentheses. Coefficients marked with ***, **, and * are significant at the 1%, 5%, and 10% level, respectively.

	RISK1	RISK2	RISK3	RISK4
Intercept	-0.607	0.061	-4.958	0.213
	[-0.22]	[0.01]	[-1.53]	[0.08]
EUR*PsSACORDMsBK	-0.226***	-0.483***	-0.098	-0.264**
	[-2.83]	[-2.86]	[-1.02]	[-2.64]
FinCrs	0.001	-0.005	-0.505***	0.048
	[0.01]	[-0.06]	[-13.17]	[1.13]
Revenue	0.035	0.027	0.396**	0.018
	[0.26]	[0.09]	[2.49]	[0.14]
LTDebt/TA	-1.454**	-3.037*	-1.120	-1.147**
	[-2.03]	[-1.85]	[-1.25]	[-1.99]
ROA	-37.748***	-76.757***	-36.977***	-34.057***
	[-7.51]	[-7.45]	[-5.97]	[-8.83]
Dep/TA	-0.253	-0.592	1.253	-0.120
	[-0.36]	[-0.37]	[1.44]	[-0.15]
TobinQ	0.994	1.510	-0.424	0.440
	[0.99]	[0.68]	[-0.35]	[0.43]
IFRS	0.071	0.160	0.279***	0.068
	[1.14]	[1.18]	[2.78]	[1.19]
Revn_Grwth	-0.114	-0.270	-0.318	-0.182
	[-1.12]	[-1.22]	[-2.06]	[-1.38]
MV/BV	-0.015	-0.030	-0.041***	-0.017
	[-1.2]	[-1.13]	[-2.90]	[-1.15]
Prov/Tloans	6.693**	14.369**	-2.811	13.106***
	[2.62]	[2.59]	[-0.56]	[4.33]
NPL/Tloans	3.604*	7.604*	3.727***	3.210
	[1.95]	[1.89]	[2.67]	[1.60]
CFO/TA	-5.222	-9.578	-8.062	-4.098
	[-1.22]	[-1.07]	[-1.61]	[-1.27]
Number of observations	801	801	801	780
R-squared	0.62	0.61	0.25	0.57
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes

Table 8

This table reports the regression results for the risk taking behaviour of 'small banks' post-SACORD. EUR*PsSACORDLgBK is a dummy variable equals 1 if the bank is an European bank, the market capitalization is higher than the 75 percentile of sample market capitalization and the period is from 2008 financial year. The dependent variable RISK1 is the volatility of ROA over four corresponding years. RISK2 is the difference between the maximum and the minimum of ROA over four corresponding years. RISK3 the volatility over four corresponding years of the difference between the bank ROA and the average ROA across all listed banks in Europe. RISK4 is the volatility of EBITDA scaled by total assets, measured over four corresponding years. The models are estimated by difference-in-differences with Standard errors are adjusted for heteroskedasticity and t-statistics are reported below the coefficients in parentheses. Coefficients marked with ***, **, and * are significant at the 1%, 5%, and 10% level, respectively.

	RISK1	RISK2	RISK3	RISK4
Intercept	-0.218	0.900	-4.302	0.602
	[-0.08]	[0.14]	[-1.31]	[0.23]
EUR*PsSACORDLgBK	-0.133***	-0.281***	0.119	-0.192***
	[-2.92]	[-2.88]	[1.45]	[-3.42]
FinCrs	-0.011	-0.029	-0.503***	0.030
	[-0.26]	[-0.32]	[-13.15]	[0.70]
Revenue	-0.001	-0.052	0.352**	-0.018
	[-0.01]	[-0.16]	[2.20]	[-0.13]
LTDebt/TA	-1.407*	-2.937	-1.142	-1.085*
	[-1.92]	[-1.75]	[-1.28]	[-1.84]
ROA	-37.660***	-76.569***	-36.992***	-33.871***
	[-7.44]	[-7.38]	[-5.97]	[-8.42]
Dep/TA	-0.294	-0.680	1.189	-0.163
	[-0.40]	[-0.41]	[1.36]	[-0.20]
TobinQ	1.151	1.845	-0.408	0.594
	[1.13]	[0.81]	[-0.34]	[0.57]
IFRS	0.057	0.129	0.265**	0.055
	[0.92]	[0.96]	[2.63]	[0.97]
Revn_Grwth	-0.063	-0.160	-0.247	-0.134
	[-0.63]	[-0.73]	[-1.64]	[-1.06]
MV/BV	-0.016	-0.031	-0.038***	-0.019
	[-1.23]	[-1.15]	[-2.76]	[-1.36]
Prov/Tloans	7.419***	15.920***	-2.596	14.058***
	[2.72]	[2.67]	[-0.52]	[4.07]
NPL/Tloans	3.503*	7.389*	3.688***	3.105
	[1.92]	[1.86]	[2.65]	[1.57]
CFO/TA	-5.168	-9.463	-8.020	-4.070
	[-1.20]	[-1.05]	[-1.60]	[-1.24]
Number of observations	801	801	801	780
R-squared	0.66	0.64	0.27	0.61
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes

Appendix B

Variable	Description
Mktcap	Natural logarithm of fiscal year-end stock price multiplied by the number of shares outstanding (market capitalisation)
Auditfees	Natural logarithm of total audit and audit-related fees charged by the external auditor for audit related work
TAudFees	Natural logarithm of total audit fees, audit related fees and non-audit fees paid to the auditors
Naudfee	Natural logarithm of non-audit fees or consultancy fees paid to the auditors
TAssets	Natural logarithm of total assets of firm
Revenue	Natural logarithm of net revenue of the financial year
Nloan/TA	Net loans scaled by Total assets
LTDebt/TA	Long term debts scaled by total assets (Leverage)
Loss_Ind	Dummy variable equal 1 if the bank reported a loss in the current year
LLP/Tloans	Loan loss provision scaled by total loans
NPL/Tloans	Non-performing loans scaled by total loans
Return on assets (ROA)	The ratio of net income after interest and tax to average total assets
Geo seg	Natural logarithm of 1 plus the number of geographical segments from Bankscope.
Financial crisis (FinCrs)	Dummy equals 1 between 2007-2009
Accru/TA	Absolute value of accruals (difference between net income and cash flow from operations) scaled by ending total assets
Systematically important financial institutions (SIFI)	Dummy equals 1 when the financial institution is classified as SIFI.
Non-interest-revenue to total revenue	Non-interest-revenue scaled by total revenue.
CFO/TA	Net cash flow from operation scaled by total assets
TobinQ	Market capitalization + total liabilities scaled by common stock + total liabilities
RISK1	RISK1 is the volatility of firm's return on assets over four corresponding years.
RISK2	RISK2 is the difference between the maximum and the minimum of return of assets over four corresponding years.
RISK3	RISK3 is the volatility over four corresponding years of the difference between a firm's ROA and the average ROA across all listed banks in Europe
RISK4	RISK4 is the volatility of firm's earnings before interest, tax, depreciation, and amortization (EBITDA) scaled by total assets, measured over four corresponding years.
Asset growth	The rate of growth in total assets between the current year and the preceding year.

Revenue growth	The rate of growth in net revenue between the current year and the preceding year.
MV/BV	Market Value of assets scaled by Book Value of assets
Dep/TA	Total bank deposits scaled by total assets
NIR/Rev	Non-interest revenue scaled by net revenue
International Financial Reporting Standards (IFRS)	Dummy equals 1 when IFRS was implemented in EU in 2005-2013 and 2011-2013 in Canada.

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