Middlesex University London

THE IMPACT OF COMPETITION AND INTERNAL CORPORATE GOVERNANCE MECHANISM ON BANK PERFORMANCE

The Case of North American and European Countries

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2ND DECEMBER 2021

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Dedication

I would like to dedicate the thesis to my partner Atinuke, family members (Sister Oluyemi oloyede and Uncle Ademola Adekola, Dr./Mrs. Animashaun), and my mother. She has helped and encouraged me through the difficult times since 2009 in the United Kingdom.

Acknowledgment

I would like to specially acknowledge and appreciate the Director of Studies (Dr. Sylvia Gottschalk) and supervisor (Dr. Alireza Rohani) for their help and unrelenting support towards my Ph.D. completion. I also appreciate the contributions of previous supervisors/DOS – Dr. Nemanja Radic, Prof Ephraim Clark, Dr. David Kernohan, and Prof. Franco Fiordelisi.

Tremendous and continual support by Assistant Prof. Sylvia is remarkable – Thank You!

Abstract

This thesis examined the effect of antitrust law and bank concentration on European and North American bank performance and managerial slack. This study empirically investigated the interrelated issues of antitrust policy, competition, and corporate governance and showed their significant roles in maximising shareholder wealth. Our analysis also examined the impact of concentration, antitrust law, internal corporate governance, and bank-specific and macro-economic factors on European and North American banking industry performance. With attention to E.U. commercial banks (1998-2014), European savings banks (2001-2014), European cooperative banks (2005-2014), United States commercial banks, Canada commercial banks, and European/North-American listed commercial banks (Part A – Data analysis with no governance variable [1995-2018]; Part B – Data with governance variables [2006-2018]).

The higher level of property and agricultural loans, loan loss allowance, loan charges off, and non-performing loans to total asset ratio contributed to United States commercial bank failures (Alali and Romero, 2012). Also, in years leading to the 2007-09 financial crisis, banks failed to comply with the minimum capital requirements for risk-weighted capital ratio, and many banks held an excessive level of capital on the balance sheet above the minimum regulatory threshold (Lindquist, 2004; Jokipii and Milne, 2008; Ayuso et al., 2004). The holding of excessive capital buffer signified managerial risk aversion, under-investment, and reduced bank competitiveness. This study investigated how antitrust policy helped increase bank competitiveness and profitability in the European Union and North America. Our study found evidence that antitrust policies increased bank profitability and minimised managerial slack. In addition, many studies showed that the management ownership structure aligned the managers' interests with that of the shareholders (Saunders et al., 1990; Gorton and Rosen, 1995; Houston and James, 1995).

Our study explored new empirical evidence for the nineteen European listed and unlisted banks with different bank specialisations. Bank profitability is proxied by return-on-average-equity, return-on-equity, and equity returns, which are the dependent variables in this study. The explanatory variables considered are bank-specific, macro-economic, internal corporate governance proxies, age, bank concentration, antitrust law, and financial crisis dummy variables. We utilised different panel data estimators (such as pooled ordinary least, between estimator, population average, fixed effects, first differences, and random effects estimators) and other estimation techniques (probit/logit regression, principal-component-analysis,

difference-in-difference (DID) estimation, and instrumental variable regression) to examine the causal effect of bank longevity, antitrust policy, bank concentration, internal corporate governance, bank-specific factors, macro-economic factors and dummies of year, country and specialisation on bank profitability. The difference-in-difference estimation assists in exploring the effects of concentration (HHI) interaction with antitrust policy and governance measures on bank performance. We also examined the effects of other explanatory variables and interactions on managerial slack.

Our fixed effect analysis showed that liquidity ratio, cost-income ratio, net-loan-to-total-asset, non-earning-assets-to-total-asset, asset utilisation, income diversification (BAAM), inflation, and credit risk had significant beneficial effects on cooperative bank performance. However, certain interactions (mHHIxAge, lHHIxAge), bank-specific (age, total-earning-asset-to-total-asset, capital-fund-liabilities, burden-total-asset) and macro-economic factors (GDP per capita) have significant and negative effects on EU co-operative banks performance. The bank-specific, exogenous factors (anti-trust-policy), and macro-economic factors that positively influence savings banks' performance are, for ROAE, Age-HHI-interactions, antitrust-policy, and total assets. On the other hand, the following explanatory factors negatively influenced E.U. saving bank performance, GDP per capita, credit risk, market share, net-loan-to-total-asset (NLTA), and cost-income ratio. The following bank-specific and exogenous factors improved European commercial bank performance. For ROAE, we confirmed antitrust-policy, capital-funding-liabilities (CFL), burden-total-asset, asset utilisation, income diversification (BAAM). The capital strength, cost-income ratio, and financial crisis adversely influenced European commercial bank performance. The United States commercial banks shared a similar beneficial influence of antitrust policy and CFL on profitability. Our random effect analysis showed that liquidity ratio, CFL, NEATA, and asset utilisation influenced Canada's commercial bank beneficially. On the other hand, average bank concentration, capital strength, cost-income ratio, and credit risk hampered Canadian commercial bank performance.

According to the managerial slack (QLTTTA) findings, our random-effects modelling of European cooperative banks showed age, average concentration, high-concentration-age interaction, CFL, overheads, total assets, market share, GDP per capita, and financial crisis reduced managerial slack significantly. On the other hand, high-HHI, liquidity ratio, cost-income, NLTA, BURDENTA, TEATA, NEATA, asset utilisation (AU), BAAM, inflation, and credit risk significantly increased cooperative bank managerial slack. Our fixed effect analysis of United States commercial banks showed that antitrust policy, ETA, inflation, government debt significantly reduced managerial slack. The effect of age and total assets on QLTTTA is

similar to our European cooperative bank findings. The adverse effects of our control variables on managerial slack follow the same pattern as European cooperative banks in some respect.

For listed commercial banks, our fixed effect modelling showed that the loan-loss-reserve, capital expenditure, and the interaction of low HHI with structural changes in antitrust policy significantly minimised the likelihood of negative return-on-equity. The marginal effect analysis also confirmed that the structural change in antitrust policy at low bank concentration minimised the possibility of negative ROE empirically and graphically. The DID analysis also confirmed that the interaction of high HHI with the structural change in antitrust policy and dividend-per-share significantly increased listed bank ROE. The probit/logit analysis showed that earnings-per-share, board-specific skills, and the interaction of high-HHI with the independent board members significantly reduce the likelihood of negative returns. As the non-executive total compensation increased, the marginal effects of independent board members on the probability of negative returns increased. Our thesis implied that the non-executive board members must be optimally incentivised to ensure effective oversight.

This thesis contributed to previous bodies of empirical studies on bank efficiency and profitability in four ways. Firstly, we measure bank concentration proxied by the Herfindahl-Hirschman-Index method on total assets [chapter 4 and 5], return-on-invested-capital [Chapter 6 Part A], and price [Chapter 6 Part B]. Secondly, we assumed the interaction of bank concentration with antitrust policy and the interaction of concentration with corporate governance proxies had not been explored at the time of this study. The first empirical chapter examined the impact of the HHI-Antitrust law on bank performance and managerial slack. The process of interacting governance proxies with competition measures contributed to policy efforts to improve corporate governance. Finally, this study contributes to the literature by examining the impact of income diversification as part of the control variables on bank performance.

This study presents conclusive findings on changes in bank performance around the antitrust policy in European and North American banks. The coefficients of the antitrust policy dummy (AT2004) for European commercial banks, United States commercial banks, and European savings banks are positive and significant, which implies that the antitrust policy significantly increased return-on-average-equity. The findings provided a contrasting view to Giroud and Mueller (2010) that empirically showed that business combination laws significantly minimised return-on-asset in North American banks. As expected, the results are not homogeneous in the European Union. For instance, the antitrust policy was not significant for Cypriot commercial banks and significantly negative for the returns on assets of Swedish

savings banks. The negative effects of antitrust policy on bank performance may explain the less competitive banking industry in Cypriot and the European savings banks are generally less competitive than commercial banks.

In previous studies, the impact of HHI and business-law interaction on managerial quiet life had been explored in the United States (Giroud and Mueller, 2010). Their analysis indicated overhead, input, and real incomes surge due to business law introductions. There is a significant positive relationship between the HHI-BC-Law interaction and some quiet life proxies in non-competitive industries, i.e., the ratio of overhead costs to total assets; the cost of goods sold to sales; and the ratio of real wages to the number of employees, deflated by inflation. This type of research had not been conducted in Europe, and there are no comparative studies on North American Banks and Europe. In Table 19, 22-24, our findings are similar to Giroud and Mueller's (2010) study. Structural changes since the antitrust regulatory changes only significantly increased the negative ROE or the likelihood of poor bank performance.

Contrary to Giroud and Mueller's findings, there is a significant negative relationship between the antitrust policy and QLTTTA (for European savings banks, U.S. commercial banks), while previous studies found no link. Our findings indicated that the overheads and employee wages decreased due to antitrust laws for less competitive and competitive banking industries. QLPEE (Ratio of personnel expenses to no of employees, deflated by CPI) – In support of previous literature (Bertrand and Mullainathan, 1999; 2003; Giroud and Muller, 2010), our REM model findings found a positive relationship between U.S. commercial banks QLPEE and antitrust policy.

1.0 Introduction

Many non-competitive banks are adversely affected by managerial slack, and the management of such banks benefitted from quiet life. On the other hand, a firm's managers in competitive industries are under constant pressure to reduce managerial slack and improve business efficiency (Giroud and Mueller, 2010). According to economic theory, high market power in the banking sector can be associated with the increased cost of financial intermediation, reduced investments and savings, loss of social welfare, and lower economic growth (Maudos and de Guevara, 2007). In support of the quiet-life hypothesis, previous studies confirmed that market concentrated banks failed to reduce costs. Such banks were characterised by reduced efficiency (Homma et al., 2014) and quiet life (Doyran and Santamaria, 2019). Agency costs are usually incurred while the shareholders motivate agents to act in their interest. The main motives of antitrust policies are to enhance fair competition, protect customers, and sustain business efficiency.

The banking systems transform from traditional banking services to commission-producing activities, pension funds, and mutual funds. The conventional role of banking activities that entail accepting deposits and creating loans face competitive pressures from financial innovation, digital currency, financial market, financial holding companies, and bank holding companies. These competing factors threaten the traditional banking business as a major funding source (Levine et al., 2000; Allen and Santomero, 2001). The shift of banks away from conventional banking services increased its susceptibility to high tail beta because non-interest bank income is too risky. The Tail beta is a measure of systemic risk which can be defined as the likelihood of a sharp decrease in a bank's equity price conditional on a crash in a banking index (De Jonghe, 2010). The De Jonghe (2010) study argued that bank size continues to be a unique predictor of banks' tail beta. It is important to note that banks with more non-interest generating activities increased banks' systemic risk proxied by tail beta. The effect of non-traditional income streams (i.e., fee and commission income, trading income, and other operating income) varies. The banks that focus on traditional services are less risk-prone because they rely on managing the bank's net interest margin and the loan-asset ratio. The integration of advanced technologies into banking services played a crucial role in improving bank profitability in bank-based, market-based, Eastern and Central European Economies

(Athanasoglou et al., 2006; Sufian and Habibullah, 2009; Berger et al., 1995b; Berger and Bonaccorsi di Patti, 2006). The competition challenges are well documented in previous studies. The European banking market had become increasingly concentrated, and there is no indication of an increase in competition (Casu and Girardone, 2009).

Diversified banks are more susceptible to systemic risks, especially during the stock market crisis. The major concerns revolved around the protection of too-big-to-fail banks from bankruptcy via governmental quantitative easing during the crisis and the failures of bank supervisors to capture poor bank governance practices. Government intervention raised moral hazard issues by bank agents because it encouraged excessive risk-taking by bankers, which may result in systemic risk in the nearest future. The European bank contagions helped the company's financial system function efficiently in good times and led to the sporadic spread of systemic risk due to multiple banks failing in bad times (Covi et al., 2019). Large banks are more susceptible to European- wide shocks because of the European Directives for Single Market integration and make the work of national supervisors more challenging. Hence, the increasing European bank consolidation and integration complicated the task of bank regulators, especially with banks that engage in cross-border mergers and acquisitions.

The propensity to shirk corporate resources by the bank executives at the expense of shareholders has been a great concern for researchers and decision-makers (Ghosh and Petrova, 2013). The Masulis et al. (2007) study confirmed that managers protected from the markets for corporate control pursued self-driven goals at the expense of shareholder value maximisation. Since the 2007-09 financial crisis, many interest groups have focused on avoiding financial system instability and reducing the likelihood of future recessions. Many researchers provided many solutions to the problems. However, many aspects remain unresolved. The information obtained from the 2007-2009 financial crisis is not enough to predict bank vulnerability to the future crisis. Two decades leading to the 2007-09 financial crisis, the rise of mega-banks via mergers rose significantly, and the conventional backbone of antitrust policy is the market concentration (Rosen, 2007). Our main goal helped determine how bank performance in different countries is affected by changes in the bank market structure and bank-related indicators. This offered insight into how bank concentration affected performance and the functions of antitrust regulation in European and North American economies.

The complete contract played a major role in mitigating principal-agent problems (Hart, 1995). The pursuit of self-interest by agents to carry out certain objectives after contract negotiations

with the principals is known as a moral hazard. The asymmetric informational problems made it difficult to stop moral hazard problems because future contingencies are challenging to predict. The moral hazard between banks and borrowers usually occurs due to asymmetrical informational issues. Although the growth of deposit insurance schemes had been increasing recently (Demirguc-Kunt and Sobaci, 2001; Morrison and White, 2011), the prevalence of moral hazard and adverse selections made fairly priced deposit insurance either unachievable (Chan et al., 1992) or achievable but undesirable (Freixas and Rochet, 1998). Previous studies also confirmed that the banking industry is characterised by adverse selection and moral hazard problems (Morrison and White, 2011). The adverse selection and moral hazard usually co-existed in the banking industry to cause asymmetric informational issues, i.e., bank provision of loans to poor performing firms with negative net present values despite the knowledge of it and the inability of bankers to monitor investments (Dong and Guo, 2011). This banking behaviour contributed to agency problems in banking in the form of bad debts, non-earning assets, and loan default. The process of minimising agency problems focused on expense reduction, monitoring of bonding cost, and residual losses. Hence, banks can perform monitoring functions (Diamond, 1984; Fama, 1985), especially if internal resources are effectively allocated with technological innovations.

The quiet life hypothesis allowed commercial banks with a high level of concentrations to function inefficiently. A study also noted that quiet life is the best monopolistic profit (Hicks, 1935). The negative relationship between efficiency and market power prompted competition initiatives in many sectors of developed and emerging economies (Bertrand and Mullainathan, 2003). Therefore, there is a need for improved corporate governance measures and competitiveness in the commercial banking industry to address the agency problems. In recent decades, the high transaction costs made it challenging to solve the agency problems focusing on contracts alone effectively. Hence, the product market competitions can complement incomplete contracts to minimise agency conflicts.

The principal-agency theory assumed the presence of asymmetric informational problems, separation of ownership, and control. As a result of principal-agency problems, the three agency costs are associated with the asymmetric problems between the less informed principal and the agents. Major agency problems are perquisites, managerial slack (i.e., quiet life), and empire-building (Giroud and Mueller, 2010). The empire-building problem can be defined as the free cash flow problem whereby CEOs are pursued personal growth at the expense of

shareholder value maximisation. The perquisite consumption usually raised public concerns about bankers' accountability. Empire building can buy unproductive assets and invest in projects with no growth prospects. The CEOs can benefit from an increase in total firm assets even if many of the assets are made up of non-earning assets, bad loans, and negative net present value projects.

The propensity to shirk corporate resources by the bank executives at the expense of shareholders has been a great concern for researchers and decision-makers (Ghosh and Petrova, 2013). Since the 2007-09 financial crisis, many interest groups have focused on avoiding financial system instability and reducing the likelihood of future recessions. Many researchers provided many solutions to the problems. However, many aspects remain unresolved. The information obtained from the 2007-2009 financial crisis is not enough to predict bank vulnerability to the future crisis. Before the 2007-09 financial crisis, the European banking system experienced consolidation, and the effect of the sovereign debt crisis on stability remained contentious (De Young et al., 2009). There are two contrasting views about the impact of competition on financial stability. According to the competition-fragility hypothesis, the higher level of bank competition reduced bank financial stability and profit margins (Keeley, 1990; Marcus, 1984). The competition-fragility view encouraged banks to invest in risky and profit maximising projects, contributing to financial stability (Allen and Gale, 2004; Berger et al., 2009). The competition-fragility view identified a negative relationship between bank competition and financial stability. Contrarily, the competition-stability view opposed bank concentration, citing that the high market dominance and concentration of few banks encouraged higher interest on loans while choosing firms with risky projects, negatively disrupting the banking system's stability (Boyd and De Nicolo, 2005).

Banks' intermediation, asset-liability management, and maturity transformation roles expose their functioning to bank runs and systemic risks. In addition, bank reliance on depositor funds as a major funding source can cause severe agency problems between the banks and the depositors. The government deposit insurance schemes, bank recapitalisation, and lender-of-last-resort provisions by the Central banks during the 2007-09 financial crisis played a major role in fostering bank stability and consumer protection. However, these stability measures caused market distortions and demand for additional regulatory standards. In place of this, we examined the efficacy of recent competition law changes (i.e., antitrust policy) in addressing these agency problems.

The poor performance in the banking sector can be attributed to credit losses, gearing, market, and liquidity risk (Fiordelisi and Molyneux, 2010). Poor bank performance is usually linked to bad luck and financial crisis instead of admitting inefficient decisions by the bank management. However, counterproductive managerial decisions can limit bank profitability. In addition, banks faced the risk of free-riding problems in a financial market with many suppliers of capital for borrowers (Diamond, 1984).

Monitoring and screening are important bank governance activities (Freixas and Rochet, 1997; Ahn and Choi, 2009). The opportunistic behaviour of borrowers (i.e., moral hazard) can be prevented by implementing effective bank supervision to minimise credit risks. Previous empirical studies argued that the bank cost of self-monitoring is lower because banks have an informational edge and are delegated monitors (Diamond, 1984; Fama, 1985). Bank informational edge helped analyse and monitor loan risk, bad debts, non-earning assets, and borrowers' credit risk. The efficient allocation of resources can be achieved by incorporating the measures of delegated monitoring in banking practices. Investment screening and delegated monitoring are key to improving corporate governance activities within the banking system.

There has been substantial deregulation of financial services in the past three decades, coupled with creating the European Monetary Union [EMU] and unified EURO currency. The goal of the European Union aimed to enhance integration, remove entry barriers, and promote both efficiency and competition in the European banking industry (Casu and Girardone, 2010). The European Commission monitors competition law in Europe with particular attention to antitrust, cartel, state-aid, and merger control. The competition regulators in Europe relied on the assumptions of structure-conduct-performance paradigms and viewed Herfindahl-Hirshman-Index (HHI) as a measure of market concentration. However, a study viewed HHI as a weaker proxy for measuring competition (Beck, 2006). The benefits of competition are mixed in banking because higher competition is usually weighed against the risk of instability. Hence, banks are historically regulated during a financial crisis eased by a government bailout. The entry barriers and asymmetrical problems are examples of frictions in the banking market that invalidate the welfare theorems associated with perfect competition and tolerate the exercise of market power (Vives, 2001). Previous studies showed that a highly competitive industry not only minimised managerial slack but also compelled managers to be conscious of liquidation threats (Jagannathan and Srinivasan, 1999; Schmidt, 1997). Nonetheless, the antitrust policy can create a more dynamic and efficient banking industry.

The firm size influenced CEO pay positively. The previous study implied that the relationship between CEO Pay and size is endogenous. Therefore, the pooled OLS and fixed effect model regression would be biased estimation techniques (Ackerberg and Botticini, 2002). The borrower's expectation of reduced loan interest charges encouraged more investment and growth. The banking industry's switching costs and sunk costs increased the entry barrier (Yafeh and Yosha, 2001). The empirical studies on developed and developing countries identified the prevalence of imperfect competition (De Bandt and Davis, 2000). There was a general view that competition has increased over the last decade. However, empirical studies are yet to see an increase in competition in the European banking industry (Goddard et al., 2013).

1.1 Bank Regulation and Deregulation

1.1.1 Regulation

Apart from the economic challenges, the 2007-09 financial crisis revealed moral hazards and adverse selection in commercial banking (Belas, 2013). The purpose of bank regulation is to restrict dividend pay-out that can cause capital inadequacy and bank failure. A recent study examined the impact of bank regulation on board independence (Li and Song, 2013). The United Kingdom and some European countries (i.e., Sweden, Denmark, Norway, Germany, Austria) utilised a single national regulatory body to monitor and supervise financial institutions. The lack of legal barriers allowed banks to engage in non-banking activities and increased the size of financial holding companies.

1.1.2 Deregulation

Deregulatory measures were aimed at removing regulatory restrictions and increasing competition. The European Second Banking Directive of 1989 allowed banks to offer banking, insurance, and other non-banking services under a single banking entity. Similarly, the United States Gramm-Leach-Bliley Act of 1999 introduced deregulatory measures that allowed banks to engage in different non-financial activities and transactions. Bank consolidation and the dismantling of legal barriers increased bank integration. Financial technology is disruptive to the organizational design of the bank industry. However, there are concerns about whether the financial conglomerate provided or destroyed values through economies of scope (Leaven and Levine, 2007; Schmid and Walter, 2009). More studies also investigated the role of functional diversification in minimising bank exposures (Baele et al., 2007; Stiroh, 2006).

The Riegle Neal Act of 1994 (also known as the Interstate Banking and Branching Efficiency Act/IBBEA) reviewed interstate bank acquisition legislation and allowed bank holding companies to acquire banks in any state in the Union. The Financial Service Modernisation Act of 1999 (also known as Gramm-Leach-Bliley Act) permitted the amalgamation of commercial banks, investment banks, and insurance firms to form financial holding companies capable of selling insurance and marketable securities. The FSMA encouraged the emergence of bank consolidation and inter-industry mergers. For example, the merger of Nations Bank and Barnett Banks in 1997 was the 2nd biggest in United States history (acquisition cost of $15.5 billion), which raised anti-competition behaviour concerns (Kwast, 1999). The second-largest merger

in United States history with a presence in 28 local banking markets and the United States Federal Reserve competition concerns forced the divestment of $4.1 billion in deposit. The Kwast et al. (1999) study also found that the antitrust policy may not necessarily affect bank mergers, United States banking consolidation, and the national structure at the current concentration threshold set by the Department of Justice Antitrust authorities. The 2nd largest merger in the United States history with presence in 28 local banking markets and the Federal Reserve competitive concerns forced $4.1 billion in deposit divestment. For instance, 91% of 3814 mergers as approved by the Federal Board System during the 1985-1997 period (Burke, 1998; Kwask, 1996; Rhoades, 1996). The United States regulatory bodies also used divestiture to eliminate the merger's anticompetitive effects in certain local markets while permitting most mergers to proceed. The study raised the question about the efficacy of antitrust policy in alleviating the adverse impact of bank consolidation.

1.1.3 Anti-trust Policy

The foundation of implementing antitrust policy can be traced to the degree of market concentration in non-concentrated, averagely concentrated, and strongly concentrated markets. The 1890 Sherman Act was the first United States federal antitrust law that constrained collusive, monopolistic trade behaviours (Mueller, 1967). Consolidation in a thinly concentrated market could be highly contestable. A decrease in market contestability in moderately and highly concentrated markets will compel antitrust authorities to act if the market share of the top 4 companies increased by 7% points in the past 5-10 years (Stelzner and Chaturvedi, 2020). Other antitrust laws (e.g., the Federal Trade Commission Act, the Clayton Antitrust Act, and other major amendments to the antitrust laws) in America prohibited mergers and acquisitions that significantly minimised competition or monopolised the market. The 1968 Horizontal Merger Guidelines (HMGs) introduced under section 7 of the Clayton Antitrust Act aimed to prevent market dominance of any one company or group of small companies, increase concentration, and preserve the substantial de-concentration in the concentrated market (Justice, 2015). The merger guidelines were reviewed in 1982 and 2010 to accommodate greater concentration citing efficiency enhancement (Peltzman, 2014). The antitrust authorities (under the United States Department of Justice) had relaxed the threshold of concentration to allow for market power in many industries, and political changes had been instrumental in the deregulation of antitrust policy in recent decades (Stelzner, 2014). The intensity of antitrust policy administration and the contestation of mergers or acquisitions even in highly concentrated markets have been declining as long as the acquirer firm can justify

scale economies. The European economies have a common antitrust policy that restricts the national government's decisions.

The competitive injuries were alleged together with relative gross concentration ratio and market sizes during the 1970s, which led to 44 antitrust litigated bank acquisition cases in the United States (Goodman, 1971). A diverse antitrust regime had been implemented towards horizontal mergers by the United States, Canada, and Europe in the last six decades leading up to the 1990s (Eckbo, 1992). While the United States aimed for tough antitrust regimes directed at horizontal mergers for many decades while Canada benefited from almost unconstrained antitrust policy (Eckbo, 1992). During the 1950s-1990 period, according to the 1968 Merger Guidelines of the Department of Justice and Section 7 of the Clayton Act, the American government filed about 500 antitrust complaints against the horizontal merger. In addition, there was a string of regulatory limits on the allowable levels of industry concentration and market capitalisation of merging companies (Eckbo, 1992). The United States antitrust regimes had challenged the horizontal merger in the banking industry, but the antitrust policy was not enforced by the regulators (James and Wier, 1987). The Council of Economic Advisers to former president Obama prepared a draft on competition and market power in 2016. Still, it failed to enforce the Hart-Scott-Rodino Antitrust Improvements Act of 1976 that emphasised merger disclosure above certain financial thresholds Moreover, the antitrust authorities failed to request secondary information on mergers and acquisitions.

According to the rationale that antitakeover regulation relied on the market structure, the non-competitive industry is dominated by increasing managerial slack and reduced productivity (Giroud and Mueller, 2010). The United States business combination laws are competition laws that imposed a moratorium on certain transactions and controlled corporate raiders from selling assets to pay off debts. During the reduction of hostile takeovers, the business combination laws hampered corporate governance and encouraged managerial slack (Giroud and Mueller, 2010). In addition, the business combination law imposed restrictions on certain mergers and asset sale transactions between dominant investors and small companies. The protection of firms from hostile takeover encouraged investment in non-value maximizing acquisitions (Masulis et al., 2007). The Markham (2013) study clarified that the principals limit their goal divergences by incurring monitoring costs to modify aberrant agent activities and cartel-like behaviour. Hence, it is worth considering the benefits of optimal non-executive compensation as a monitoring mechanism to maximise shareholder value.

According to the entrenchment hypothesis, self-driven CEOs with potentially excessive agency cost often adopt a higher than optimal level of antitrust provisions (Straska and Waller, 2010). The European antitrust policy is based on Articles 101 and 102 of the Treaty on the Function of the European Union (European Commission, 2021). The articles ban anticompetitive contracts between two or more banks and limit market abuse by dominant banks. In journals, it has been widely established that cartel-like behavior between competitors can lead to higher prices (Hunold et al., 2020). The European Antitrust policy is similar to the American Sherman, Clayton, and Federal Trade Commission Act to counter anticompetitive practices such as cartels, abuse of market dominance, mergers, and acquisition that limits competition (Guidi and Karagiannis, 2015). A recent study showed that stronger antitrust policy regimes failed to significantly increase local competition or minimise corporate dominance (Lawson and Murphy, 2016). The banking industry is highly regulated and preferably protected from antitrust investigation by claiming that financial regulation can protect public interests (White, 2015). The White (2015) study confirmed a significant overall and increasing level of bank concentration as measured by the shares assets and deposits held by the largest banks. The top ten largest banks controlled 45-50% of United States bank assets and deposits (Adams, 2012). The Competition Bureau in Canada revised its Merger Enforcement Guidelines (MEGs) in 2011 to limit anti-competition by providing extra guidelines on buyers' power (Competition Bureau, 2011). The Canadian Competition Bureau also elaborated on the Bureau Treatment of minority interest and interlocking directors. The process of tying managerial compensation to corporate performance worsened incentives to collude to advance managerial interest only and encouraged cartel-like behaviour (Markham, 2013). Therefore, it is important to optimally incentivised the non-executive directors to enhance bank executive oversights.

1.2 Competition

The product market competition is a determinant of profitability due to its influence on managerial decisions and behaviour (Porter, 1990; Nickell, 1996). The study used broad measures of bank competition are the two structural (HHI-Herfindahl- Hirschman Index, and concentration [CRn] ratio) and three non-structural criteria [Panzar-Rosse H-statistics, Lerner index, and profit persistence] (Shaffer, 1983; Li et al., 2013; Shaffer and Spierdijk, 2015; Spierdijka and Zaourasa, 2018). The high levels of competition played a crucial role in improving output efficiency, economic growth, widening consumer choice, and promoting

resource allocations. Porter's Structure-Conduct-Performance (SCP) paradigm stated that firms earned abnormal profits and denied entry to new entrants by increasing industry concentration which lowers collusion cost.

Many economists emphasised informally the importance of product market competition in minimising managerial slack (Machlup, 1967). On the other hand, Hart (1983) attempted to model the impact of competition on the agency problems between principals and managers. An increasing level of competition increased the likelihood of bankruptcy, which compelled CEOs to work effectively (Hart, 1983). The changes in competition lead to higher productivity and greater managerial incentives (Raith, 2003). The implementation of the Financial Service Modernisation Act of 2000 led to a significant decline in the poison pill, and the percentage of bidders with poison pill decreased from 64% to 44% (Cremer and Ferrell, 2012). Some researchers indicated that product market competition replaced managerial incentives and exhibited a complementary relationship (Karuna, 2007).

The Structure-Conduct-Performance (SCP) hypothesis is also called the market-power hypothesis. SCP is a conventional industrial organisational theory. The banks with greater efficiency ratios and other associated variables of market power can achieve better performance. Some empirical studies confirmed a positive relationship between banking concentration and performance because banks can achieve monopolistic profits via increasing market power (Bourke, 1989; Hannan, 1979; Molyneux and Thornton, 1992; Hou and Robinson, 2006). Abnormal high profitability can be attributed to the more concentrated banking industry while small banks are less efficient. The collusion hypothesis supports the positive relationship between concentration and performance. It is important to note that profitability that linked with excessive bank collusion had negative effects on the final end-users in the form of higher loan rates and credit rationing (Chortareas et al., 2011). The collusion hypothesis encouraged small banks to exhibit cartel-like behavior favoring more expensive loan fees and reduced interest rates on individual investor deposits.

The two approaches for measuring bank competition are the structural and efficient structure hypotheses. The SCP is a conventional industrial organisational theory known as the market power hypothesis. The structural approach focused on market structure and concentration. Some empirical studies confirmed a positive relationship between banking concentration and performance because banks can achieve monopolistic profits via increasing market power (Bourke, 1989; Hannan, 1979; Molyneux and Thornton, 1992). The traditional SCP paradigm

can be related to the theory of firm collusion that occurred due to reduced competition and higher market concentration (Sathye, 2005). The Spanish bank concentration was encouraged by the Spanish central bank, which contributed to a decrease in the level of competition (Llyod-Williams et al., 1994). SCP paradigms concluded that firms act collusively to enhance the positive relationship between industry concentration and profit maximisation (Bain, 1959). The relative market power (RMP) hypothesis allowed large banks to influence price competitively to increase entry barriers. The market share of individual banks is a proxy for measuring market power. Banks with excessive market power tend to collude to deter competition and alter their conduct at the expense of consumers.

The collusion theory stated that a higher level of collusion could be related to the small number of firms in the industry. The big financial institutions can also exercise their monopolistic market power by influencing market prices non-competitively at the expense of consumers. However, the collusive behaviour may not necessarily contribute to the positive association between concentration and profits (Goldberg and Rai, 1996). The efficient Structure Hypothesis (ESH) posited that larger banks could operate more efficiently due to economies of scale, scope, and cost reduction. Therefore, large efficient banks can earn higher profits and are more likely to be concentrated eventually (Demsetz, 1973; Khan et al., 2017). The banks in highly regulated economies can exploit market power, and market power increases prices. Regardless of size, the highly efficient banks earned higher profits due to highly skilled management teams and technological innovation. Market concentration and economies of scale were not viewed under the efficiency structure hypothesis as having a significant impact on bank performance. The SCP hypothesis stated that the clients are less likely to benefit from highly concentrated market prices. The cost of collusion amidst the biggest firms can be minimised by market concentration, enabling banks to earn positive abnormal profits beyond the competitive level. The importance of SCP paradigms cannot be ignored because there is a high level of concentration and collusion in the banking markets.

The efficiency structure hypothesis (ESH) is a non-structural conduct-based approach that relies on prices and other indicators to measure the degree of competition. The theory takes into consideration the competitive, oligopolistic, and monopolistic-competitive markets. The H-statistics measured the behaviour of firms and performance in response to change in price (Goddard et al., 2011). The non-structural approach of banking competition indicated that entry barriers and market contestability influenced competitions. The examples of non-structural

competition proxies are Panzar-Rosse H-statistics, the Lerner index, the Boone indicator (Boone, 2001; Boone, 2008; Bikker and van Leuvensteijn, 2008; van Leuvensteijn et al., 2011). The non-structural measures of the competition were rooted in the New Empirical Industrial Organization (NEIO). Other measures of efficiency frontier are parametric (SFA: stochastic frontier analysis) and non-parametric techniques (DEA: Data envelopment analysis). The traditional and structural measures of competition emphasised that firm concentration can erode competition. In comparison, the new non-structural measures acknowledged that consolidation via competition allowed concentration and competition to increase simultaneously (van Leuvensteijn et al., 2013). For instance, foreign banks usually played a major role in market liquidity provision in countries with the under-developed capital market. They bolstered competition via mergers or consolidation, which meant that competition and concentration could occur concurrently.

The Efficiency Structure hypothesis [ESH] proposed by Demsetz (1973) showed that the relationship between industry concentration and performance enhanced growth, performance and allowed firms to achieve competitive advantage. The study implied that efficient banks minimised cost and generally became more concentrated. The main drivers of the positive association between concentration and bank profit improved efficiency and profitability. The ESH assumed that banks with a unique management team and technological innovation experienced better cost-efficiency. The efficient banks with leading market shares benefitted from an increasing concentration level because a highly concentrated market minimized the collusion cost and encouraged direct/indirect collusion (Demsetz, 1973; Smirlock, 1985). The structural measures of competition emphasised that firm concentration can erode competition. The new non-structural measures acknowledged that consolidation allowed concentration and competition to increase simultaneously (van Leuvensteijn et al., 2013). The ESH showed that quantitative easing and government Directives are not appropriate policy tools for big banks to mitigate failures. According to the scale efficiency hypothesis, the banks with innovative management teams can provide on-/off-balance sheet activities at a more efficient scale to reduce unit costs and earn higher profits. The main demerit of HHI is the inability to differentiate between big and small economies. Regardless of size, highly efficient banks earned higher earnings due to a highly skilled management team and technological innovation. The market concentration and economies of scale were not viewed as having a significant impact on bank performance under the efficiency structure hypothesis.

In earlier studies, companies that operated in a perfectly competitive output market did not have scope for managerial slack. Firms that fail to downsize and minimise cost are usually forced out of the market by competitive pressure (Machlup, 1967). A study also showed that higher competition increased the probability of liquidation, increased CEO risk-taking, and reduced the company's profitability (Schmidt, 1997). The reduced cost can be attributed to higher efficiency in the banking industry, which enabled clients to benefit from reduced charges, lowered lending costs, and higher deposit rates. However, the benefits of increased competition (i.e., better access to funding; improved competition in other sectors; innovations; enhanced economic growth; and broadened consumers" choices) can be weighed against the risk of financial instability as banks are heavily regulated industry historically. It is important to note that excessive competition and transaction-based banking [i.e., securitisation] contributed to the recent financial crisis (Claessens and Laeven, 2004). In the wake of the 2007-09 financial crisis, there was a trade-off between financial stability and competition (Hou and Robinson, 2006). The study also showed that risk-averse firms in highly concentrated industries usually command reduced predicted gains.

1.2.1 Banking Market Structure

The indicator of market structure is the n-firm concentration ratio (CR_n) which measured the market share of the top n-firms in the industry. The Herfindahl-Hirschman Index is a better proxy of market structure because it deals with the limitations of concentration ratio between CR_{-3} and CR_{-10}:

$HHI = \sum^{N}_{i=1}(S_i^2)$ ……(1.0)

Where Si = market share of the i-th firm, when the firms are ranked in descending order of market share. For the CR-3 and CR-10, N = 3 and N = 10, respectively. The Herfindahl-Hirschman Index used the information of all the firms in the industry. For instance, the 7 firms with 30%, 20%, 15%, 10%, 10%, 10% and 5% market share have HHI of 900, 400, 125, 100, 100, 100, 25, respectively. Hence, the firms with less HHI index are less concentrated. The SCP test aims to link market structure with the firm performance from, and conduct can be predicted. The HHI proxied by total assets, sales, and loan performance had been explored previously (Giroud and Mueller, 2010; Bolt and Humphrey, 2015).

1.3 Corporate Governance

Corporate governance can be defined as the system of regulation, rules, and factors capable of controlling a company's operations (Gillian and Starks, 1998). The governance mechanism is divided into internal [e.g., board of directors, management team, assets, equity and debt] and external [e.g., debtholders and investors] governance mechanisms (Ross et al., 2005). Another study showed that corporate governance code could also be divided into internal [e.g., The Board of Directors (and their function, structure, and competition); agent's Incentives; Capital Structure; Bylaw Provisions (or antitakeover policy); and Internal Control Systems] and external governance [e.g., laws and regulation; markets; and external oversight] (Gillian, 2006).

Some bank governance measures are not mutually exclusive and can be interdependent. John and Senbet's (1998) study implied that corporate governance played an important role in resolving agency problems between the principals and the agents. The recent study argued that controlling shareholders increased their ownership stake during the poor performance and failed to protect external investors via legislation (Dimick and Rao, 2016). In real life, shareholders have little control over the board members, and many boards of directors treat CEOs generously via ineffective monitoring (Bebchuk and Fried, 2004). Hence, CEOs failed to act in the interest of the shareholders by pursuing self-goals (Jensen, 1986; 1993; Morch et al., 1993; Shleifer and Vishny, 1989; 1997). The Straska and Waller (2010) study showed that firms with reduced managerial ownership, low shareholder concentration, and low relative stock valuation have lower bargaining power during takeover decisions. The Dimick and Rao (2010) study also indicated that firms with dispersed ownership structures benefitted more from investor protection laws.

The weaker corporate governance that encouraged higher CEO incentives can be linked to multiple directorships of external directors, director(s) employed after CEO employment, a small percentage of an institutional investor, and the absence of blockholders (Borokhovich et al., 1997; Hallock, 1997; Core et al., 1999; Cyert et al., 2002; Hartzell and Starks, 2003). Weaker corporate governance had been linked with reduced pay-performance sensitivity (Bertrand and Mullainathan, 2001), and option backdating encouraged opportunistic incentive practices (Bebchuk et al., 2009; Bizjak et al., 2009). The pursuit of self-interest by executives is high when executive power is high, and the power causes CEOs to personally award excessive incentives (Yermack, 1997; Bebchuk and Fried, 2006; Morse et al., 2011). The

staggered board that hampered hostile takeover attempts significantly reduced equity performance (Ghosh and Petrova, 2013). This is referred to as internal governance.

There is a consensus that board monitoring is effective when the higher percent of the directors are independent. However, the relationship between board independence and performance is weak and controversial (Coles et al., 2008; Adams et al., 2010; Coles et al., 2012). In practice, the CEOs exerted tremendous control over co-opted board members. Hermalin and Weisbach's (1998) model of CEO bargaining with the board indicated that the CEO utility function is distasteful for effective board monitoring and showed a preference for board non-independence. Most CEOs that sympathetically employ a board of directors with similar views or social ties usually contradict shareholder value expectations in the long term (Finkelstein and Hambrick, 1990; Hwang and Kim, 2009). This is often known as board capture or board co-option. Coles et al. (2014) identified two types of board composition: co-option and non-co-option independence. The board co-option signified board capture by CEOs. Non-co-option independence is when directors kept their roles before the incumbent CEOs assumed office. The non-co-option is key to effective monitoring of the management team. The board co-option values usually range from 0 to 1, and the higher values reflect a high level of greater co-option. The co-opted directors are associated with reduced efficiency. Coles et al. (2014) study had a mean co-option value of 0.47, which indicated that about 50% of the board members were appointed after the CEO assumed job role. The increased ability of CEOs to co-opt high percent of the board decrease the likelihood of CEO turnover due to weak performance. Board co-option encouraged CEO self-interests in the form of increased compensation, reduced pay-performance sensitivity, and perquisite consumption at the expense of shareholder long-term value creation. Hence, board co-option can reduce the efficacy of board monitoring.

There has been an excessive increase in the level of executive compensation above the rank-and-file compensation in recent years (Kaplan, 2008; Jensen et al., 2004; Bebchuk and Grinstein, 2005). Jensen and Murphy (1990) critiqued that pay had been inadequately linked to performance due to societal pressures. The managerial power hypothesis viewed sub-optimal pay-performance sensitivity as a product of CEO influence. It implied that executive power encouraged the possibility of suboptimal pay arrangements that led to diluted incentives. Weaker corporate governance had been linked to a high level of compensation for CEOs/executives and reduced pay-performance sensitivity (Bebchuk and Fried, 2004).

Previous studies confirmed CEO pay is higher when there are multiple directorships, interlocking directors in the board, board co-option, absence of large external institutional investors/blockholders, and a higher level of significant antitakeover provisions (Borokhovich et al., 1997; Hallock, 1997; Core et al., 1999; Cyert et al., 2002; Hartzell and Starks, 2003). The factors analysed by previous researchers limit effective monitoring and contribute to agency problems. Some studies argued that incentives did not contribute to the 2007-09 financial crisis (Fahlenbrach and Stulz, 2009). The Kaplan and Rauh (2010) study supported the optimal contracting view. Edman et al. (2009) study indicated that the optimal pay lines relate closely to actual executive compensation's empirical findings.

1.4 Governance Mechanism for controlling Managerial Agency problems

The boards of directors are tasked with decision-making and the monitoring of CEOs. However, the executive directors cannot monitor themselves, and the non-executive directors (outside directors) may not be effective monitors for the following reasons. Firstly, the lack of financial goals in commercial banks led to a lax attitude towards monitoring bank performance. Secondly, non-executive directors working in many board rooms focus less on individual bank affairs. Finally, non-executive directors colluded with the bank CEOs and remained loyal to the management to re-elect and continually benefit from fees. Therefore, the Cadbury Committee suggested changing the board structure: the board chairman must be independent of the CEO's influences. In addition, the audit and remuneration committees should consist mainly of non-executive directors (Hart, 1995).

The presence of a large group of small shareholders reduced incentives to monitor bank executives. For instance, the presence of one or more institutional investors, large shareholders, and block-holders with less than 100% stake minimised agency problems but did not completely solve agency problems. In addition, large shareholders with a majority stake may utilise their voting right to improve their positions at the expense of other shareholders or take ownership and control of the company.

1.5 Bank-specific Factors and Performance

Previous studies showed that off-balance-sheet banking activities generated non-interest income increased bank tail beta. Small banks with better capitalisation can withstand extremely adverse and turbulent economic conditions (De Jonghe, 2010). The study concluded that diversification by a monopolistic institution does not guarantee the banking system's stability. The empirical chapter 1 and 2 utilised the asset utilisation (A.U.), net loan to the total asset (NLTA), liquidity proxies (LR), income diversification, macro-economic [e.g., Gross Domestic Product per capita (GDPC), inflation (CPI), and interest rates] and other bank-specific factors as control variables. The impact of macro-economic and bank-specific factors on the profitability of European and North American commercial bank performance was explored.

The Chicago School of Thought assumed that the positive relationship between concentration and profits might not necessarily indicate market power. Hence, banks with larger market shares benefitted from economies of scale. Many empirical studies are inconclusive about which concentration-profit relationship led to bank collusion or efficiency (Molyneux and Thornton,1992; Berger, 1995; Goddard et al., 2001, 2007; Dick and Hannan, 2010). The quiet life hypothesis showed that market power is counterproductive for operational efficiency (Berger and Hannan, 1998). Many empirical studies investigated the effect of competition on bank performance using HHI. The potential competition relied on entry barriers that are not directly measurable (Baumol et al., 1982; Panzar and Rosse, 1987; Molyneux et al., 1994, De Bandt and Davis, 2000; Goddard and Wilson, 2009). The cooperative and savings banks in France, Germany, Italy, and Spain achieved a greater return on equity than the commercial banks due to greater upsides from retail banking and SMEs lending (Goddard et al., 2010). The unweighted mean beta is lowered for either savings or cooperative banks compared to commercial banks except for France and the United Kingdom (Goddard et al., 2010).

1.6 Governance and Competition

The relationship between competition and corporate governance instruments (managerial compensation schemes [Aggarwal and Samwick, 1999a], board structure (Karuna, 2007), business combination laws [Giroud and Mueller, 2010], and firm-level takeover defenses [Cremers et al., 2008]) had been explored by many empiricists. Corporate governance mechanisms helped in monitoring and minimising agency cost. Many researchers found that

higher takeover defenses were associated with reduced firm valuation, lowered profitability, and reduced long-term-bidder returns (Gompers et al., 2003; Bebchuk et al., 2004; Bebchuk and Cohen, 2005, Cremers and Nair, 2005; Masulis et al., 2007). A stronger competition is linked to takeover defenses and higher stock-based compensation, especially when a long-term relationship among the stakeholders (Cremer et al., 2008). Poor governance made stronger competition in the product market highly costly because the competitive environment is likely to force non-competitive and in-efficient banks out of the market (Alchian, 1950; Stigler, 1958; Fama, 1980; Fama and Jensen, 1983; Shleifer and Vishny, 1997).

Some studies theoretically found that greater market competition increased available information and minimised monitoring cost (Holmstrom, 1982, 1999; Nalebuff and Stiglitz, 1983; Hart, 1983). Hence, in this case, competition and the market for corporate control functions as a substitute to minimise agency costs. The theoretical papers suggested that shareholders can permit a higher level of takeover defenses if there is increasing competitiveness. A recent study showed that corporations with a high level of competition have more takeover defense (Cremers et al., 2008). The study indicated that the corporate control and competitiveness market could be complementary. The nature of the product market competition relationship symbolised the role of stakeholders for profitability and managerial behaviour (Maksimovic and Titman, 1991; Allen et al., 2007). A hypothesis showed that product market competition functions as the replacement for governance as competitiveness enforced market discipline on executives to maximise company valuation (Ammann et al., 2013).

1.7 Research Problems

Other studies showed that the management ownership structure tends to align managers' interests with that of the shareholders (Saunders et al., 1990; Gorton and Rosen, 1995; Houston and James, 1995). The study argued that competition and concentration affect banking systems differently, indicating that concentration alone is an inappropriate proxy for competition. Previous studies suggested that policies enhancing the competitiveness of the banking industry, if well initiated, have positive implications for systemic stability (Schaeck et al., 2009).

The European regulators are faced with the challenges of addressing the increasing bank consolidation and the need to remove the barriers to the European financial market integration (Casu and Girardone, 2009). The classical financial theory hypothesised that the risk within the portfolio of assets could be minimised through diversification (Haugen, 2001). According to the

asymmetric informational problems in the banking industry, the classical finance theory recognised the importance of bank activity monitoring and diversification in minimising the cost of financial intermediation (Diamond, 1984; Cesari and Daltung, 2000). Some researchers challenged the role of diversification because the benefits of diversification are outweighed by the higher volatility of non-interest income (DeYoung and Roland, 2001; Stiroh, 2004; Stiroh and Rumble, 2005). The presence of high bank concentration created granularity effects where few large banks co-existed with many small financial intermediaries (Bremus and Buch, 2017). Managerial agency and moral hazard problems (i.e., moral hazards caused by CEOs' access to deposit insurance schemes and government bailouts, excessive incentive consumption, high CEO power) had been contentious issues in the banking industry, causing a decrease in shareholders' value maximisation. Both are not mutually exclusive in the banking industry and need to be resolved. Managerial agency problems were contentious issues in the banking industry, causing a decrease in shareholder value maximisation. The adverse selection and moral hazards caused by the CEOs access to deposit insurance schemes and government bailouts, excessive incentive consumption, high CEO power).

1.7.1 Research Question

Our pivot data indicated European and North American banks had overhead expenses 2 or 3 times greater than the operating profiting indicating cost in-efficiency and agency problems. Many studies also confirmed bank concentration could predispose banks to failures and systemic distress (Mishkin, 1999; Caminal and Matutes, 2002; Boyd and De Nicolo, 2005). This raised questions on what can be done to resolve the agency problems (in forms of empire building and quiet life) or managerial slack inherent in financial institutions. Examples of agency problems in the banking industry are excessive capitalisation beyond the minimum regulatory capital requirement, non-earning assets, non-performing loans, bad debts, excessive expenses, etc. The goal in the first empirical chapter 1 (Chapter 4) was to verify the effect of bank concentration on performance and the moderating role of antitrust policy in alleviating the potential negative impact of bank concentration. Our study of antitrust policy affects not only focused on Western European banks but paid attention to less competitive Eastern European banks. Our empirical inquiry raised the following question:

- Does concentration weaken European bank performance relative to their North American counterpart in recent years?

- Do bank concentration and its interaction with antitrust policy improve European bank performance?

The United States bank was recognized as more competitive than their European banks in the 1990s (De Bandt and Davis, 2000). The finding that both concentration and competitiveness of the banking system were positively related to banking stability suggested that the bank concentration is an insufficient measure of bank competitiveness (Beck et al., 2006). In the last four decades, an increased market concentration in many industries has been linked with greater income inequality in the United States (Vogt et al., 2006; Davis et al., 2007; Shields, 2010; Stiglitz, 2017; Stelzner and Chaturvedi, 2020). The top United States banks' loan and deposit market share increased from 10-15% in the late 1970s to nearly 40% in 2010 (Corbae and D'Erasmo, 2013). The Giroud and Mueller (2010) study focused on the United States BHCs/firms only and utilised business combination laws (competitive policy) that restricted asset sales or mergers for 3-5 years. Giroud and Mueller (2010) study emphasised the role of business combination laws in increasing managerial slack due to reduced hostile takeover threats. The study that utilised the Lerner index as a measure of competition instead of HHI confirmed that market power increased the likelihood of non-performing loans and bank fragility (Guidi et al., 2021). Hence, comparing the interactive effect of antitrust policy and bank concentration on commercial banks enhanced our scope of understanding on how to improve competitiveness and minimise managerial slack in the banking industry. Our second empirical chapter (Chapter 5) attempts to recognise if North American commercial banks (Canada and United States only) are more competitive in recent years than their European counterparts examined prior and comparatively determine the efficacy of antitrust policy.

- Does antitrust policy (competition law) interaction with bank concentration improve North American commercial bank performance compared to their European counterparts?

Many empiricists also argued that monopolistic banking and excessive investor power minimised entrepreneurial initiatives (Myers, 1977; Burkart et al., 1997). The legal protection of investors is linked to effective corporate governance, as indicated in dispersed shareholding and efficient capital allocation (La Porta et al., 2000). Instead of focusing on the impact of antitrust policy in the year of introduction, this is the first study to examine the effects of structural change in antitrust policy on the relationship between bank concentration and performance. Instead of addressing agency problems and monopolistic banking with ethical

considerations in antitrust laws, our study addressed managerial slack in banking by examining the effects of structural change in antitrust policy.

- How does structural change in antitrust policy and its interaction with different levels of high bank concentration predict the likelihood of negative return-on-equity for listed European and North American commercial banks?

Although Giroud and Mueller's (2010) study indicated that competition laws weakened corporate governance due to the reduced threats of a hostile takeover, other studies showed that bank-specific corporate governance (also known as risk governance) could play a major role ameliorating agency problems. A dedicated board-level risk committee characterises the best practices in risk governance for big banks with majority independence (Mongiardino and Plath, 2010). The Fahlenbrach and Stulz (2011) study empirically showed that CEOs with a higher level of compensation performed worse during the 2007-08 financial crisis. For instance, chief risk officers (CRO) served as the risk-management-related corporate governance mechanism by reporting performance metrics and risk to the board of directors and not the CEOs (Aebi et al., 2012). Hence, the risk reporting method by the CRO led to better bank performance during the 2007-08 financial crisis, while most of the traditional governance measures remained insignificant or negative in some cases. The policymakers are struggling to find corporate governance measures that are effective for the banking industry, which motivated the 2nd part of the last empirical chapter (Chapter 6). The non-monotonic nature of the U-shaped relationship between competition and corporate governance explored by Karuna (2008) encouraged this study to conduct conditional marginal effect analysis of some variables. Recent studies of some countries confirmed the complementary nature of governance and competition in enhancing firm productivity (Cosset et al., 2016; Bodnaruk et al., 2013; Jia, 2013). We expanded on these empirical studies by focusing on listed commercial banks with data on non-executive total compensation. Giroud and Mueller (2010) study recognised that exploring the effects of governance can benefit from interacting competition measures with corporate governance proxies, especially in non-competitive industries.

- Can stronger corporate governance measures (non-executive total compensation) beneficially moderate the relationship between concentration and listed commercial bank performance in Europe and North America?

1.7.2 Doctoral Contributions

The purpose of this thesis is to capture the varied effects of bank concentration on performance and examine the moderating effects of antitrust policy. During our econometric analysis, the bank concentration samples were divided into three separate instances of the high, medium, and low concentration for an individual country under study. The study explored how the relationship between competition (i.e., Interaction of antitrust policy and bank concentration) and internal corporate governance improved bank performance. An improved understanding of the relationship between bank concentration and efficiency offered greater social benefits bank outputs serve as inputs in other sectors of the economy (Ivan, 2015). Therefore, the quiet life considerations should be incorporated into the bank competition policy. Similar to previous studies, we used the HHI indicator to measure market power which signified quiet life by the bank executives. While Giroud and Mueller (2010) focused on United States banks only, our calculation of bank concentration is different from this study. We calculated yearly HHI for individual banks in Europe and North America based on the country's annual market share. Our contributions examined the implications of bank concentration for large and small banks in the United States, Canada, Western European, and South-Eastern European countries. The mean return on average equity for United States commercial banks, European commercial banks, Canadian commercial banks, European saving banks, and European cooperative banks are 8.58%, 7.46%, 6.87%, 3.34%, and 4.69%, respectively. Our data showed that United State commercial banks outperformed European commercial banks and others despite having the highest level of bank concentration. Our empirical studies contributed to knowledge on bank competitiveness by examining how European banks' performance can be enhanced while tackling bank managerial agency problems and the likelihood of systemic risks caused by more European banking integration.

This study utilized the important determinants of performance and managerial slack from existing literature and utilised different managerial slack proxies compared to Giroud and Mueller (2010). The Ergen and Kohl (2019) study confirmed the absence of the effect of comparative antitrust from the literature. This study contributed to banking literature in terms of conceptual frameworks, methodological approach, antitrust policy effects, and the use of principal component analysis to create new corporate governance indexes. Rather than focusing on bank fragility in a few countries and one bank specialisation, we conducted more

robust empirical studies addressing these three issues. Firstly, we addressed agency problems for European banks by examining the effect of antitrust policy and concentration on bank performance. Secondly, the comparative analysis of North American and European commercial banks about the impact of bank concentration and antitrust law on performance measures were also examined. Implementing an antitrust policy must be protected from differing governing coalitions and political manifesto to create a more sustainable competitive environment in financial and non-financial firms. Our study only focused on banks in Europe and North America. This thesis increased the robustness of the empirical chapter 1 and 2 by using probit/logit and marginal effect models to determine the effects of industry concentration, bank-specific, and macroeconomic factors on the likelihood of bank failures and compared the findings to the results from panel data regression.

In the last empirical chapter, we observed the negative effects of bank concentration (a sign of monopolistic power) on returns. Our study attempted to explore if the differing structural change in antitrust policy instils market discipline and forces higher industry concentration to maximise bank value. Our econometric analysis for the United States and Europe considers the impact of different structural changes in antitrust policy. Our study bridged the gap in the literature by examining the effect of structural enforcement of the antitrust policy on bank performance. The interactions of some internal governance measures changed the negative impact on returns and dividend per share at weak or no significance levels. The panel data regressions had weaker predictive power in analysing the effects of non-executive total compensation (NETC). The impact of many individual corporate governance measures is not (or weakly) significant. We contributed to knowledge by creating composite governance variables and checking for collinearity between the explanatory variables using principal component analysis like the previous study (Herrera-Restrepo et al., 2016; Jawadi et al., 2017). The Chatzimanol (2011) study also acknowledged that the mutating relationship between the laws and governance practices has important implications for competition policy and the European financial regulation. While investigating the effect of NETC on returns in the last empirical, we observed a weak significant effect of NETC on bank returns. This motivated the need to examine if NETC is instrumental in increasing bank trailing earnings per share and dividend per share. Our findings support this empirically. We examined if higher bank monopolistic power (high concentration) can enhance bank value in the presence of an optimal level of non-executive total remuneration. The conditional marginal effect analysis of non-executive total pay and board independence on the likelihood of negative return in our research differs from previous empirical studies (Giroud and Mueller, 2010; Ammam et al., 2013;

Sheikh, 2018). Hence, stronger corporate governance is complementarily beneficial to market competition. Our study contributed to empirical studies that examine the substitutability of product market competition and corporate governance (Giroud and Mueller, 2010; Ammann et al., 2013).

Our study contributed to the literature on corporate governance and competition to address the managerial agency problems in the European and North-American banking industry. The interaction of bank concentration and antitrust policy influenced bank performance differently depending on bank specialisation, country-specific, and individual bank-specific factors. The impacts of bank concentration, antitrust laws, and corporate governance on bank performance are expected to vary based on country-specific, macro-/micro-economic, and specialisation differences. Our study is different from the previous study because there was no attempt to incorporate the reduced threats of hostile takeover that supported business combination laws in weakening corporate governance and enhancing the opportunity for managerial slack.

This study also provided extensive evidence about the importance of optimal non-executive compensation in enforcing the market for corporate control and effective bank monitoring. To provide new insights into the role of competition (antitrust policy effect) laws in Europe and North America, we compared the combined impact of antitrust laws and concentration on bank performance in these regions. Firstly, this study examined if the relationship between concentration and bank performance can be moderated differently by the antitrust policy in Europe. Secondly, does the impact of antitrust laws differ between the European and North American banking industries? Thirdly, we tested the effect of structural change in antitrust policy using probit regression with interactions on bank performance at different levels of bank concentration. Lastly, we examined the combined policy implications of corporate governance and high concentration on bank performance in publicly listed economies. Previous studies are broadened by contributing to the literature on improving bank performance and competitiveness.

Earlier studies examined the relationship between product market competition and executive compensation (Cunat and Guadalupe, 2009). The aftermaths of the recent financial crisis necessitated the need to explore the implications of competition laws and board governance for bank performance. At the time of this research, no studies examined the impact of bank concentration and antitrust policy interaction on bank performance. For instance, Giroud and Mueller (2010) examined the effect of HHI-business-combination-law interaction on firm performance in the U.S. only. However, the Giroud and Mueller (2010) study recognised the importance of examining the impact of the interaction of antitrust policy and HHI on bank

performance in different countries. The study also identified the important policy implications of such interactions to improve competitiveness. Our first empirical chapter (chapter 4) aimed to fill this gap and analyse the impact of HHI-antitrust policy interaction on commercial bank performance in Europe, which had not been done at the time of this research. The second empirical chapter (Chapter 5) was similar to chapter 4 but focused on mainly North American (the United States and Canada only) commercial banks, and the findings were compared with European commercial banks. The third empirical chapter (chapter 6) focused on how the interaction of internal corporate governance and high bank concentration influence bank performance in Europe and North America. However, it is apparent that classifying corporate governance based on the financial system also failed to identify the likelihood of the 2007-09 financial crisis and the standard corporate governance (e.g., ownership structure, insider shareholding, debt financing, corporate control activity, board independence) failed to prevent the crisis (Agrawal and knoeber,1996; La Porta et al., 2000; Adam, 2009; Beltratti. and Stulz, 2012). Chapter 6 also examined if non-executive total compensation and strictly independent board members play a major role in reducing the likelihood of negative returns.

1.7.3. Main Aim

- To evaluate the impact of bank concentration on shareholder value maximising behaviour.
- To assess the role of antitrust policy regulation in moderating the relationship between bank concentration and performance in Europe and North America.
- To analyse the effects of internal corporate governance interactions with bank concentration on the performance of listed commercial banks in Europe and North America.

1.7.4 Research Objectives

The main objectives explored how the relationship between bank concentration and internal corporate governance enhanced value-maximising behaviour.

1.7.4.1 Empirical Chapter Objectives

In empirical chapters one and two:

- Chapter 4 and 5: To test if bank concentration weakens European and North American performance differently.
- Chapter 4: To analyse the moderating effects of antitrust policy on the relationship between high concentration and the performance of different European bank specialisations.

In empirical chapter two:

- Chapter 5: To analyse the moderating effects of antitrust policy on high concentration and North American commercial bank performance. This study also compared the efficacy of antitrust policy in the United States and the European commercial banks.

In empirical chapter three:

- To examine if the interaction of structural change in antitrust policy and different levels of high bank concentration reduce the likelihood of negative return-on-equity for listed European and North American commercial banks.
- To analyse how internal corporate governance interacts with bank concentration to improve listed European and North American Commercial bank performance.

1.8 The Structure of the Thesis

1.8.1 Chapter One

The first chapter provided general insights into the concentration, corporate governance, and performance, focusing on Europe and the North American banking industry. This chapter introduces the role of antitrust policy, governance-concentration, and concentration-antitrust-policy interactions in reducing principal agency problems. The chapter also explained the role played by agents in the form of a quiet life, moral hazards, and excessive risk-taking that often reduce productivity. The thesis provided research problems, research questions, aims, and objectives. Empirical Chapter 1: This chapter evaluated the moderating effects of antitrust policy on the relationship between high concentration and European commercial bank performance.

1.8.2 Chapter Two

The second chapter provided a detailed literature review on competition, governance, and principal agency theory. In addition, the second chapter explained the principal agency theory concerning banking. Empirical Chapter 2: This chapter analysed the moderating effects of antitrust policy on competition (High HHI) and United States commercial bank performance. C2a: This chapter also compared the efficacy of antitrust policy for both the North American and the European commercial banks.

1.8.3 Chapter Three

The third chapter provided background information about commercial, cooperative, and savings banking in Europe and North America. Chapter 3 also discussed the chosen research philosophy, paradigm, research methodology, and methods. The chapter justified using different data analysis methods and their shortcomings in the problems statements.

1.8.4 Chapter Four

The fourth chapter is our 1st empirical chapter examining the effect of bank competition (concentration-antitrust-policy interaction) on bank performance and managerial slack for European banks. The antitrust policy provided insight into its moderating role in improving bank performance and minimising agency problems for European banks.

1.8.5 Chapter Five

The second empirical chapter is similar to the previous chapter four. The chapter only focused on commercial banking in North America, and findings were compared with European commercial bank findings in chapter 4. This fifth chapter (Empirical Chapter 2) provided empirical findings about the moderating effect of antitrust policy on the relationship between bank concentration and commercial bank performance in North America.

1.8.6 Chapter Six

Firstly, due to the lack of governance data for the non-listed bank, we examined the impact of the interaction between structural change in antitrust policy and high concentration on bank performance. The empirical chapter also examined the role of internal corporate governance measures and their interactions with a high concentration in improving bank performance and minimising agency problems in Europe and North America. Our last empirical chapter showed that optimal levels of non-executive total compensation and dividend per share were instrumental variables capable of improving bank performance.

1.8.7 Chapter Seven

This chapter discussed chapters four to six in detail and the empirical findings benchmarked with journals. We contribute to knowledge by comparing European bank results to North American. This chapter explores the relationship between competition and bank governance in more detail. This contributed to the nexus of studies on competition and bank governance.

1.8.8 Chapter Eight

The section provided concluding remarks for the thesis.

1.8.9 Chapter Nine

The last chapter provided a general inference about our study's policy implications and its limitation. The country-specific findings will be presented in the external appendix.

2.0 Literature Review, Background, and Research Methodology

2.1 Literature Review

2.1.1 Bank performance

The Sloan (1996) study had shown that high accrual firms were associated with negative future abnormal returns and vice versa. Other studies also confirmed that discretionary accruals over-estimate earnings and performance as investors do not fully understand the earnings-generating process (Xie, 2001; Richardson et al., 2005). The Richardson et al. (2006) study emphasised that the accruals were not linked to sales growth. These studies captured quiet life and managerial slack inherent in banking leading up to the crisis. Banks' profits with non-traditional banking services increased with management ownership, while the profits of traditional banks increased with board ownership that does not always need regular monitoring (Westman, 2011). The Westman (2011) study showed that the executives of non-traditional banks indulged in adverse selections and moral hazards, knowing that their business activities are opaque to monitor.

Many studies examined the effects of technological development (Kontolaimou and Tsekouras, 2010), ownership structure (Iannotta et al., 2007), cost efficiency, and financial structure (Girardone et al., 2009) on productive performance. Our study determined the determinant of bank performance and managerial slack based on internal and external factors. The internal factors focused on bank-specific factors. The bank-specific factors utilised different performance, liquidity, and risk measures in our thesis. The macro-economic variables (such as consumer price index, government debt, GDP per capita, and so on) represented our external factors. During the 2007-2009 global financial crisis, the underperforming bank performance was characterised by short-term lending, high gearing, non-diversification of portfolios, credit expansion, and the increasing shares of non-interest income (Demirguc-Kunt et al., 2013a, Beltratti and Stulz, 2012). However, few empiricists examined the effects of banking and

financial crisis on bank profitability, and findings remained inconclusive (Athanasoglou et al., 2008; Herrero et al., 2009; Dietrich and Wanzenried, 2011; Lee and Hsieh, 2014).

2.1.2 Bank Concentration and Competition

The earlier study recognised that United States commercial banks outperformed their few European counterparts during 1992-1996 (De Bandt and Davis, 2000). Giroud and Mueller (2010) also confirmed the negative effects of concentration on U.S. firm performance. However, Our pivot data analytics attempted to explore more robust data in recent years. Our pivot data analysis outcomes during 2000-2014 showed that the United States commercial banks outperformed their European commercial banks' counterparts by 29% and 27% in terms of operating profit and net income. However, the European commercial banks incurred more overheads of approximately 28% than their United States counterpart during the same period. Our pivot data analytics implied that the European banks underperformed compared to United States commercial banks because they had more overheads and reduced profitability. The moral hazard problems are linked to bank executives not bearing the full consequences of their problems. This raised questions on why European banks are less competitive than the United States in profitability and cost-saving. The excessive overheads of Europeans may be linked to cost inefficiency, managerial slack or poor managerial decisions, and agency problems. The Pivot data analytics in Appendix 1A showed that the European commercial banks underperformed their North American counterparts.

In reduced competition, the bank executives prioritised quiet life and often extracted private rent. During the 1979-1996 period, many studies of 23 industrialised countries were characterised by monopolistic competition (Shaffer, 1982; Nathan and Neave, 1989; Molyneux et al.,1994; Coccorese, 1998; Bikker and Groeneveld, 2000; De Bandt and Davis, 2000). Exploring the two alternative paradigms, many journals from the banking industries of developed economies focused on the level of concentration and competition (Bikker and Haaf, 2002; Coccorese, 2005; De Guevara et al., 2005; Molyneux et al., 1994; Weill, 2013; Mamatzakis et al., 2005; Carbo et al., 2009). During the 1992-96 period, the United States commercial banks had been known to be more competitive than their European [France, Italy, and Germany] counterparts (De Bandt and Davis, 2000). Bikker and Haff's (2002) study showed the negative relationship between bank competitiveness and concentration. On the

other hand, another study found no conflict of interest between concentration and competition for Italian banks during the 1988-2000 period (Coccorese, 2005). The U-shaped relationship between bank competition and stability in 10 European countries over the 2000-2008 period had been linked to the disparity in regional economic conditions (Liu et al., 2012). This is why the impact of the antitrust variable in minimising the negative effect of bank concentration on bank performance may be inconclusive or ineffective.

The risk of bank fragility increased because banks in highly concentrated systems received government bailout funds that raised adverse risk-taking incentives (Mishkin, 1999). The earlier study highlighted that higher bank concentration encouraged reduced credit rationing, bigger loans, and an increased likelihood of failure if the loans were susceptible to multiplicative uncertainty (Caminal and Matutes, 2002). Boyd and De Nicolo's (2005)study showed concentration enhanced the likelihood of systemic distress, and the study also found a positive link between bank concentration and bank fragility. Also, European cross-border banking that focused on creating subsidiaries instead of installations of local bank branches led to significant barriers to complete market integration (Barros et al., 2005). The degree of competition proxied by Panzar-Rosse H-statistics is higher for western European nations than Eastern Europe, Cyprus, and Malta, over the 1998-2002 period (Staikouras and Koutsomanoli-Filippaki, 2006). The companies in more concentrated industries benefited from reduced returns and a high entry barrier (Hou and Robinson, 2006). Maudos and De Guevara (2007) found a positive relationship between market and x-cost efficiency. The non-diversifiable distress risk-oriented firms in highly concentrated industries usually command reduced predicted gains.

The major barriers to European bank integration can be attributed to the national economic state, cultural difference, values, fiscal and legal rights (Berger et al., 2001; Buch and Heinrich, 2002; Berger et al., 2003). The European bank integration had favoured wholesale banking compared to the retail banking system due to consumer confidence in local banks. This caused the indigenous European depositors to prefer national banks (Schuler and Heinemann, 2002). The degree to which financial institutions can earn abnormal gains via excessive market power had not been empirically resolved (Goddard et al., 2001; Casu and Girardone, 2006, 2009b; Degryse and Ongena, 2008; Tregenna, 2009; Dick and Hannan, 2010). The conventional Structure-Conduct-Performance hypothesis supported the positive relationship between concentration and performance. The positive relationship led to banks setting unfavourable prices for consumers regarding higher interest rates on loans and reduced deposit rates (Berger,

1995). Before the 2007-2009 financial crisis, the European banking market had consolidated (Goddard et al., 2007). The Chicago Revisionist School confirmed that the collusive behaviour could not be justified by the positive relationship between concentration and profitability. It may indicate scale efficiency and competitive edge (Liu et al., 2012). Akin et al. (2016) study examined the effects of competition on United States bank stability during the 2007-09 financial crisis and found evidence supporting the competition stability view. The higher market concentration for South-East European banks led to decreased non-performing loan ratios, indicating higher financial stability (Guidi, 2021). However, the other competition measure, the Lerner index, showed that banks' market power increased non-performing loan ratios. This signified the risk of credit risk. Studies found that the concentration-stability hypothesis contributed to higher financial stability (Beck et al., 2006). However, according to the concentration-fragility hypothesis, higher bank concentration also increased financial fragility (Guidi et al., 2021). The impact of bank concentration is mixed, but the excessive amount of non-performing loans to total loans on the bank balance sheet have serious policy implication for bank efficiency and profitability in the long run.

The effective deterrence hypothesis linked the likelihood of a horizontal merger to anti-competitive behaviour, which was greater in Canada than in the United States (Eckbo, 1992). Homma et al. (2014) found an intriguing relationship between growth and efficiency throughout the banks' life cycle. However, the Efficient Structure Hypothesis dominated the Quiet Life Hypothesis regarding economic impacts. The predictive power of competitive behaviour varied over time, within or across countries, and depended on the criteria of measurements (Carbo Valverde et al., 2009). Market concentration proxied by HHI had negative effects on Costa Rican bank profit, which led to the rejection of the SCP hypothesis and the acceptance of the quiet life hypothesis (Doyran and Santamaria, 2019). Given these issues, the Northern American and European banking sectors provided interesting empirical cases to examine in this study.

2.1.3 Antitrust Policy

The United States' democrat antitrust regimes are compatible with the European social democratic parties with the mission to prevent corporate monopolists from maintaining market share and profitability despite reduced innovation (Amato, 1997; Sassoon, 1997; Monti,2001; Kenworthy, 2014). The European Socialist Democratic Parties 'SDPs' (e.g., United Kingdom

Labour party, Belgian Parti Socialiste's and other SDPs in France, Germany, Italy) used electoral manifestos to promise stronger enforcement of antitrust policy while others preferred expansive industrial policies and other forms of regulation instead of antitrust laws (Guidi and Karagiannis, 2015).

According to the ESH hypothesis, the antitrust policies preventing market concentration reduced efficiency (Demsetz, 1973). An antitakeover provision is a form of weaker governance that allows risk-averse managers to indulge in value-destroying acquisitions without the risk of job loss (Masulis et al., 2007). The more inefficient governance was inherent in the empire-building hypothesis, and quiet life theory had been challenged previously (Bertrand and Mullainathan, 2003). In agreement with the following findings, bank executives that indulge in quiet life are less likely to make profitable investment decisions. White (2015) emphasised the role of antitrust laws towards greater competitiveness in the banking industry as an important sector of the United States economy and challenged the bank cooperative ideology that supports entry, LIBOR rate fixing, regulatory ceilings on the deposit interest rate, and cartel-like behaviour. We tested to see if the antitrust policy can help minimise quiet life (in the form of bank concentration capable of causing bank fragility) and strengthen competition rather than imposing costly corporate governance mechanisms on banks.

2.1.4 Corporate Governance

Since the middle of the 1990s, the continental European economies had been restrained non-flexible labour regulation, politically motivated corporate governance regimes, and bank-based finance. While the United States corporate governance maximises shareholders' value and re-structuring, the European economies had exposure to politically infected corporate governance regimes (Kershaw, 2003). The legal protection of investors is used to explain the differences in corporate governance regimes across countries. Allen and Gale's (2002) study compared bank-oriented corporate governance systems (Germany, Japan) to market-oriented governance systems (e.g., the United States and the United Kingdom). Relationship-based corporate governance can be linked to banks and government providing funds to companies, while market-based governance encourages large investors to fund firms (La Porta et al., 2000). The takeovers are an important part of market-based governance.

An earlier study of non-financial firms found no significant association between the percentage of external directors and firm valuation (Hermalin and Weisbach, 1991; Bhagat and Black, 2002; Hermalin and Weisbach, 2003). The banks with a greater percent of board independence

underperformed during the crisis because such banks received more quantitative easing (i.e., called TARP – Troubled Assets Relief Program) from the United States government (Adam, 2009; Beltratti, A. and Stulz, R., 2012). The role of corporate governance in enhancing performance has been extensively studied. Agency problems can be linked to the pursuit of self-interest by the banker at the expense of shareholder value maximisation. A certain mechanism can be pivotal in alleviating agency problems. One of the mechanisms is non-executive director monitoring. Other control mechanisms are insider shareholding, institutional investors, block-holder shareholding, debt funding, labour market pressure for bank executives, and corporate market control (Agrawal and knoeber,1996). The Agrawal and Knoeber (1996) study indicated that the effects of insider shareholding, debt financing, and corporate control activity on firm performance were statistically insignificant during simultaneous equation econometric estimations. Therefore, the reliance on single control mechanism is not effective in solving agency problems and has misleading effects on performance. This raised question of whether agency problems in the banking industry can be solved using optimal outside directorship incentives as standard corporate governance measures struggle to address risks.
Many studies that performed a large-sample cross-sectional analysis in the 1990s found no relationship between the observable governance features and firm value (Himmelberg et al., 1999). Recent studies confirmed no significant or even negative association between bank profitability and the standard corporate governance indicators such as CEO ownership, board independence, and shareholder rights proxied by governance index (Gompers et al., 2003; Fahlenbrach and Stulz, 2011; Aebi et al., 2012; Beltratti and Stulz, 2012). The corporate governance challenges of the bank are linked to poor banking decisions by small depositors, the opaqueness of bank assets, and the contagion risks of bank complex financial instruments (Flannery, 1998).

The market competition compelled CEOs to adopt governance structures that matched changing conditions. However, other situations such as wealth, prestige, education, and ethnicity may counteract the influence. Hence, the effects of governance structure deviated from expectation in a perfect market equilibrium due to significant adjustment costs (Core and Larcker, 2002). A recent study found a negative relationship between certain corporate governance attributes and bank stability for the United States and some international banks (Anginer et al., 2018). Flannery's (2001) study had shown that bank market discipline could be achieved via direct impact on executive risk-taking and indirect marketing monitoring of banks' financial position. The degree of non-executive director financial expertise had been linked to

an improved bank performance before the financial crisis but worse performance recorded during the crisis (Minton et al., 2010). Corporate governance had been empirically verified to significantly increase return-on-asset and sales growth in softly and weakly competitive environments (Cosset et al., 2016).

2.1.5 The relationship between Bank Concentration and Antitrust Policy

Earlier empirical studies showed that product market competition instilled market discipline and encouraged management to maximise firm performance (Alchian, 1950; Stigler, 1958; Schmidt, 1997). The failures of antitrust policy to significantly minimise corporate dominance and increase competition can be attributed to endogeneity issues (Lawson and Murphy, 2016), which informed our third research question.

2.1.6 The impact of Corporate Governance and the Structural Change in the Antitrust Policy on Bank Performance Measures

The antitrust policy provided a competitive disciplinary effect that oversaw managerial slack. Profit instability is significantly and positively associated with the ownership concentration of regulated utility firms and financial institutions (Demsetz and Lehn, 1985). However, the positive relative diminishes with the increase of both variables. A study examined the valuation effect of corporate governance depending on the degree of competition in 14 large European nations (Ammann et al., 2013). Some of these studies indicated that corporate governance improved the valuation of companies in non-competitive industries only (Giroud and Mueller, 2010; Ammann et al., 2013). A Cosset et al. (2016) study of 682 firms globally showed that an increase in competition enhanced corporate governance ratings, and corporate governance is associated with a higher firm valuation in developing economies or less competitive industries in developed economies. A recent study examined the relationship between bank concentration, corporate governance, and economic growth. The study showed that the bank concentration had negative effects on the economic growth of financially dependent industries and stronger corporate governance reduced the harmful impact of bank concentration (Diallo, 2017). A recent study empirically showed the positive effect of CEO power on firm valuation driven by the product market competition. Also, it confirmed the efficacy of CEO power in a competitive market only (Sheikh, 2018). It implied that competition and corporate governance played a similar role in alleviating agency problems. The CEO power index used by the study included

the structural, ownership, and expert dimensions of CEO power, which are corporate governance indicators.

2.2 Background

2.2.1 Principal Agency Theory

The corporate governance issues questioned whether there are an agency problem and the high transaction costs that made it impossible to solve agency problems through a contract. Principal agency theory provided insight into why managers may be given some performance-related pay (such as equity shares or stock options) as one of the ways to resolve agency problems (Hart, 1995). In the banking industry, where agency problems (moral hazards and adverse selection) and incomplete contracts persist, the importance of governance structure cannot be underestimated. The misuse of firm perks, negative perquisites, excessive CEO power, lack of bargaining power between board members and CEOs, excessive CEO incentives consumption, and camouflaged incentives are the major causes of agency problems (Bachelder, 2005). A previous study showed that weak banking supervision standards, a high degree of securitisation, and lower interest rate environments encouraged greater risk-taking in lending by banks and preceded most of the historical financial crisis (Calomiris, 2008; Maddaloni and Peydro, 2011). The process of improving bank liquidity usually entailed severe agency problems (in forms of quantitative easing and liquidity assistance) and short-term low-interest lending by banks that softened their lending standards (Allen and Gale, 2007a; Acharya and Naqvi, 2010). The adverse selections and asymmetric information problems are the major causes of moral hazards which can contribute to agency problems in the long run and hamper bank profits. This study contributed to a better understanding of bank performance and managerial slack by examining how the competition laws and board governance helped minimise agency problems. Bank executives' moral hazards and asymmetrical informational problems resulted in severe losses and allowed the CEOs to benefit significantly from high incentives. Non-performing loans, loan losses, and bad debts are the major causes of bank failures.

Many studies showed that poor corporate governance contributed to the 2007-2009 financial crisis. A study identified investment-related agency conflicts as a severe type of agency conflict in the U.S. (Shleifer and Vishny, 1997). The agency conflicts can be measured using free-cash-

flow (Jensen, 1986). Implementing one of the six antitakeover provisions reduced the market value of average firms by $113 million, especially for firms with low free cash flow. In comparison, the firms with high free cash flow lost $358 million in value (Bebchuk et al., 2009). The result failed to acknowledge that corporations can adjust their corporate governance measures to mitigate potential agency problems. After Chi and Lee (2010) study sorted companies based on the level of free-cash-flow, the study found no significant difference in governance attributes across the groups, similar to findings to Bebchuk et al. (2009) study. Many corporate governance reforms have been implemented since the 2007-2009 financial crisis. Most non-listed banks have historically operated under an implicit social contract (Baradaran, 2014) and benefitted from certain government quantitative easing for their role in economic stability (Taft, 2015). Agency theory assumes that corporate governance is important for corporations with greater potential agency costs (Chi and Lee, 2010). The study confirmed that improved corporate governance quality among firms with a high free cash flow increased valuation, and the governance merits are insignificant amidst companies with low free cash flow. Corporations susceptible to increased agency conflicts with higher free cash flow benefitted more from improved corporate governance.

Agency theory and many empiricists indicated that the senior executive act in self-interest via excessive compensation consumption (Yermack, 1997; Bebchuk and Fried, 2006; Morse et al., 2011). The agency problems are in the form of perquisite consumptions, quiet life, and empire-building (Giroud and Mueller, 2010). The study of 37 United States banks over the 2003-2012 period showed that the higher compensations cannot always be linked to increasing technical efficiency levels (Matousek and Tzeremes, 2016). The shareholders bear the cost of excessive perquisite consumption by bank executives. The lack of free cash flow is the major source of empire-building where the bank executives are investing in negative net present value projects. The quiet life encouraged inefficiencies rather than benefit from monopolistic rent (Koetter et al., 2012). Many studies had broadly explored the effects of governance structure (Core et al., 1999), takeover threats (Agrawal and Knoeber, 1998), merger acquisition (Bliss and Rosen, 2001), and regulation (Perry and Zenner, 2001) on CEO pay level. Agency problems occurred in different forms based on the ownership structure, deposit insurance creating moral hazards, and governance control. The separation of ownership in the shareholder-CEO relationship encouraged the CEO to indulge in self-interest (Berle and Means, 1932; Jensen and Meckling, 1976). Recent studies showed non-monotonic relationships between wage-setting structures and corporate governance measures depending on the country. The Dimick and Rao (2016)

study found a bi-directional relationship between wage-setting structures and the level of corporate ownership concentration.

While certain perquisite consumption is a less detrimental agency problem (Burrough and Heylar, 1990), the study showed that executives in a substantial minority of listed firms benefitted from excessive perks and incentive packages compared to private firms (Edgerton, 2012). The optimal contracting view showed that the arm-length contract between the talented agents and the principals is key to value maximisation (Edman et al., 2009; Gayle and Miller, 2009; Kaplan and Rauh, 2010). Quiet life occurs when bank executives are insulated from hostile takeover and competitive pressure. The firms with a high level of antitakeover provisions and reduced shareholder ownership experienced reduced valuation on the cash reserves (Dittmar and Mahrt-Smith, 2007). The corporations with a high level of antitakeover requirements and lowered insider ownership invested their cash more quickly on capital expenditures and acquisition (Hartford et al., 2008). A study examined how the severity of agency conflicts affects the relationship between corporate governance and firm valuation (Chi and Lee, 2010). These studies focused on the impact of governance on corporate cash policy and cash valuation.

2.2.2 Bank Concentration and Competition

The impact of concentration on bank profits is mixed. Some studies showed that the concentrated banking sector is less prone to financial crises and significantly boosts bank profit than non-concentrated banks (Allen and Gale, 2004). The concentration-stability view supported many United States banks, but there is a higher likelihood of financial instability than in the United Kingdom and Canada (Allen and Gale, 2000). On the other hand, highly concentrated banks are more prone to bank fragility because bank concentration encourages interest rate charges on firms (Boyd and De Nicolo, 2005). The increased concentration in off-balance-sheet banking business offset de-concentration in conventional loans business (Maudo and Fernandez de Guevara, 2004; Carbo and Fernandez, 2005). A more integrated European banking market has serious implications for systemic risks and regulators (Goddard et al., 2007). Also, as the country reached a certain level of development, bank concentration had negative effects on development and growth (Diallo and Koch, 2018).

There are extensive debates about how bank competition influenced economic welfare and performance. Fungacova et al. (2017) contributed to knowledge by examining the effect of bank competition on the cost of credit using panel data from 20 European countries over the

2001-2011 period. Competitiveness can be improved by promoting productivity growth, and the study showed reduced productivity in Europe compared to the United States (Thimann, 2015). However, in some developed economies (Germany), high wages meant low competitiveness and increased productivity, and vice versa in emerging economies.

Previous researchers examined how product market competition influences profit distribution, and greater product substitutability or larger market share provided higher incentives to the management to minimise cost (Raith, 2003). According to the Schmidt (1997) study, the higher level of competition increased the probability of liquidation with a positive impact on CEO efforts and minimised firm profit margin indirectly. Signing an explicit contract between a risk-neutral principal and a risk-averse agent can play a major role in reducing costly activities; high cost is usually influenced by the implicit incentives caused by the external competitive environments external to the banks. The Raith (2003) study highlighted the importance of allowing free inflow and outflow of companies to remove the opacity. Cunat and Guadalupe (2009) indicated two channels in which competition can influence the nature of the contract given to agents. Firstly, a higher level of competition, productivity, and cost reduction activities can enhance firm market share (in the form of marginal return). In the condition of higher competition, the elasticity of substitutions between goods and services tends to be higher. Secondly, a higher level of competition minimised the tendency of incumbents to earn abnormal profits and reduce the mean profits of the bank for a given market share. Therefore, banks should be expected to offer flatter contracts under increasing competition. Overall, the effect of the competition is mixed and ambiguous concerning risk and CEO compensation. The antitrust policy considered in this study will reduce the risk of monopolistic banking and curb bank executive managerial slack and expropriation of incentives.

2.2.3 Internal Corporate Governance

Some researchers found that privately held firms characterised by illiquid concentrated ownership enabled shareholders to effectively monitor managerial actions (Kahn and Winston, 1998; Ke et al., 1999; Maug, 1998). Another study emphasised that private companies with huge shareholders characterised by active monitoring and soft data (i.e., subjective assessment) are key to CEO firing decisions than hard accounting metrics (Cornelli et al., 2013). Weaker corporate governance induced greater mergers and acquisitions, minimised value-adding alliances, and guaranteed a quiet life (Cremers et al., 2009). The higher level of institutional investor ownership led to a better quality of external governance with serious implications for

value creation (Bodnaruk et al., 2013). Alternatively, the higher dispersion of ownership and control, together with free-riding problems from significantly dispersed ownership, played a major role in minimising the ability of shareholders to monitor and supervise listed firms (Bhide, 1993; Grossman and Hart, 1980; Jensen, 1989). Considering the outcome-based measures, the board member can align CEO interests and shareholder value creation by linking a significant proportion of CEO pay to firm performance (Coughlan and Schmidt, 1985; Kerr and Bettis, 1987; Murphy, 1985). In comparison with behavioural-based measures, the board monitored CEO decision-making and compensated for the different cause-and-effect decisions of such CEO.

Agency theory addressed the conflict of interest between the principals and the agents and emphasised different agents' attitudes to risk. Jensen and Meckling's (1976) study highlighted that the agency theory is for agents to maximise shareholder values. In an agency model with adverse selection and moral hazard, the optimal compensation package comprises salaries, equity share, perks, and other fringe benefits (Zou, 1997). Agency theory can be attributed to internal governance elements such as responsibilities, structure, and incentives of the board members; management incentives; by-laws and contractual/charter provisions; capital structure; and internal control mechanisms. Agency problems occur as a result of the informational asymmetric between the principal (i.e., external investors such as creditors or shareholders) and the agents (i.e., management team) not acting in the best interest of the investors during daily operations (Bearle Jr and Means, 1932). The development of agency theory can be divided into principal-agency and positive agency theories. The positive agency theory focused on ownership structure (Jensen and Meckling, 1976), efficient capital markets, controlling opportunistic behaviour (Fama, 1980), separation of ownership-control, and monitoring mechanisms (Fama and Jensen, 1983). The principal-agent theory modulates the relationship between principal and agent-based on logical deduction, mathematical evidence, and viable assumptions (Eisenhardt, 1989). Agency problems increase when the incentives of the CEOs, shareholders, majority/minority shareholders, bondholders, and shareholders, are not aligned.

Some academicians emphasised that competition in the product market compelled agents to act with more self-control (Alchian, 1965; Jensen and Meckling, 1976). Besides, Jensen (1993) also acknowledged the importance of improving the responsibilities of board members and majority shareholders. The formalised agency theory showed that agency issues could be minimised via effective monitoring, bonding, and optimal compensation contract design (Jensen and Meckling, 1976). Many theorists attempted to address agency problems by

examining incentive mechanisms (Banker and Datar, 1989; Grossman and Hart, 1983; Harris and Raviv, 1979; Holstrom, 1979; Mirrlees, 1999; Ross, 1973) and by utilising the incentive data of listed or public firms globally (Aggarwal and Samwick, 1999a; Bebchuk and Fried, 2004; Core et al., 1999). The empirical research around the world also explored CEO pay (Murphy, 1985; Jensen and Murphy, 1990a; Fernandes et al., 2013; Gao and Li, 2015). The Gillian (2006) study had explored a more robust framework of corporate governance in the forms of internal and external governance.

Evaluating competition laws and market concentration in major economies banking is of significant interest to policymakers and regulatory agencies. Many studies showed that improved performance could be associated with increased executive earnings (Jensen and Murphy, 1990a; Garen, 1994; Kaplan, 1994; Hall and Liebman, 1998; Aggarwal and Samwick, 1999b). Many researchers also found that corporate performance can be enhanced by increasing current pay-performance sensitivity (Masson, 1971; Abowd, 1990; Leonard, 1990). The possibilities of the CEO to engage in an overpayment, excessive perk consumption, and investment in negative net-present-value projects can be minimised via board monitoring, increasing threats of proxy fights and takeovers, and the presence of large block-holder (Hart, 1995). Fewer studies showed that reduced or no antitakeover provisions indicate improved corporate governance, leading to better performance (Gomper et al., 2003; Bebchuk et al., 2009). In agreement with the bargaining hypothesis and against the entrenchment hypothesis, a study showed that valuation (proxied by Tobin Q) increased with antitakeover provisions for companies with high agency costs and low bargaining power (Straska and Waller, 2010). For instance, the board members consist of executive directors (part of the management team). The non-executive directors should represent the audit and remuneration committees in the boardroom to provide greater monitoring.

The governance structure that separates managers' decisions from board members and public shareholders is considered reasonably efficient if the shareholders' long-term values are maximised (Fama and Jensen, 1983). The bank corporate governance mechanisms exhibited strong effects on minimising the probability of bank failure (Saunders et al., 1990; Gorton and Rosen, 1995; Anderson and Fraser, 2000; Caprio et al., 2007; Laeven and Levine, 2009; Pathan, 2009; DeYoung et al., 2013). Previous studies examined the link between regulation and performance (Brissimis et al., 2008; Giroud and Mueller, 2010; Agoraki et al., 2011). However, none of these studies examined the impact of antitrust policy and governance on commercial bank performance in Europe and North America. This study filled this gap. Chi and Lee's (2010) study showed that reduced antitakeover provisions, higher concentrated

institutional ownership, increasing equity-based managerial incentives, and non-CEO duality of role increased firm value. However, the governance impact varies based on free-cash-flow and different regression estimation techniques. The free-/operating- cashflow as a proxy for agency conflicts for U.S. companies is less liable to endogeneity with corporate governance than the level of cash studied in prior studies (Shleifer and Vishny, 1997; Dittmar and Mahrt-Smith, 2007; Harford et al., 2008). In the wake of the governance crisis in the early 2000s, there was a call to enhance board independence. As a result of the Enron and WorldCom Scandals in 2002, the Sarbanes-Oxley Act of 2002 was introduced to increase board independence requirements by enhancing the independence of audit and incentive committees. The bank stock price reacted positively to the passage of deregulatory measures in terms of the Riegle-Neal Interstate Banking and Branching Efficiency Act [IBBEA] of 1994, and the Financial Services and Markets Act [FSMA] of 2000, governance by the corporate control market (Carow and Heron, 1998; Akhigbe and Whyte, 2001; Czyrnik and Klein, 2004). The synergistic effect of governance and competition with specific attention to non-competitive industries will contribute to knowledge on ameliorating agency problems (Aggarwal and Samwick, 1999a; Cremers et al., 2008). However, the interaction of antitrust policy (ATPolicy) and governance in the banking industry remained under-studied. Theoretically, changes in product market competition alter the nature of incentive packages that shareholders (via the board of directors that protect shareholders' interests) are willing to give CEOs. However, no study examines the impact of the interaction of bank concentration and antitrust policy on the bank performance in Europe and North America; and compare the efficacy of antitrust policy in the banking industry of the two regions (Cunat and Guadalupe, 2009; Cornett et al. 2008, 2009; Giroud and Mueller, 2010; 2011). The effect of governance on listed commercial bank performance extended by interacting corporate governance with bank concentration.

2.2.4 Antitrust Policy

The economic theory confirmed that the increasing level of domestic competition led to higher level of innovation. Instead of allowing political party changes to dictate the degree of bank competitiveness, considering the effect of structural change in anti-trust policy can help to minimise the risk of bank fragility.

2.2.5 Corporate Governance and Competition

The CEOs are powerful agents capable of maximising stakeholder value (Quinn, 1985; Papadakis, 2006; Hamori and Kakarika, 2009; Berger et al., 2016). The agency theory stated that the increase in CEO power strengthened agency problems by increasing certain internal factors (i.e., managerial slack, the likelihood of managerial entrenchment) and further expanding the conflict of interest between the managers and shareholders (Jensen and Meckling, 1976). Demsetz and Lehn's (1985) study showed that competition incentivised firms to choose their governance mechanism optimally, and ownership structure varied systematically in ways consistent with shareholder value maximisation. In the case of negative externalities of relationship-related investments that led to sub-optimal value creation, the governance structures complemented their competitive strategy to achieve greater profitability (Jia, 2013). The study implied that the competition moderately strengthened the correlation between relationship-oriented investments and effective governance mechanisms. Cosset et al. (2016) empirically confirmed a significant relationship between governance and labour productivity in all competitive industries in developing countries. This implied a complementary relationship between corporate governance and competition. A recent study also confirmed that CEO power enhance firm values due to the synergistic relationship between competition and corporate governance (Sheikh, 2018). Stronger corporate governance enabled powerful CEOs to improve performance in a highly competitive market. However, this study empirically examined the effects of bank power in bank concentration on performance measures in more and less competitive markets, i.e., countries in eastern Europe and varied bank specialisation. Our study filled the gap in the empirical studies by examining the impact of the formulated internal corporate governance index and the non-executive total compensation on bank performance measures.

While many empiricists found no relationship between board independence and firm profitability (Hermalin and Weisbach, 1991; Agrawal and Knoeber, 1996; Bhagat and Black, 2002), other researchers observed that board independence enhanced company value in the events of CEO replacement and corporate acquisitions (Weisbach, 1988; Byrd and Hickman, 1992). The difference in the findings from event-study analysis and large-sample studies can be attributed to noisy proxies and the endogeneity between firm value and corporate governance (Hermalin and Weisbach, 2003). The conflicting evidence between the two techniques based on theory can be attributed to the relationship between governance quality

and firm value depending on the potential severity of agency conflicts (Chi and Lee, 2010). The event study analysis only focused on when the possible agency problems became significant and the marginal gain of good corporate governance policies was pronounced. The relationship between corporate governance and competition had been characterised by the inverted-U-shaped curve (Karuna, 2008). The inverted curve implied that competition stopped to enhance governance when the increasing level of competition is above the optimal governance apex on the inverted U-shaped curve. Hence, the relationship between governance and competition is non-monotonic. The board monitoring minimised the likelihood of detecting misconduct, increased fines imposed on the CEO, and enhanced shareholders' wealth maximisation (Nguyen et al., 2016).

2.3 Research Paradigm, Philosophy, Methodology, and Methods

This research aims to analyse the causal effects of bank concentration and antitrust laws (or governance) on Europe and North American bank performance. Our study considered a quantitative research process, and different econometric estimators were used. We conducted descriptive, explorative, and analytical research to examine the causal effects of HHI-antitrust-policy on bank performance and managerial slack because very few or no previous studies directly examine these effects in Europe. A similar study examined the impact of the interaction of bank concentration and business combination laws-interaction on bank-holding-company return-on-assets. The first empirical chapter analysis investigates the behaviour of different European bank specialisations over the 1998-2014 period. The econometric analysis in chapter 4 (Empirical chapter 1) was compared with chapter 5 (Empirical chapter 2). The panel data for European savings banks were strongly balanced while others (E.U. commercial and cooperative banks) were unbalanced. The panel data regression model in chapters four and five examined the impact of concentration, antitrust-policy interactions with concentration, bank-specific and macroeconomic factors on European and North American bank performance.

Previous literature and principal-agency problems in banking helped to develop this study hypothesis. The hypothesis is tested empirically to compare findings to the previous empirical evidence. The explorative research technique utilised in this study focused on the historical analysis using quantitative data (Collis and Hussey, 2013). The descriptive research ascertained and described the variable of interest in detail as they exist, providing clarification about a particular issue. The analytical research shed more light on our descriptive statistics and

analysed how bank concentration, antitrust laws, and control variables affect bank performance. Our main independent variable of interest had features of a phenomenon that can be measured.

2.3.1 Research Design

Determining the research paradigm is the starting point at the beginning of the research design. A research paradigm can be explained as the framework guiding our research conduct. Social scientists have been contentious about whether quantitative or qualitative research is more beneficial. The quantitative purists followed the assumptions of positivist philosophy, while the qualitative purists supported the assumptions of interpretivism philosophy (Schrag, 1992; Maxwell and Delaney, 2004; Johnson and Onwuegbuzie, 2004). The qualitative researcher opposed the assumptions of positivism by embracing the assumptions and philosophies of interpretivism and constructivism. Other qualitative purists argued that different qualitative philosophies are better than the quantitative approach (i.e., idealism, realism, humanist, hermeneutics, and postmodernism – Guba and Lincoln, 1989; Schwandt, 2000) by emphasising that time and context-free generalisations were impractical and non-desirable.

Mixed method research has explored the benefits of both quantitative and qualitative research. It is important to reiterate the commonalities of both methodological choices. For instance, for both qualitative and quantitative choices, the research questions were addressed using empirical observations, data description, construction of explanatory arguments from the data, and speculation on findings (Sechrest and Sidani, 1995). Both quantitative and qualitative research ensured that inquiries were safeguarded to minimise the likelihood of confirmation bias and invalidity that may occur (Sandelowski, 1986). This thesis treated our bank information as entities by setting objectives based on an established theory similar to how natural scientists treated the physical phenomenon. Our study lacked the behavioural context of individual banks, even though this study reliably deduced and validated the cause-effects relationship empirically. Complementing one method with another helped deal with complex, dynamic problems, emphasising the importance of mixed methodology and opening the door to a realism philosophical stance. The hybrid method offered the best chance of answering specific research questions because it allowed communication, collaboration, and improved research. Our quantitative study utilised qualitative methods to create dummy (or categorical) variables. A previous study showed that the relationship between paradigm and research

methods was neither sacrosanct nor necessary (Howe, 1988; 1992). Our study implied that the quantitative research approach might complement qualitative methods and vice versa.
Our inconclusive findings from the effects of explanatory variables showed that the hypothesis could not be tested in isolation because it is embedded in a network of beliefs, national culture, legal system differences. Hence, alternative clarification may continue to exist. Our thesis is open to further inquiry by conducting qualitative research that asks more qualitative questions about competition and bank governance. Qualitative research on its own is susceptible to soft relativism (also known as social constructivism) by respecting the views of different people and groups. An inductive research approach enabled the researcher to investigate the future without relying on historical data analysis. A research process, whether it is quantitative or qualitative, is susceptible to humanism, value-laden inquiry, and subjectivism in quantitative research during research topic decision-making, development of instruments as the target construct, choice of analytical approach, result interpretation, and the drawing of conclusions (Johnson and Onwuegbuzie, 2004).

2.3.2 Research Philosophy

The epistemology thinking about this study is positivism due to the data collection and analysis of secondary data from different financial databases. This study took a philosophical view that the data collected was less open to bias and hence objective (Saunders et al., 2007). Therefore, we adopted a philosophical stance of a natural scientist. This thesis embraced positivism as the research philosophy for all three empirical chapters. We utilised the existing principal-agency theory to develop a hypothesis and tested the idea. The hypothesis was accepted or rejected after conducting the different econometric analyses. As a result of positivist philosophy, we contributed to knowledge by examining how to improve banking competitiveness using antitrust laws. The research paradigm chosen in this study is functional, objective, rational, and aimed to offer practical solutions to problems. The research paradigm provided recommendations and insights on resolving agency problems and improving bank performance.

2.3.3 Research Approach

The widely known two research approaches are quantitative and qualitative (Kothari, 2004). This study focused on collecting data in a quantitative form that is subject to intensive econometric analysis in a formalised fashion. Deductive research can be defined as a research

process where the development of a conceptual and theoretical framework can be tested by empirical observation (Jill and Hussey, 2013). The deductive research approach moved from generalisation to specifics. The research approach is deductive because this study entails a positivist approach that aims at testing theory. This quantitative approach was carried out by conducting an applied, analytical econometric study for all the empirical chapters.

This study tested the established principal-agency theory about managerial slack and poor bank performance after reviewing many pieces of literature and deduced related hypotheses. The conducted secondary data assist in confirming or refuting the hypothesis. This approach utilises logical reasoning while examining the relationship between research and theory (Bryman and Bell, 2007). The findings from the econometric modelling were compared to existing literature and theories. The mixed results after testing the hypothesis showed the opportunity to modify the agency theory or examine closely other country-specific factors. The deductive process aims to explain the causal effect of antitrust laws on the relationship between concentration and bank performance. Then, our study compared the results to the relationship between bank concentration and performance. We applied control variables to allow for hypothesis testing, and the investigation is independent of the main explanatory factor being assessed. We developed concepts for bank concentrations and antitrust policy in ways that enabled facts to be measured quantitatively. The next section introduced our chosen research design using strategy, methodological choice, and time horizon.

2.3.4 Research Strategies and methodology

Our research strategy was archival. This archival research uses financial database information (such as Bankscope, Worldbank, Eikon Datastream) to capture the secondary data as the principal data source used in this study. We analysed a broad sample size from many countries by bank specialisation and individual country. The yearly secondary data utilised in this study is a summary product of daily bank operations. The archival research strategy allowed us to answer research questions from the past and the changes over time to be answered (Saunder et al., 2015). Most bank-specific data for empirical chapters one and two were obtained from the Bankscope database in the Financial Laboratory of Middlesex University. The bank-specific data for the third empirical chapter was obtained from the EIKON datastream at the same location. The macro-economic factors obtained from the Worldbank database helped examine the effects of economic factors. The banks with no data were excluded from the collected data as indicated by bold in the table below:

Table 1: Proportion of Bankscope Bank-Specific Data Analysed

	Country and specialisation	Total sample before data cleansing	Total sample analysed	Percent of data analysed (100%)
Empirical Chapter 1	Commercial Bank	1187	306	**26**
	Cooperative Bank	1675	1447	**86**
	Savings Bank	939	512	**55**
	Austria	302	121	**40**
	Belgium	42	16	**38**
	Croatia	34	12	**35**
	France	233	117	**50**
	Germany	1628	1393	**86**
	Sweden	54	42	**78**
	Luxembourg	70	31	**44**
	United Kingdom	155	31	**20**
	Denmark	77	30	**39**
	Italy	522	360	**69**
	Spain	60	56	**93**
	Bulgarian	23	5	**22**
	Cyprus	23	10	**43**
	Czech Republic	22	7	**32**
	Hungary	28	9	**32**
	Lithuania	10	5	**50**
	Romania	25	8	**32**
	Slovenia	17	7	**41**
	Slovania	12	5	**42**
Empirical Chapter 2	Canada	53	53	**100**
	United States	6302	6161	**98**
Empirical Chapter 3A	Listed European and North American Commercial Banks	853	814	**95**
Empirical Chapter 3B	Listed EU and North American Commercial Banks	256	233	**91**

2.3.5 Research Methods

The research method consists of data collection and data analysis techniques. The data collection methods used in this study entailed using secondary data to carry out descriptive statistics, correlation matrix, panel data econometric modelling, charting, generalisation, and systemisation. Our study was generalised to capture the influencing factors and the irregularities in bank performance and managerial slack due to the deductive approach used. These methods assist in understanding our research position and address the research problems robustly.

2.3.5.1 Data Collection Methods

Our quantitative methodological choice tested and validated an established principal-agency theory to see how competition and internal corporate governance influenced bank performance. After reviewing the literature on bank competition and agency problems, we constructed a hypothesis capturing the research problems. The hypothesis testing of research problems via econometric analysis assisted in generalising findings for different bank specialisation and different countries in Europe and North America. Our quantitative methodological choice was less susceptible to humanism, and the results were relatively more independent of the researcher's subjectivity. The quantitative research enabled us to examine a huge sample of banks from 19 European countries, Canada, and United America.

This study adopted a quantitative multi-method choice using secondary data, testing hypotheses, and comparing models using different econometric modelling techniques. Due to limited access to individual bank databases and the large sample size of banks examined in this study, we conducted quantitative research relying on data from the third-party database. The bank-specific and macro-economic data were collected from Bankscope and Worldbank, respectively. The bank-specific data for empirical chapters one and two were obtained from Bankscope. The EIKON Datastream database provided data used in empirical chapter three. This thesis carried out panel data regression modelling for different European bank specialisation, and North American commercial banks over the 1998-2014 period. In the last empirical chapter (Chapter 6), we conducted a panel data regression (i.e., pooled ordinary least square [pooled OLS], the fixed effect [FEM], and random effect modelling [REM]), probit-logit regression, marginal effect analysis, principal component analysis [PCA], two-stage-least-square [2SLS] regression on listed commercial banks in Europe and North America between 1995 and 2018.

Giroud and Mueller (2010) study utilised a similar data source to Bertrand and Mullainathan (2003) by considering 30 United States Business Combination laws (between the 1980s - 1990) at different years in different states. Our study evaluated the passage of antitrust laws in one year only for each country. Also, it examined structural changes in antitrust law since the antitrust law amendments for Europe and North American in the last empirical chapter 3a – 2002-2018 for the United States and 2004-2018 for European banks. The sample of firms considered by Giroud and Mueller's (2010) study was between 1976-1995, and the business laws were deemed to be ended in 1990. Based on data available at the time of data collection and after searching Bankscope, Bloomberg, and DataStream databases at Middlesex University financial lab for bank data between 1987 and 2015. We cleaned out all the n.a. during data cleaning up to 1997. We variably found available bank data between 1998 (or after 1998-2015) and 2015.

2.3.5.2 Data Analysis Method - Techniques and Procedures

We conducted descriptive statistics to understand the timeline of events for both the dependent and explanatory variables. However, to test the hypothesis, we collected short and long panel data characterised by many years and banks. The following econometric analysis was carried out:

Panel Data Regression

Our panel data regression for all the empirical chapters 4-6 comprised balanced and unbalanced panel data. Some of our country-level data were unbalanced because some banks were observed at different periods and vice versa for balanced panel data. We employed various types of regressors in this thesis, namely: varying regressors [e.g., bank-specific variables, non-executive compensation], time-invariant regressors [anti-trust-policy dummy and other corporate governance proxies], and macro-economic-invariant regressors [GDP per capita, inflation, government debt]. The assumption of pooled ordinary least square (OLS) showed the presence of unobserved heterogeneity across individual-specific effects and specified constant coefficients. The correlation between individual-specific effects and regressor signified fixed effect regression while the no correlation signified random effect regression. This study attempted to test if the estimators are consistent and efficient. A consistent estimator is based on the laws of large numbers, which states that more observations offer better precision and

accurate estimations. The ordinary least square estimator is efficient, linear, and unbiased estimators based on Gauss-Markov Theorem (Jansson, 2004).

The pooled OLS estimated betas as parameters. The pooled OLS assumptions are characterised by:

- The linearity of the regression model in the coefficient and the error term
- The absence of correlation between the independent variable and error term
- The population means of the error term is zero to claim that pooled OLS is unbiased
- Lack of heteroscedasticity and serial correlation. Serial correlation can be explained as the non-predictability of the observation of error term, signifying a lack of correlation between the observation of error terms.

It is important to note that heteroscedasticity minimises the precision of pooled OLS estimates. The error term is independent and identically distributed without serial correlation, and heteroscedasticity is true. The presence of a significant correlation between the independent variables in our analysis showed a problem of multicollinearity, which reduced the precision of our pooled OLS estimates. Also, our data failed to satisfy the assumptions of OLS because not all the variables of interest are normally distributed. We carried out fixed effect modelling (FEM) because it correlated the regressors and the individual-specific effects. The assumptions of FEM stated that the independent, identically distribution draws from their joint distribution; no probability characterises this for large outliers and the absence of perfect multicollinearity. The presence of an error term with a conditional mean of zero showed that the error term is not correlated with all the variable 'x' observations for the bank 'i' over time. The FEM is indicated below:

$Y_{it} = \alpha_i + \beta_1 X_{it} + \mu_{it}$, where i = 1, 2, …., n, t = 1, 2, ….. T. …… (2.0)

If this assumption is violated, there is a problem of omitted variables bias. The limitation of FEM (or within estimator) is the exclusion of time-invariant variables, and there is no identification of their coefficients. The pooled OLS and REM (or between estimators) assisted in capturing the effects of time-invariable variables (financial crisis, antitrust policy, and other dummy variables). For instance, if the variance of unobserved individual-level effects 'α_i' is bigger than the variance of the error term, the FEM is a preferential model. The advantages of different panel data regression motivated different panel estimators to examine the cause and effects of independent variables on managerial slack and bank performance. The random effect modelling (REM) assumed that the individual-specific effects are distributed independently of

the regressors. The REM is an intermediary between the OLS and the FEM. Hence, there is no correlation between the intercept and the regressors. The assumptions of REM showed that the explanatory variables are not correlated with individual unobserved heterogeneity. If the Breusch-Pagan Lagrange multiplier test is significant, the REM is a better estimator than pooled OLS. However, the study also carried out a Hausman test to know the preferential estimator between fixed and random effect models.

The assumption of linearity for the conditional probability function is a major flaw of the linear probability model. The probit and logit regression addressed these problems by using a non-linear function to model the conditional probability function of a dummy dependent variable. The logit model can be defined as the cumulative distribution function 'CDF' of the logistic function. In contrast, the probit model can be referred to as the CDF of standard normal distribution. We utilised the probit/logit model to examine the effects of bank concentration on the likelihood of negative returns, and this model is usually estimated using the maximum likelihood method. The outcomes of the logit and probit model were similar. These binary models only measure the ability of the explanatory variables to increase or decrease the likelihood of poor performance in this study. Hence, the coefficient signs are what empiricists are looking for and not the coefficient magnitude. The predicted probabilities are restricted between 0 and 1 for the logit/probit model. The probit/logit model may be challenging to interpret, but it captured non-linearities better because the models predicted probabilities that lie within zero and one.

We also estimated the marginal effects (M.E.s) of the explanatory variables using M.E.s at the means and the average M.E.s. The M.E.s at the mean is estimated for the average bank in our sample and can express it as $\delta p/\delta xj = F'(x'\beta)\,\beta j$. The average M.E.s are calculated as the mean of the individual bank M.E.s, i.e., $\delta p/\delta xj = \sum F'(x'\beta)/n^* \beta j$. The average MEs is a better estimator of marginal effects when compared to the M.E.s at the mean, but the results are very similar. The benefit of M.E.s estimation is that it allowed us to estimate the percentage at which the explanatory variables can increase or decrease the likelihood of poor performance. In addition, the marginal effects allowed us to significantly estimate the sign and magnitude of explanatory variables (i.e., HHI, the interaction of HHI and governance proxies, and other control variables) on dependent binary outcome variables.

The last empirical chapter also employed principal component analysis (PCA) as a data reduction technique to re-program multi-variate data with lesser dimensions. The PCA method allowed us to re-organise data to summarise many governance variables with relatively few

components that capture the maximum possible data from the original variables. The actual methodological aim of PCA is to capture components $a = [a_1, a_2, \ldots, a_p]$, which are a linear combination $u = [u_1, u_2, \ldots, u_p]$ of the original corporate governance variables $x = [x_1, x_2, \ldots, x_p]$. The first component, a1, is expressed as the linear combination of the original variables x and considers the maximum possible variance. The second component only captured data not captured by the first component, and there was no correlation between the two components. The PCA is beneficial when there is an adequate correlation among the original variables to motivate component representation. The PCA method exhibited sensitivity to scale differences in the variables by seeking to maximise the variance. The variance of a = xu elements, such that a'a = 1, is maximised by PCA. The eigenvalue decomposition of the correlation matrix proffered the solution by locating the main axes of the shape created by the scattered data plot. The eigenvalues indicated the level of variability explained by each component. The main limitation of PCA is that it is an unsupervised statistical technique that does not consider the label of an individual data point. To address the data standardisation issue attributed to the PCA method, we aggregated original variables with a similar unit of measurement. Care must also be taken with PCA data reduction method interpretation because the original variables were changed to a principal component, a linear aggregation of the original characteristics.

It is important to note that previous econometric estimation techniques may be susceptible to omitted variable bias, measurement errors, and simultaneous causality that cannot be addressed using multiple regression analysis. We employed instrumental variable regression (2SLS: Two-stage-least-square) for some variables in this thesis to handle these simultaneous bias or reverse causality problems in the previous model utilised. The simultaneity bias can be attributed to the correlation between the explanatory variables and the regression error term. Previous studies also considered the effect of simultaneity bias (Geishecker, 2012; Brachert et al., 2017). The presence of correlation between the error term and explanatory variable indicated the endogeneity of the regressor (Wooldridge, 2013). Endogeneity occurred when the error terms influenced the dependent variables through the regressors (Amsler et al., 2016). The instrumental variable in this study is strongly confirmed because our 2SLS regression satisfied the following conditions: the instrumental variables (e.g., dividend-per-share and non-executive total compensation) were non-correlated with the error terms (μ); correlated with the independent variables (HHI); do not exhibit a direct effect on our dependent variables (trailing earnings per share), and covariance, $\text{cov}[y, z|x] = 0$. We conducted a Durbin-chi^2 test and Wu-Hausman test of endogeneity, and we found that price is significantly endogenous. The

limitation of 2SLS is the reduced efficiency compared to the three-stage least-square regression because it does not use cross-equation data.

3.0 The Banking Sector in the European Union and North America

Due to the 2007-2009 financial crisis, many countries introduced regulatory reforms to correct the major systemic risks. The decision-makers called for frameworks to promote bank stability and enhance bank resilience during financial distress. Commercial banks can enhance value by utilising private information and monitoring bank executives to minimise moral hazard problems. The adverse selection problems intrinsic to external funding can be countered by ensuring the certification of clients' firms (Slovin and Polonchek, 1999). The bank executives can increase loan loss provisions during positive abnormal returns to lower reported earnings volatility, encouraging earnings management (Greenawalt and Sinkey, 1988; Ma, 1988). Many empirical studies on United States banks (Ahmed et al., 1999; Beaver and Engel, 1996; Collins et al., 1995; Healy and Wahlen, 1999; Liu et al., 1997; Liu and Ryan, 1995; Scholes et al., 1990) and non-US banks (Anandarajan et al., 2003; 2007; Perez et al., 2008) supported this view. The process of earning management by bankers can be attributed to a quiet life or managerial slack.

The pre-crisis United States commercial bank data employed a propensity matching score to examine the effects of securitisation on bank performance. The results showed that securitizing commercial banks were more profitable with greater credit risk exposure and greater funding costs (Casu et al., 2013). The government bailout of the European banking industry totalled about 1.5 trillion Euro towards the end of 2009, which accounted for more than 13% of European gross domestic products (Betz et al., 2014). Many studies showed that the previous European banking crises contributed output losses of approximately 20-25% of the GDP (Dell'Ariccia et al., 2008; Laeven and Valencia, 2008, Laeven and Valencia, 2010, Laeven and Valencia, 2011). The worst financial crisis after the Great Depression of the 1930s was caused by softened lending standards, weak supervision, and the widespread use of financial innovations that led to a higher level of securitisation (Taylor, 2008; Allen and Carletti, 2010; Acharya and Richardson, 2010a). The study also confirmed that securitizing banks were

characterised by larger and less diversified loan portfolios, reduced liquidity, and lower capitalisation.

3.1 United States

The United States banking structure is managed by the congressional bank regulatory bodies, the Antitrust Division of the Department of Justice, and the Supreme Court (Goodman, 1971). The Clayton antitrust law also reformed the Sherman Antitrust Act of 1890. The Celler-Kefauver Federal Law Act (1950) was introduced to reform and strengthen the Clayton Act of 1914 to minimise asset utilisation linked to anti-competitive behaviour. The Bank Merger Act of 1960, amended in 1966, allowed merging banks to get approval from one of the federal regulatory agencies. For instance, the surviving national, state-based, and insured state non-member banks are expected to seek merger approval from the Comptroller of the Currency, the Federal Reserve Board (FRB), and Federal Deposit Insurance Corporation (FDIC), respectively. The United States government started waging war against anti-competition in 1961. It started a new era by filing complaints against the intended merger of the Philadephia National Bank and the Girard Trust Corn Exchange Bank based on violating Clayton Act Section 7 and Sherman Act Section 1. The Supreme Court rejected the Merger case in June-1963, which was the first-time bank was subject to the Clayton Act (Goodman, 1971). The Phillipsburg Supreme Court Case is an example of merging small banks in the small cities between the Phillipsburg National Bank and Trust Co. and the Second National Bank of Phillipsburg. Since the 1960s, there had been an incremental weakening of antitrust enforcements against industry concentration in the United States compared to Germany, except for price-fixing (Ergen and Kohl, 2019).

The United States systemically important banks were the major source of higher systemic risk, and the public bore the cost (Restrepo-Tobon et al., 2015). Specifically, the study found that 73% of the top 100 United States commercial banks, 98% of medium and small banks, and seven of the top ten largest banks by asset size exhibited significant economies of scale. Since the 2007-09 financial crisis, financial institutions in the United States and Europe were more reliant on government bailouts (Seccareccia, 2013). The study indicated that the likelihood of bank failures had been predicted using CAMEL indicators with other internal bank-specific factors on risk habits (Jin et al., 2013), audit quality (Jin et al., 2011), off-balance sheet

activities (DeYoung and Torna, 2013) or property investment (Cole and White, 2012). The financial distress of the 1980s and 1990s showed that the financial intermediaries had strong incentives to assume excessive risk capable of increasing the probability of bank failure. A study confirmed that big banks earned profit from economies of scale at the expense of smaller specialised banks (Clark, 1988). Recent empirical studies confirmed that large depository financial institutions gain from improvements in technology and changes in regulation (Wheelock and Wilson, 2011).

Regardless of bank size, most United States commercial banks exhibited economies of scale (Malikov et al., 2014). The economies of scale represented every aspect of antitrust regulation and formed the basis for well-established efficiency defense in mergers and acquisitions (Williamson, 1968; 1977). For instance, the merger process limiting competition can surpass current antitrust legislation if the merging banks demonstrate significant performance efficiency. The deregulatory measures and technological advancement improved bank productivity in the long run (Mukherjee et al., 2001; Semenick, 2001; Tirtiroglu et al., 2005). The larger banks had been recognised to experience positive productivity growth while smaller banks experienced poor productivity growth (Feng and Zhang, 2012). The 70% of total productivity growth had been linked to technical changes, and the scale economies account for just 7% (Feng and Serletis, 2010). The small United States commercial banks with less than $500 million in assets achieved better profit efficiency than larger banks while using the same production technology (Berger and Mergr, 1997; Akhighe and McNulty, 2003).

In support of the quiet life hypothesis, the bank executives in less competitive markets can invest bank assets in less risky loans and derivatives (Rhoades and Rutz, 1982; Clark, 1986). The empirical study of United States bank quiet life showed that bank concentration had serious implications for firm behaviour, positively associated with bank cost inefficiency (Berger and Hannan, 1998). Akhigbe and McNulty's (2003) study concluded that the profit efficiency of small commercial banks decreased with quiet life or expense preference behaviour and increased with the market structure or lender-borrower relationship development. The quiet life (QL) hypothesis, ceteris paribus, implied that the small commercial banks limited their loan riskiness and utilised the equity to reduce profit under the expense-preference hypothesis. The QL bank executives exhibited shirking behaviour which minimised profit efficiency because of the inability to produce the optimal output level. Quiet life behaviour is more pronounced in

less competitive markets than in competitive markets, and the cost of output increases due to the manager's shirking behaviour.

3.2 Canada

A study of commercial banks in Canada, Western Europe, and Japan showed that a high level of bank concentration could be linked with higher profit rates (Short, 1979). Canadian commercial banking emerged in the early 19th century under the control of government authorities. It was chartered to meet certain social obligations, and the bankers gained significant financial rewards from their operations with clear public externalities (Hammond, 1967). Since 1871, many Federal Bank Acts are fundamental parts of capital adequacy requirement to make the Canadian banking system highly concentrated and more stable than their United States counterpart (Seccareccia, 2013). Dimand and Koehn's (2009) study showed that the United States commercial banks were more susceptible to insolvency risk tremendously in the 1930s than the Canadian banking system due to large United States banks' access to government bailout during the crisis.

In the early 1990s, 90% of the Canadian banking sector's total revenues came from traditional interest income. The revenue type is now less than 50% as total bank revenue is increasingly linked to more off-balance sheet activities (Seccareccia, 2013). Leading up to the 2007 United States subprime mortgage, the Canadian bank return on equity had an upward trajectory, then dropped during this crisis, and the average return on equity was approximately 10%. As a result of the Canada United States Free Trade Agreement and the North American Free Trade Accord 'NAFTA', United States banks increased competition. As a result, the Canadian banks engaged more in asset securitisation by creating off-balance-sheet items in the financial system. The securitisation that relied on the mortgage market contributed to the profits of Canadian banks and the economic expansion of the housing market in North America (Correa and Seccareccia, 2009).

The lesson from the 2007-2008 financial crisis showed that unregulated financial systems are susceptible to the problems of moral hazard and adverse selections. For instance, such problems were evident in Canada and globally during the 1990s in the form of mark-to-model valuation techniques (Berndt and Gupta, 2008). The Canadian banking system is more stable and quickly weather the 2007 subprime crisis because foreign banks played a subordinate role in the

domestic banking market. Foreign financial institutions control less than 6% of mortgages provided by all the banks (Traclet, 2005). The Canadian banking system is sheltered from foreign ownership. Under the Basel II capital requirements, the Canadian banks had shown a better capital buffer than their American and European counterparts. The Canadian banking system has been less geared since the 1970s due to its stringent regulatory controls and maintenance of a highly significant safety buffer to cope with balance sheet volatility (Crawford et al., 2009). The banks that fail to comply face serious sanctions from the regulators. Hence, compared to banks in the United States, United Kingdom, and Continental Europe, the Canadian banking system faced fewer losses, bad debts, and write-downs.

3.3.The European Banking System

The European banking market has become more concentrated with no increased competitive pressure. Despite the EU regulatory interventions, the EU retail banking market still experiences a high level of barriers to entry and reduced integration due to major differences among countries (Casu and Girardone, 2010). Since the 2007-2009 financial crisis and the European sovereign debt crisis, it has been challenging to fully understand the relationship between regulation, bank concentration, and European financial stability in the banking industry. The patterns of regulation and bank bailouts do not result in significant economic growth and raise issues about the competitiveness of banking in the European financial system (Beck et al., 2006; Vives, 2011). The major cause of the recent financial crisis had been attributed to asymmetric informational problems caused by inefficient ways of transferring bank-specific information to public investors. The asymmetric informational problems degrade the functionality of banks and harm economic growth (Barth et al., 2012). The traditional banking method of accepting deposits and generating loans or credit has been declined significantly; and changed from asset allocation to pension funds and mutual funds (Allen and Santomero, 2001). It implies that the banks changed from traditional banking businesses to fee-generating services. The household in Japan, Germany, and France are more risk-averse in their investment decisions than the United Kingdom and the United States. The bank-based economies like Germany, France, and Japan can manage risks through capital reserves and intertemporal smoothing. However, in a market-based economy like the United Kingdom with major competition from the financial market, risks can only be managed using derivatives and other similar approaches. The decline of mortgage-based securities raised the question about internal risk management, governance mechanisms, and regulation (Beck et al., 2008).

The goals of the European First Banking Co-ordination Directive in 1977 were to minimise barriers to entry and enhance cross-border business. The 1988 2nd Banking Co-ordination Directive enhanced competition by creating a single banking license (i.e., passports). This Directive also allowed banks to offer universal banking such as insurance, commercialisation, derivatives activities, and factoring (Goddard et al., 2013). The purpose of the Financial Service Action Plan (FSAP) adoption during the 1999-2004 period and the European Monetary Union (EMU) is to create a competitive and dynamic financial services industry with improved regulation (Goddard et al., 2007). However, despite the legislation and deregulatory measures, there is still resistance to creating a fully integrated European Single Market in the financial industry (Casu and Girardone, 2010; Gropp and Kashyap, 2009). As a result, the increase in competition does not translate toward convergence of bank profitability across Europe.

The Efing et al. (2015) study utilised a pay dataset from the Austrian, German, and Swiss banking sectors to capture the banking segments of asset management and investment banking for about 67 banks. The recent study found an economically significant association of compensation with both the extent and the volatility of bank trading income, especially during the pre-crisis period of 2003- 2007 (Efing et al., 2015). Previous studies documented that higher incentive pay and bank risk were associated with weaker bank governance (Fahlenbrach, 2009; Hau and Thum, 2009). The cooperative banks represent 20% of the European banking industry. For instance, for 1447 European cooperative banks studied, in Austria, cooperative banks represent 3.52% of the sample size, in Belgium [0.41%], in France [3.11%], in Germany [64.20%], in Italy [24.88%], and in Spain [3.87%]. Since the 2007-2009 financial crisis, the EU banking regulation and supervisory mechanisms widened its policy areas to increase European Commission's (EC) surveillance over members' fiscal policy (Verdun and Zeitlin, 2018; Chang, 2018). The surveillance enabled control of the bank policy of European member states by the European Central Banks. Also, for 512 savings banks, in Austria, savings banks represent 8.79% of the sample size, Denmark 2.93%, France 2.54%, Germany 77.54%, and Sweden 8.2%. The Cipollini and Fiordelisi (2012) study examined the effects of bank-specific factors, industry concentration, and macro-economic factors on the financial distress of unbalanced panel data of 308 European commercial banks over the 1996-2009 period. The study showed that credit risk, liquidity risk, and bank Lerner index are significant negative determinants of distressed shareholder value ratio [SHVR]. There is a negative relationship between market power and SHVR financial distress (Berger et al., 2009; Beck et al., 2011; Cipollini and Fiordelisi, 2012). Cipollini and Fiordelisi (2012) study are consistent with the

Basel III accord that emphasised the relevance of setting rules for banks to minimise liquidity risk using liquidity coverage measures. Williams (2004) study supported the bad management hypothesis in the empirical analysis of European savings banks.

Since establishing a single market by the European Union, the reforms and initiatives of improved convergence of the European banking sector struggle to translate to better bank profitability. The 2007-2009 financial crisis exposed certain systemic flaws amongst European banks, which pre-dispose banks to greater credit-, refinancing-, and sovereign risks (Matousek et al., 2015). Recent studies argued government bailouts had negative effects on European banks in the form of slower response of bank lending to firm performance and distorted bank competitiveness in Europe. It can be argued that banks getting access to government bailout gives such financial intermediaries unfair financial advantage through cheaper capital, which may not help to reflect true bank performance. For instance, the United Kingdom government bailed out financial intermediaries with almost US$1.1 trillion as a way of re-instilling confidence in the banking system. The government in Denmark and competitors also bailed out 13 out of 140 Denmark banks. The ongoing sovereign debt crisis in Europe was a major threat to bank performance, causing substantial losses and impairments on banks' sovereign debt holdings because banks hold significant government bonds (Acharya and Steffen, 2015). The efforts of the bank to devote billions of assets to enhance regulatory capital ratios and minimise exposure to the crisis had led to almost a 70% loss in market value.

Most Central and Eastern Europe (CEE) countries are relatively small with a less developed financial system in under-developed financial intermediaries and limited market-oriented approaches. As a result, the CEE equity market is plagued with less liquidity and reduced competitiveness than Western European countries (Claessens and Laeven, 2003). The modern theory of financial intermediation acknowledged the information edge of banks and assumed that financial intermediaries benefit from scale economies and comparative advantages in the processing of information about borrowers' behaviour (Harris and Raviv, 1991; Diamond, 1984). Commercial banks traditionally lend to small-and-medium-sized firms with information-challenging borrowers. Such banks gather information about the borrowers during loan screening and contract development and then monitor borrowers' repayment and savings activity.

For many decades, the European banking system has been characterised by profit-maximising shareholder-owned commercial banks co-existing with stakeholder-driven savings and cooperative banks. The stakeholder banks are more prominent in Germany, France, and Spain

than shareholder commercial banks (Altunbas and Chakravarty, 1998). The implementation of IFRS among the listed European commercial banks enhanced earnings quality by mitigating the ability of bank management to engage in earnings management using loan loss provisions (Leventis et al., 2011). As a result of the implementation of European directives in the banking and financial sectors, there is increasing convergence in risk culture and business models of stakeholder and shareholder banks. This is often referred to as the convergence hypothesis. The Makinen and Jones (2015) study examined the behaviour of shareholder-owned commercial banks and stakeholder-owned cooperative and savings banks using the efficiency frontier approach during the 1994-2010 period. The study of the 521 European banks showed that the average non-efficiency scores vary by ownership type and are reduced for cooperative banks compared to commercial and savings banks. The Great depression emphasised the significance of stakeholder-driven cooperative banks.

The cooperative banks function mainly in the SMEs and retail markets by accepting deposits and offering loans to creditworthy customers. Cooperative banks help to maintain a strong balance sheet and minimise credit risk better than private banks; The European cooperative banks are crucial to playing a crucial role in supporting sustainable economic growth and accounts for 20% of the European Union bank deposits and loans (Fiordelisi and Mare, 2014). The Fiordelisi and Mare (2014) study examined the stability of European cooperative banks during the 1998-2009 period and found evidence consistent with the competition-stability view proposed by Boyd and De Nicolo (2005). The study implies that bank market power hurts bank soundness. The increasing bank soundness can be attributed to higher homogeneity in the cooperative banking sector, and regulation played a major role in enhancing financial stability. The European Association of Cooperative banks highlighted that the cooperative banks demonstrated robustness and resilience during the 2007-08 global financial crisis (EACB, 2012). The cooperative banking industry is different from other financial institutions in terms of benefits, ownership structure, and control. The European cooperative banks operate a one-member-one-vote principle regardless of equity ownership. Focusing on the traditional banking model, the asymmetric informational problems between cooperative banks and the customers are less pronounced because the cooperative banking system favours relationship banking.

Cooperative banks may serve a dual purpose of profit maximisation and expansion without profit intent (Christensen et al., 2004; Ayadi et al., 2009). Secondly, the Cihak (2007) study indicated that the goal of cooperative banks is to maximise client surplus rather than profit goals. Cooperative banks are characterised by greater financial stability and reduced return volatility (Hesse and Cihak, 2007). The result of 45 large European cooperative banks also

supported less risk orientation of the cooperative banking system (Groeneveld and de Vries, 2009). Many empirical studies analysed the performance (Goddard et al., 2008a; Kontolaimou and Tsekouras, 2010), failure risk (Fiordelisi and Mare, 2013), diversification (Goddard et al., 2008b; Lepetit et al., 2008; Mercieca et al., 2007; McKillop and Wilson, 2011), and the ownership structure (Gorton and Schmid, 1999) of small credit institutions. Due to cooperative banks' principles and ethos, the president of the European Commission "Jose Manuel Barroso," the cooperative banks outperformed commercial banks during the 2007-2009 financial crisis. The Jose Manuel (EC President) statement is consistent with previous empirical findings that showed that access of cooperative banks to soft information on members' or customers' creditworthiness helped to outperform commercial banks and are less prone to failure (Hesse and Cihak, 2007; Ayadi et al., 2010). It is important to note that systemic risk is positively associated with size (Vallascas and Keasey, 2012; De Jonghe, 2010), and most cooperative banks are usually small, localised credit institutions. On the other hand, other empiricists showed that cooperative banks are more susceptible to default risk than commercial banks (Goodhart, 2004; Brunner et al., 2004; Fonteyne, 2007).

The cooperative banking system is better positioned to assess the risks and creditworthiness of the borrowers locally. Hence, the implications of moral hazard and adverse selection are less pronounced for cooperative banks compared to commercial banks. A recent study found a significant negative relationship between the European cooperative banks' market power and bank stability "Z-scores," indicating that a reduced competition "Lerner index" is associated with a high level of bank instability, and herding behaviour proxied by HHI had positive effects on bank stability (Fiordelisi and Mare, 2013). The competition had been discovered to substantially decrease individual bank stability and exhibited a hump-shaped relationship associated with the market power of the loan market (Clark and Radic, 2018). The market power in the deposits market is positively and linearly associated with bank solvency.

The United Kingdom 2007-09 financial crisis contributed to a contraction in the supply of German retail lending because of German savings bank exposures to substantial subprime exposure (Puri et al., 2011). The United States banks owned regional banks (Landensbanken) in Germany exposed to the United States subprime mortgage. The German savings banks are mandated to offer narrow banking by serving mainly local clients and regions. Since the beginning of the 2007 financial crisis, corporate and total lending have been increasing, but retail lending by savings banks has been declining continually. The difference-in-difference analysis showed that the crisis-affected German savings banks, especially small and less liquid,

reject loan applications than non-affected savings banks (Puri et al., 2011). Hence, it seems German savings banks minimised their lending to minimise liquidity risk.

3.3.1 Germany

The three pillars of the German banking system are public banks (i.e., savings banks, Landesbanken [regional savings banks], and so on), cooperative banks, and private banks (Puri et al., 2013). The bank-based systems dominated the financial systems in France and Germany, with write-down losses of $23.3 billion and $55.9 billion in 2008, respectively (Hardie and Howart, 2009). The German and French depository banks held 78.3% of total assets in 2002 and 70% in 2007, respectively (IMF, 2004; Hardie and Howart, 2009). The German state-owned banks (such as Landesbanken [regional banks], Sparkassen [savings banks], and Deutsche Postbank) dominated the industry and have been accused of having an unfair competitive edge over private banks because public guarantees back public banks. Following the complaints by private banks to the European Commission in 1999, phasing out loan guarantees to Landesbanken were agreed between the German government and European Competition Commission in July/2005. Hence, the German government withdrew state guarantees for commercial activities of savings banks (Sparkassen)and their clearing institutions, Landesbanken, in 2005. However, the German banking sector maintained a long-run partnership with more companies, called the Hausbank system. Germany's Hausbank system implied a close association between the corporate entity and their banks characterised by cross-shareholdings and share-directorships. Hence, senior bankers are usually part of the executive board to monitor performance.

The large European savings banks minimised the cost of technological change, which led to a uniform decrease in banks' total cost (Carbo et al., 2003). The European savings banks had statistically strong evidence supporting the bad management hypothesis citing the issuance of poor quality loans, especially for German savings banks (Williams, 2004). The German competition policy is integrated into the European governance regimes, and the German antitrust policy [Bundeskartellamt] was founded in 1957 (Ergen and Kohl, 2019). The German banking structure consists of the top five national universal banks and many regional banks that offer competition and a full range of banking services. German universal bank executives with significant lending positions in commercial firms often exert influence in the supervisory

boards of the firm, especially for banks with huge shareholding. For instance, Deutsche bank had major stakes in Daimler-Benz, Allianz, Metallgesellshaft, Phillip Holzman, consultancy firms, and Munich Re. The European antitrust agencies prosecuted predatory competition (Gifford and Kudrle, 2015).

3.3.2 United Kingdom

The United Kingdom banks achieved higher mean return on equity than banks in Belgium, Denmark, France, Germany, Italy, Netherland, and Spain, during the 1992-2007 period (Goddard et al., 2010). It is also important to note that the cost of capital that affects bank profitability differently varies between countries and between banks in each country (Fiordelisi and Molyneux, 2010). The Building Societies Act (1986) allowed building societies to become listed banks. It offered banking services such as fund transmission, unsecured loans, investment management, stock brokerage, provision and underwriting of insurance, expansion into other European Union states, and real estate services. Since January 1987, the number of building societies changing to bank status or acquired by established United Kingdom banks increased. The number of building societies fell from 2286 in 1900 to 63 in 2003. Following the revision of the Building Societies Act in 1997 and the passage of the Financial Services and Markets Act (2000), mutual banks are allowed to offer banking services. Some non-banking companies can now offer retail banking services, depositing, and loan-making. The United Kingdom banking system experienced a Big-Bang "series of financial reforms" to encourage greater bank competition and structural changes in the financial sectors. The reforms permitted United Kingdom banks and other financial companies to expand into new ventures and sustain financial stability. The United Kingdom government introduced the Financial Services Act (1986) to put pressure on LSE to eliminate cartel-like rules by increasing non-members' ownership of shares. The reform also enabled merchant banks to become investment banks offering investment-related services such as proprietary trading, asset management, global custody, bonds, and consultancy.

The main aim of the Financial Services Act (1986) is to protect investors during the Big Bang Era and support the financial firms to engage in self-regulation. There are two tiers of self-regulating organisations in the United Kingdom, namely. The lower-tier SROs (SFA – Securities and Futures Association; IMRO – The investment Managers Regulatory Organisations; and PIA – Personal Investment Association) reports to the upper-tier SROs,

called the Securities and Investment Board. Most of the SRO have minimal or no enforcement power due to their close relationship with the financial firms, and SROs merged to become FSA. Collusive behaviour may be unavoidable due to the close relationship between the regulators from SROs and the regulated financial firm. The Bank of England had been responsible for price and financial stability since its nationalisation in 1946. The 1979 United Kingdom banking Act classified financial institutions as banks and licensed deposit institutions. The Act amendment in 1987 merged the distinctions between the categories. The bankruptcy and collapse of Barings (1995) called into question the supervisory prowess of the Bank of England. The 1998 Banking Act transferred the power detailing the role of the Deposit Protection Board and the supervisory role of the Bank of England to a newly formed Financial Service Authority (FSA). The Financial Services and Market Act of 12th June 2000 made FSA the only regulator of all United Kingdom financial institutions. The Zhao et al. (2013) study showed that the switching costs influence the competitiveness of United Kingdom banks. A lot of the United Kingdom commercial banks had not recovered from the effect of the 2007-09 financial crisis (Duygun and Shaban, 2016). The United Kingdom financial institutions are expected to comply with the European large exposures Directives, but that will change in the coming years due to Brexit. The banks in the United Kingdom are expected to submit data to the FSA on non-performing loans, and high-impact banks usually go through an onsite assessment by the FSA supervisors who are risk management specialists or independent accounting firms.

3.3.3 Italy

The completion of the Single Market Act (1986) had major impacts on the banking sectors in Italy and Spain. Most Italian banks from the 1930s until the mid-1980s were state-owned or managed by a non-governmental organization and strongly supervised by the government. Due to financial reforms in preparation for the functioning in the EU single market and consolidation in the 1990s, Italian banks went through a major structural change. The 1936 Banking Act allowed commercial banks to take short-term deposits and offer loans, and the investment banks were restricted to long-term funding. The Banking Act of 1993 encouraged mergers and bank branching, created bank holding companies and removed the distinction between short-term and medium-term deposits. The reform also allowed banks to have a 15% equity stake in commercial entities. Since 1993, the Italian banks went through streams of

privatization in the 1990s, which started with the selling of 64% equity-holding of Credito Italiano, followed by other banks such as Banca Commerciale Italiana, Mediobanca, Banco di Napoli, and Banca di Roma. The government's equity stake in banks declined from 70% in 1993 to about 12% in 1999. Early cooperative banks' original goal was to address the asymmetric informational problems while helping the borrowers. However, in recent years, cooperative banks faced the fundamental problem of capital accumulation and non-earning assets. The European cooperative and savings bank can benefit from higher profitability and improved stability if the banks diversify into more off-balance-sheet activities (Kohler, 2015).

The economic growth in Italy decreased from 1.6% in 2017 to 0.9% in 2018, and the bank non-performing loans are decreased. Since 2009, the Italian banking sector has been experiencing reduced credit risk, higher capitalization, ongoing restructuring and consolidation, and profit recovery. Banks' issuance of loans to consumers continued to grow at the rate of 2.6% annually, owing to the favourable conditions in the real estate market driven by the rising consumer confidence index, reduced interest rates, and reduced house prices. As a result, bank NPLs had declined from 16.2% in 2015 to 8.7% in 2018, and a continuous decrease in NPLs is expected. The cost of capital is more than bank profitability in most European countries. The return on equity of Italian banks increased from 4.1% in 2017 to about 6% in 2019 due to a decline in loan loss provisions and a 4% decrease in operating costs. The bank consolation and restructuring in Italy are driven by fintech and the dynamic regulatory environment.

The major indicators of distress for Italian cooperative banks are voluntary closures and acquisitions across the provinces. The likelihood of cooperative banks' default in Italy can be linked to economic downturns, minimized via micro-prudential regulation (Mare, 2015). A study showed that efficient Italian cooperative banks are mission-oriented and significantly reduced the performance gap than non-co-operative ones (Manetti and Bagnoli, 2013). However, the recent studies showed that the Italian cooperative banks are four times susceptible to default risk compared to commercial banks during the 1997-2006 period (Fiordelisi and Mare, 2013). The cooperative banks are less likely to experience earnings volatility than commercial banks.

3.3.4 Spain

The Spanish banking system was less competitive before the 1980s and geographically

segmented. The Specialised Credit Institutions (SCIs) consisted of banks, mutual savings banks, and credit cooperatives that operated under the same regulatory regime. The SCIs were not allowed to grant credit to certain sectors of the economy and could not accept funding by deposit-taking. The level of control on interest rates relaxed in 1987. The reforms enabled commercial and mutual savings banks to capture more depositors and borrowers by providing very affordable products. The reforms created two financial institutions: focusing on growth and increasing gains. The commercial and mutual savings banks went through a series of privatisation, merger, and acquisition in the 1990s.

The Spanish bank consolidations in the 1990s increased the degree of bank concentration. The total deposit in the Spanish banking system is shared by private commercial banks, mutual savings banks, and credit cooperatives in the proportion of about 49%, 46%, and 5%, respectively. The financial law passed in November-2002 aimed to modernise the Spanish banking system; and to improve bank competitiveness, financial innovation, and efficiency. The European cooperative bank competition significantly enhanced individual bank stability in Austria, France, Germany, Italy, and Spain (Fiordelisi and Mare, 2014). The relationship between competition and relational lending or stability is dynamic for regional and cooperative banks (Liu et al., 2013; Martinez-Miera and Repullo, 2010).

3.3.5 Austria

Most European banks experienced a significant drop in net interest margin [NIM] between 2000 and 2005 (Liebeg and Schwaiger, 2006). The bankscope database for West Europe also showed that Euro-Area banks experienced a continuous decline in NIM during the 2005-2014 period. The Austrian banks experienced a 50% drop in NIM during the 1998-2014 period (Sigmund et al., 2017). A recent study showed that board size and committee meetings significantly enhanced Austrian bank performance (Salim et al., 2016). Ross et al. (2009) examined the impact of portfolio diversification on risk, efficiency, and capitalisation of Austrian commercial banks during the 1997-2003 period. The Ross et al. (2009) findings confirmed that diversification negatively affected cost efficiency, minimized banks' realised risks, enhanced profit efficiency, and capitalisation.

The margin of foreign banks in the Austrian market due to the highly concentrated banking market increased entry barriers to foreign banks (Williams, 2003). A recent study showed that

banks had been compensating for a decrease in net interest margin [NIM] by focusing on off-balance-sheet business activities that generated non-interest income [NII] (Nguyen, 2012). Many studies confirmed a negative relationship between NIM and NII (Rogers and Sinkey, 1999; Lepetit et al., 2008). The gearing ratio is an extra part of the Basel III framework that does not significantly impact the Austrian bank NIM. In addition, the current low-interest-rate environment imposed downward pressure on interest income in the Austrian banking sector.

3.3.6 Belgium

The Belgian banking industry experienced intensive banking competition in its small open economy. The Belgian bank branch network decreased by 40% from 8000 branches to less than 5,000 branches from 1985 till the 2004 period, while other European countries experienced the increase during the same period (Huysentruyt et al., 2013). The Belgian and European financial sectors had been experiencing restructuring since the late 1970s due to the European legislation that abolished capital controls, encouraged cross-border banking activities, and national deregulatory measures. Mention and Bontis's (2013) study examined the effect of human intellectual capital on bank performance in Belgium and Luxembourg. The findings showed that the structural and relational capital was positively associated with bank performance, but the effect is insignificant. Mention and Bontis's (2013) study also showed that relational capital negatively moderated the relationship between structural capital and performance. The commercial banking sector is one of the most crucial sectors in the monetary model of Belgium. Belgian banking was affected during the financial crisis due to heavy reliance on interbank loans and shadow banking. The Belgian technology-based small firms attracted most of their funding from commercial banks and government funding (Bozkaya and De La Potterie, 2008).

The Belgian banking industry used to have a robust cooperative banking sector before the 1990s. However, the cooperative banks now engage in mergers, acquisitions, and restructuring post-1990s, indicating changing business models and non-traditional principles (Perilleux and Nyssens, 2017). The retail bank branching was significantly higher in richer neighbourhoods than in poorer ones (Huysentruyt et al., 2013). This implied that poorer neighbourhoods experienced low bank branching in Belgium. The loan loss reserves are important parts of the bank's viability and soundness. Hence, the Belgian banks usually utilised capital ratio and loan loss provisions concurrently to identify what motivates the loss provisioning policies (Arbak, 2017). Arbak's (2017) study examined the impact of incurred losses accounting standards and

the onset of the financial crisis on provisioning policies. The study's outcome showed that future losses were tightly associated with provisioning policies. Hence, we deduced that Belgian banks might have used provisioning decisions to manage their present earnings and to signal future profitability.

The Groeneveld and de Vries (2009) study examined the impact of credit risk on cooperative banks compared to commercial banks and discovered that cooperative banks are more resilient during the financial crisis. This is because cooperative bank business models and principles supported the creditworthy customer in the long term, which was crucial to supporting a more stable financial system. The biggest losses experienced by cooperative banks can be attributed to the divergence from its core principles and traditional banking services. Although the cooperative bank may not be at risk of too-big-to-fail problems, the closure policies of cooperative banks increased the susceptibility to an implicit "Too-many-to-fail" problem (Acharya and Yorulmazer, 2007). In an environment of herding behaviour, competition strongly enhanced bank stability in a more homogenous banking system (Beck et al., 2013). Goddard et al. (2008b) study indicated that income diversification strategy positively affected size. Hence, income diversification can increase the stability of cooperative banks (Kohler, 2015). However, an increase in non-deposit funding can be linked to risks and instability.

3.3.7 Scandinavian Countries

The Scandinavian banks consisting of Norway (not part of the European Union), Sweden, Denmark, and Finland were fully integrated through bank mergers, even more so than the European Union. During the early 1990s, the Scandinavian region experienced a severe banking crisis, leading to a wave of consolidation in the region. Universal banking is the norm, but this study focused only on Danish (Savings and Commercial banks) and Swedish (Savings) banks. The region is characterised by a high level of bank concentration, with the five largest banks in each country accounting for a significant proportion of the banking sector. The traditional savings banks were significantly linked to the local community, and the first Swedish savings bank was established in 1820 – Gothenburg (Forsell, 1992). The Hansen (1997) study had shown that more than 70 out of the 208 Denmark banks during the 1st world war disappeared in 10 years during the 1921-1931 period. The European savings banks delivered greater values to stakeholders than their private banks and were more risk-averse than commercial banks (Carbo and Williams, 2000; Lindblom, 2001). The number of commercial

banks decreased from 41 to 28 banks during the 1920-1935 period (Petersson, 2009). Due to the banking crisis, hard regulatory regimes lasted between the mid-1930s till the late 1970s to enhance bank stability. The post-1970s characterised by a soft regulatory regime that entailed the combination of reduced restrictive regulation and the new regulatory environments, such as Basel I-111 (Sjogren and Jes Iversen, 2018).

3.3.8 France

The French banking system experienced slower growth due to high government interference and regulation. The French banking system was controlled by two public commercial banks (BNP Paribas and Societe Generale) and four cooperative banks (e.g. Credit Agricole, Banque Populaire, Caisse d'Epargne and Credit Mutuel. (Hardie and Howarth, 2009). The European Central Bank data showed that the five largest banks controlled 52.3% of total assets compared to 22%, 26%, 36%, and 40% in Germany, Italy, the United Kingdom, and Spain, respectively (ECB, 2008).

The banks with a higher level of switching cost can be linked to greater market power, and the cooperative banks with lower switching costs had a mean market share of 20% in Europe (Egarius and Weill, 2016). Egarius and Weill (2016) study examined the relationship between market power and switching costs of cooperative banks of the three largest European [e.g., France, Germany, and Italy]. The switch cost in the study referred to the transaction cost for switching banks. The cooperative banks had tremendous networks of local branches serving the local clients with stronger bank-client relationships (Ayadi et al., 2010; Bulbul et al., 2013). Previous studies have shown that cooperative banks supported financial stability (Chiaramonte et al., 2013). On the other hand, Ferri et al. (2013) study showed that European cooperative banks reduced the volatility of credit supply.

Globalisation and financial market deregulation have been strategic in enhancing competition growth in the banking industry. Higher levels of foreign banks penetration had been linked to greater costs, reduced profitability, and margins of the domestic banks (Claessens et al., 2001; Lensink and Hermes, 2004). The study of 170 commercial banks in France showed that the foreign banks were more profitable than the domestic banks during the financial crisis - especially for foreign banks from advanced economies (Bouzgarrou et al., 2018). The technical and managerial efficiency assessment of the largest European commercial banks using a non-

parametric approach in France, Germany, the United Kingdom, Italy, Spain, and Greece during 2005-2013 indicated high levels of poor managerial performance (Minviel and Bouheni, 2021).

3.3.9 Transitioning Commercial Banks in Central-Eastern Europe

The major banking reforms in the transitioning economies entails structural changes and the formation of a two-tier system whereby the portfolio of mono-central bank produced commercial and retail activities (Bonin, 2004). For all the banks in the European transition economies in the 1990s (Hungary – Hasan and Marton, 2003; Czech Republic – Weill, 2003; Matousek and Taci, 2004; Croatia – Kraft and Tirtiroglu, 1998; Jemric and Vujcic, 2002; Romania – Asaftei and Kumbhakar, 2008), many studies indicated that the foreign banks were more efficient than the local and state-owned banks. Most foreign banks in Bulgaria have their established banks in Austria, Germany, France, and Italy to bring technological innovation, risk management, corporate governance, capital, and technical know-how. Also, the foreign corporate clients improved the cost-efficiency of banks in other transition economies (Nikiel and Opiela, 2002). Tochkov and Nenovsky (2009) examined Bulgarian commercial banks' efficiency (i.e., cost-, technical-, and allocative efficiency) over the 1999-2007 period and its determinants. The study examined the impact of ownership structure, institutional reforms, European Union accession, and bank-specific factors on the efficiency of Bulgarian commercial banks. Tochkov and Nenovsky's (2009) study showed improvement in commercial bank efficiency, especially in 2005; the foreign banks were more efficient than local private banks, and higher returns on assets were significantly and positively linked with all the three efficiency measures. In addition, the liquidity had significant positive effects on Bulgarian commercial banks' technical and cost-efficiency.

The Croatian banking sector started with 26 banks in 1990. As of 1997, the country had about 61 universal banks, of which nine banks were foreign banks. The banking sector became more competitive in the last two decades contributing to social stability and economic growth in Croatia (Pervan et al., 2015). Since the Dayton Peace Agreement's signing around 1995, foreign banks have increased entry (Jemric and Vujcic, 2002). The number of Croatian banks doubled since the liberation of banking in the 1990s (Kraft and Tirtiroglu, 1998). The Ivan et al. (2015) study tested the quiet life hypothesis empirically, focusing on the sample of Croatian commercial banks during the 1994-2014 period. The study found a negative relationship

between market power and bank efficiency with a small economic impact. Fidanoski et al. (2018) examined the effects of bank-specific factors, industry-related and macro-economic factors on Croatian bank performance. Fidanoski et al. (2018) have shown that asset size in terms of scale economics, loan portfolio, and GDP growth significantly enhanced the profitability of Croatian commercial banks. Fidanoski et al. (2018) study found that Croatian bank profit reverted to its equilibrium level, indicating the assumptions of bank contestability in Croatia. Other studies showed that the GDP, the Euro interbank offered rate, and liquidity ratio [loan and securities] significantly enhanced the Croatian bank performance (Pejic et al., 2009; Pervan et al., 2015). At the same time, inflation had no effects on bank profits (Fidanoski et al., 2018).

The Gunsel (2010) study explored the determinants of the timing of bank failure in Northern Cyprus during the 1984-2002 period using a discrete-time logistic survival regression. The timing of bank failures is linked to certain bank-specific and macro-economic factors. During the communal era in the Czech banking industry, commercial banking and central bank activities were highly concentrated, and the banking system was monolithic. 81.5% of the gross national product in 2002 was linked to the customer deposit from the North Cyprus banking sector (Arasli et al., 2005). The top three banks were highly concentrated in 2021, controlling 56% of domestic deposits and 48% of domestic loans (Stephanou, 2011). The deregulation of the old communal banking regime led to an increase in banks' size from 9 to 52 during 1989-1993 (Podpiera and Weill, 2008). Due to the high level of non-performing loans, the Czech government decided to privatise its banking industry by selling its non-performing loan to foreign investors and banks. As a result of bank executive inefficiency, the proportion of non-performing loans to total loans reached 30% in 1997 (CNB, 1998). The government started the privatisation of Czech banks in 1998. Vodova (2011) study explored the determinants of liquidity for Czech commercial banks during the 2001-2009 period. The outcome of panel regression has shown that bank liquidity influenced bank capitalisation significantly and positively. The Vodova (2011) study also confirmed that bank liquidity could be adversely and significantly influenced by inflation, business cycle, and financial crisis.

The Podpiera and Weill (2008) findings supported the weak management hypothesis related to a rise in non-performing loans and decreased cost efficiency. The improvement in bank efficiency minimised bank failures in developed nations (Barr et al., 1994) and transition economies (Podpiera and Podpiera, 2005). The Rossi et al. (2005) study examined the

likelihood of bank failures in the sample of banks in nine transitioning economies and the support bad luck hypothesis. A recent study examined the determinants of Lithuanian commercial bank profits over the 2004-2013 period (Narusevicius, 2018). The Lithuanian banking sector is susceptible to scale inefficiencies because of its infancy, as evident in previous studies (Pasiouras and Kosmidou, 2007; Coffinet and Lin, 2010). A better economic outlook encouraged higher levels of transactions and servicing of loan portfolios which in turn increased operational costs. Many empirical studies showed that economic activities increased operational expenses (Albertazzi and Gambacorta, 2009; Dietrich and Wanzenried, 2011). The reduced quality of the loan portfolio reduced bank revenue generation capability (Athanasoglou et al., 2008). Bank profits can also be influenced by procyclical factors, implying that bank performance fluctuated during economic cycles.

Regulation increased the short-run cost that outweighed the advantages associated with the benefits of lowered technical inefficiency (Asaftei and Kumbhakar, 2008). The breakdown of democratic institutions in Romania had forced transnational banks (Vienna Initiative framework) to forge a public-private governance system to manage the Romanian sovereign debt crisis (Cornel, 2019). The Slovenian bank was strongly affected by the 2007 financial crisis and the governance re-capitalised the domestic banks without requiring European Troika's financial assistance (Brezigar-Masten et al., 2015; Piroska and Podvrsic, 2019). The Piroska and Podvrsic (2019) study contributed to the post-crisis European banking governance by integrating New European Banking Governance (NEBG) controlled by the European Central Banks into the policy decision making of the European member states. The NEBG consists of the European state aid controls, fiscal policy coordination, central banking, and banking union. The decision-making powers are transferred from the European member rates to the supranational level. The banking crisis in Slovenia deepened due to prolonged NEBG's macroeconomic and fiscal constraints that led to a costly government bailout. The governmental quantitative easing raised government debt which encouraged bank privatisation. The study of Slovakian commercial banks showed that the poorest performing banks could be rescued via improved managerial policy and the implementation of an improved-incentive policy (Zimkova, 2014).

4.0 The Moderating Effect of Anti-Trust Policy on the Relationship Between Bank Concentration and Bank Performance in Europe

4.1 Introduction

The steady decline in asset quality is the major challenge facing European banks. The region struggled with non-performing loans sitting on the bank balance sheet, forcing banks to increase loan loss provisions and impairment charges (Cork, 2013). The increasing non-performing loans in Europe posed significant financial instability risk (Ozili, 2019). Despite this, increasing levels of provisions struggled to keep pace with the rising levels of NPLs. As a result, European banks struggled with low profitability and non-performing loans. A study showed that the bank non-performing loans stood at one trillion Euro at the end of 2014, equivalent to 9% of European GDP (Aiyar et al., 2015). During the post-crisis era, the European banks were under increasing pressure to increase capital buffer and successfully raised their median Tier-1 capital ratio from 8.7% in 2008 to 12.7% in 2012 (ECB, 2013). The increase in the capital buffer is driven partly by the European Banking Authority's capital exercise in anticipation of Basel III requirements, risk-weighted assets, and the quality of capital (EBA, 2012; Montes et al., 2018). The Greenwood et al. (2015) study has shown that the fire sales of assets can spill financial distress and price drop to other European financial institutions. Recent studies also confirmed that the high level of non-performing loans since the 2008 financial crisis had slowed down lending, putting a drag on economic growth (Thornton and Tommaso, 2021). Most of the European banks had slowed down lending and increased the sale of assets. Liikanen's report linked excessive risk-taking in highly advanced financial instruments and heavy reliance on short-term funding as major causes of the financial crisis (McNulty, 2012). In the presence of a moral hazard, the competition had been observed to compromise prudential bank behaviour and add deposit rate controls as regulatory measures increased franchise value (Hellmann et al., 2000). The European regulatory bodies had to counter excess compensation with enhanced prudential regulation (Babis, 2015). A study emphasized that financial intermediation decreased with binding capital requirements, and the market-oriented capital requirements enhanced bank value (Berger et al., 1995). The regulatory mechanisms were used to enforce market-driven capital required to improve bank safety and soundness (De Angelo and Masulis, 1980). The market-oriented capital requirement for each bank differs, and each

bank followed this market requirement in the absence of regulatory capital requirements.

Since the 2008-09 financial crisis period, the policy debates about too-big-to-fail bailout had been popular in recent years owing to the cost and benefits of bank size and government quantitative easing that incentivised bankers based on asset size, complexity, and earnings manipulations (Schmid and Walter, 2009; Veronesi and Zingales, 2010; Wilson et al., 2010). Banks operating in the small financial system and functioning in economies that were worse affected by the financial crisis experienced diseconomies of scale due to declining production capacity (Beccalli et al., 2015). Since the post-financial crisis period of 2007-09, many European countries have been facing a rising sovereign debt crisis (Beck et al., 2014). Many developed economies emphasised that the excessive incentive pays in the banking industry financial market division contributed to excessive risk-taking leading up to the recent financial crisis (Dunning, 2010; Efing et al., 2015). As a result, the European Commission proposed new Europe-wide legislation in 2013. The United States government also introduced the Say-on-Pay rule in 2010 to scrutinize executive incentive pay and limit incentive pays to contribute to excessive risk-taking (Dunning, 2010). Other studies examining the impact of corporate income tax (CIT) on bank activity in Europe and the United States found that these banks shifted the tax burden to depositors, lenders, and the buyers of fee-generating services (Albertazzi and Gambacorta, 2010). The study of 2400 banks in 69 nations showed that robust creditor rights were associated with more bank-risk taking, a higher likelihood of a financial crisis, and better bank performance (Houston et al., 2011). However, credit information sharing significantly reduced the likelihood of loan default rates, and governance quality did not moderate the relationship (Fosu et al., 2019).

The Demirgüç-Kunt and Levine (2000) study emphasised that the relationship ambiguity between bank concentration and efficiency can be attributed to varying banking market-specific features. Many empiricists have attempted to explore the relationship between European bank concentration and efficiency (Goddard et al., 2007). Although some researchers showed that bank concentration enhanced bank competitiveness linked to higher bank profitability (Bikker and Haaf, 2002; Deltuvaite et al., 2007). Claessens and Laeven (2004) study, among others, rejected these empiricists' findings. The Ferreira and Soukiazis (2013) study examined the causal relationship between the bank concentration in all 27 European countries and bank efficiency over the 1996-2008 period using the Grange reverse causality approach. The study found negative causation from concentration to efficiency and from efficiency to concentration. The researcher's outcome was in line with the structure conduct performance paradigm that has shown that increasing bank market power caused inefficiency.

The purpose of the Lamfalussy framework is to create an effective regulatory and supervisory setting to enhance the European financial sector's stability, integration, and competitiveness (ECB, 2007). A recent study had shown that the new governance practices co-existed within the legal framework and emphasised that the law was shaped by new governance practices (Chatzimanoli, 2011). The hybrid relationship between laws and corporate governance can be linked to regulatory competition for achieving greater European financial integration. The structural measures of competition are structure-conduct-performance, HHI-Herfindahl-Hirschman Index (Li et al., 2013), and concentration (CRn) ratio. The non-structural measures of competition are the Lerner index (Spierdijka and Zaourasa, 2018), Rosse-Panzar H-statistics (Shaffer, 1983), and profit persistence (Goddard et al., 2011). The profit persistence of banks in 65 countries had been recognised to hamper GDP growth and raised entry barriers attributed to bank concentration (Goddard et al., 2011). In support of structure conduct performance and moral hazard hypothesis, the Lee and Hseih (2012) study showed that increasing bank concentration enhanced bank performance and risk. In addition, bank concentration may cause managerial slack and increase banking systemic spillover risk. The high levels of competition played a crucial role in improving output efficiency, widening consumer choice, and promoting resources. Regulators have the incentive to monitor bank risk choices and protect public welfare because their role is crucial in ensuring financial stability (John et al., 2010). Competitiveness can be improved by promoting productivity growth, and a study cited reduced productivity in Europe compared to the United States allocations (Thimann, 2015), and our descriptive statistics confirmed this. The antitrust trust laws can also be termed competition laws. The purpose of the laws is to regulate how firms operate their businesses and protect clients' interests from monopolistic business practices. The European Commission faces the challenges of protecting the financial sector from anti-competitive banking behaviour and is keen on investigating antitrust infringements in the European. financial sector.

4.1.1 Research Questions and Objectives

The main challenges in our study lie in identifying how bank concentration (proxied by HHI index), internal bank-specific-, and macro-economic factors influence bank performance. Hence, we contributed to the literature on bank competition by measuring individual bank-level concentration for each European nation and comparing bank concentration levels amongst different European bank specialisations. The objective is to evaluate how antitrust policy moderates the relationship between bank concentration and European bank performance. This provided insights to policymakers on improving bank competitiveness and profitability by enforcing competition (antitrust) laws. Therefore, helping to contribute to debates on strengthening the global financial systems through innovative policy initiatives and creating a more profitable banking industry. This section asked the following questions:

- Does concentration have negative effects on European bank profitability?
- Do antitrust laws moderate the relationship between the concentration and the European bank performance?

4.1.2 Hypothesis Development

The adverse effect of bank concentration on the bank end-users, stability, market entry, and performance had been extensively explained in the research question, background, and literature review sections of this thesis. Many empirical studies showed that bank concentration is associated with bank fragility (Caminal and Matutes, 2002), higher entry barrier (Hou and Robinson, 2006), systemic risk (Boyd and De Nicolo, 2005), credit risk (Guidi, 2021), reduced competitiveness (Bikker and Haff, 2002), and quiet life problems (Doyran and Santamaria, 2019), which motivated our first research questions. We extended on Staikouras and Koutsomanoli-Filippaki's (2006) journal that indicated that banks in Western European countries were more competitive than their Eastern Europe counterparts during the 1998-2002 period. We measured bank concentration of Eastern and Western European countries over 1998-2014. We examined the efficacy of antitrust laws on the relationship between bank concentration and performance in less developed (Eastern Europe) European countries.
H.A.: Ceteris paribus, the quiet life hypothesis, and agency theory, the higher level of bank concentration linked to weaker bank performance.

H.B.: Ceteris Paribus, the interaction of bank concentration and antitrust policy is positively associated with better European bank performance.

4.1.3 The Chapter Significance for European Banking system

The significance of this chapter is to examine the impact of European banking industry concentration and bank-specific factors on bank performance, especially for developing country European banks. It is also important for policymakers and stakeholders to further explore how antitrust laws moderate the negative relationship between bank concentration and performance.

Firstly, we empirically verified if the effect of bank concentration on bank performance is negative. Secondly, it is interesting to see how antitrust policy moderated the relationship between bank concentration and performance in the European banking industry. This study improved on Giroud and Mueller (2010) by examining the effect of European antitrust laws on bank performance using different econometric models. The use of antitrust laws in our thesis replaced business combination laws in the United States. Both laws are importantly similar competition laws aimed at improving industry local firm competitiveness. Secondly, it summarised the macro-economic trends in the Europe and their effects on bank profits as part of control variables. Finally, the chapter also shows us how antitrust policy positively moderated the relationship between concentration and performance based on industry-specific concentration levels in some European countries.

4.2 Macro-economic factors influencing European Banks

The over-arching concerns in advanced economies (i.e., Europe, Japan, and United States) had been rising debt to gross domestic product [GDP] ratio since 1800, and the post-crisis growth remained fragile (Reinhart et al., 2012). A related study showed that countries with more than 90% public debt to GDP were more at risk of slower growth (Reinhart and Rogoff, 2010a; Reinhart and Rogoff, 2010b). A robust mean reversion in profitability had been explored in a few studies (Penman, 1991; Fama and French, 2000). In addition, many studies explored different aspects of the determinants of firm profitability to explore: (a) comparison between cashflow and accruals (Sloan, 1996; Xie, 2001); (b) comparison between margins and turnovers (Fairfield and Yohn, 2001; Soliman, 2008); (c) earning volatility (Dichev and Tang, 2009); (d) domestic against foreign earnings (Thomas, 2000); and (e) the effect of accounting

distortions feature to conservative accounting practices (Penman and Zhang, 2002). The full consequence of the aftermath of the 2007-2009 financial crisis remained vague. However, the economic growth in the Eurozone remained in doubt. It is important to note that macroeconomic exposure had a huge impact on bank profitability, equity returns, and economic growth at large (Li et al., 2014). Although while firm performance can be linked to investment decisions, risk management, and governance, macro-economic factors are relevant for performance prediction. However, less archival and empirical studies examined macro-economic implications for bank profitability using government debt percent of GDP (GDGDP), inflation (CPI), and GDP per capita. We fill this gap empirically.

Austrian banks are part of a bank-based economy that plays a pivotal role in converting savings into investments and loans. Hence, bankers' decisions in bank-based economies (Austria, France, and Germany) have serious implications for their economies and growth. Macroeconomic fluctuations and exposures can hugely affect operational capacity and bank profitability. Macro-economic exposures can adversely affect bank profitability, compromising its equity capital. Banks with high gearing proxies are more vulnerable to the capital fund's high cost, which increases investor sentiment about the financial soundness of such financial intermediaries (Rumler and Waschiczek, 2010). The impact of macro-economic fluctuations affects bank profitability and poses serious implications on the cost of equity or debt financing. The theory of bank capital stated that bank profitability had serious implications for lending through their effect on bank capital structure (van den Huevel, 2002; van den Huevel, 2009). The banks with the higher capital reserves were better insulated against macroeconomic shocks and could adapt better to monetary policy changes (Altunbas et al., 2004; Gambacorta and Mistrulli, 2004). The greater reserve requirements reduced banks' liquid assets and loan supply (Alper et al., 2018). However, banks with a weak capital reserve may be forced to cut down on loan creation and lending on the asset side of the balance sheet. The United Kingdom experienced a small banking crisis in the 1970s and followed by the demise of a prestigious financial institution in the mid-1980s. Such waves of the banking crisis and financial alerted the government to introduce prudential regulation and supervision at the forefront of their economic policy (Llewellyn, 1999; Eichengreen, 1999). The central banks faced dual policy objectives to sustain financial stability and keep inflation low (Miller et al., 2009). The main instrument at central bank monetary policymaker is the interest rate adjustments which posed a threat to bank profitability. A sudden increase in interest rate is linked to reduced bank profitability and can increase the probability of bank insolvency (Cukierman, 1991;

Copelovitch and Singer, 2008). Hence, monetary policymakers have one major instrument (interest rates) that is pivotal to regulating inflation and ensuring price stability.

The association between GDP growth and profit persistence can be mixed depending on growth opportunities in the market. The persistence of bank profit is negatively associated with the GDP growth rate (Goddard et al., 2011). A high level of inflation can hamper the competitiveness of the banking market because the prices of financial products were less informative (Claessens and Laeven, 2004) and worsened the frictions in the credit market (Boyd et al., 2001). A previous empirical study found a significant negative association between inflation and competition (Angellini and Cetorelli, 2003).

4.3 Internal Determinants of European Bank Performance

4.3.1 Capital Strength

The banks with a high capital base before a major financial crisis are more likely to withstand earning shock and negative volatility. A recent study emphasised that a higher level of capital before the financial crisis increased the bank's chance of survival during the banking crisis (Berger and Bouwman, 2013). In support of this notion, other researchers confirmed that the highly capitalised banks experienced greater stock market performance before the crisis (Beltratti and Stulz, 2012; Demirguc-Kunt and Huizinga, 2013). Unfortunately, Acharya et al. (2009) highlighted that the largest bank continued to pay substantial dividends at the early stage of the 2008 financial crisis. The bank size had significant positive effects on bank valuation (Niu, 2016). The failure of large banks posed systemic risks and resulted in macro-economic externalities, and the supervision by bank regulators was crucial (Boyd and Runkle, 1993).

The banking industry's health had been examined using equity to total asset ratio [ETA], and this ratio is also known as capital strength ratio (Yao et al., 2018; Abbas et al., 2019). The ETA in this thesis helps assess the financial leverage and stability of banks in Europe and North America. The high ETA ratio would be ideal because it signified high capital strength. On the other hand, the Basel III framework aimed to improve the resilience of the banking sector by increasing the quality and the quantity of the regulatory capital base, by scaling the risk coverage of the capital framework, introducing a new gearing ratio to protect against model risk and measurement error (Brei and Gambacorta, 2016). The Shen and Chang (2006) study showed that ETA influenced bank performance positively. The positive effects of the capital

strength ratio were similar to the gearing ratio of the Base III regulatory framework (Ferri and Pesic, 2017). The study indicated that capital strength is a positive and significant determinant of the risk-weighted asset exposure to default. Other studies also confirmed the positive effects of capitalisation ratio on performance (Fahrul et al., 2018; Sinha and Sakshi, 2016). The bank capitalisation was positively associated with the large United States commercial banks and negatively for medium-sized banks (Abbas et al., 2019). The low capital strength increased the likelihood of bank failure because over-capitalization imposed extra costs on banks and their clients. An optimal capital base and a non-concentrated banking system can improve the efficiency of the banking system.

4.3.2 Credit Risk

Credit risk and other risk factors are important determinants of bank profitability. Banks are generally vulnerable to credit risks due to loan losses, bad debts, economic and macro-economic factors. Loan losses, unpaid loans, and the accumulation of bad debts are expected to minimize bank profitability (Bourke, 1989). Other empiricists also found a negative relationship between credit risk and bank performance (Miller and Noulas, 1997). For example, the hazard-rate model using a maximum-likelihood approach showed that size, previous equity returns, equity return volatility, and gearing are the main determinant of default risk (Shumway, 2001; Chava and Jarrow, 2004). In addition, a study had shown that credit risk was higher for banks with higher non-performing loans and debts (Drago et al., 2017).

The credit default swap is a credit risk measure used to measure the European bank distress (Männasoo and Mayes, 2009; Ötker and Podpiera, 2010; Poghosyan and Cihák, 2011). The relationship between European bank capital and systemic risk was convex [U-Shaped] over 1996-2010 (Haq and Heaney, 2012). The U-shaped relationship indicated that increasing bank capitalisation cannot minimise systemic risks. The earlier study showed that individual banks' defaults could be linked to systematic or idiosyncratic shocks (Duffie and Singleton, 1999). A recent study also confirmed that the largest European banks were most interconnected over the 2006-2013 period, and there was a fairly concentrated structure of the credit risk network (Brownlees et al., 2021).

4.3.3 Age

Many studies viewed firm age as an indicator of how firm internal processes change over time (Anderson and Eshima, 2013). Firm age has an inverse relationship with capital expenditure to the net asset (Iyer et al., 2017). A recent study also showed that excessive liquidity and low banking sector development are linked to severe informational problems, and these problems were unique to younger banks (Demetriades and Fielding, 2011).

4.3.4 Liquidity Risk

Many researchers found that the shares of impaired assets significantly affected efficiency in negative ways (Yildirim and Philippatos, 2007; Havrylchiyk, 2006; Brissimis et al., 2008). The share of impaired assets may be loan loss provision to total loans. Bankers can use the loan loss provisions to manipulate earnings, but the implementation of IFRS by Europe in 2005 minimised earning management behaviour. The Abbas et al. (2019) study has shown that a 1% increase in the United States large commercial banks had been linked to 6 percent and 3.5 percent increase in capital and liquidity, respectively.

The liquid asset to total asset ratio can be defined as the proportion of assets that can easily be converted to cash and thus indicates bank ease of response to uncertain events (Giordana and Schumacher, 2013). The liquidity coverage ratio is part of Basel III reforms requiring banks to hold high-quality liquid assets consisting of level 1 and 2 assets (Fuhrer et al., 2017). The process of maximising bank equity value played a key role in achieving an optimal liquidity ratio (Zhang et al., 2020). Our thesis included a group of control variables to minimise the problems of spurious relationships. Initially, we consider the bank-specific factor to account for liquidity risk, credit risk, and income diversification.

4.3.5 Capital funding to liabilities (CFL)

The high level of bank-specific vulnerabilities associated with high funding costs depleted bank earnings and reduced bank capital reserves in difficult times. Hahm et al. (2013) empirical evidence of panel probit regression showed that the stock of non-core liabilities increased bank vulnerabilities to the crisis by eroding risk premium. Recent studies explained the importance of reduced foreign borrowing costs in raising bank leverage (Bruno and Shin, 2015). Another study confirmed that banks funded by retail deposits were susceptible to a bank run and flight-

to-safety during macro-financial distress (Catao and Kaat, 2021). Hence, financial institutions needed to strike an effective balance between interest income and non-interest sources of funding and incomes.

4.3.6 Cost-Income Ratio (CI)

The administrative cost and risk had significant negative effects on Croatian commercial bank profitability (Fidanoski et al., 2018). A study also linked the cost-income ratio to reduced bank valuation (Niu, 2016). The European Central Bank (ECB) reports a negative association between bank solvency and diverse funding costs (Arnould et al., 2013, 2020). The cost-income ratio is a bank efficiency proxy for assessing how bank costs change relative to income (Burger and Moormann, 2008). Hence, it is a measure of bank productivity. The non-performing loans and cost-income ratio were recognized to influence bank profitability adversely (Bapat, 2018).

4.3.7 Net-Loan-to-Total-Asset Ratio

The net loan to total assets [NLTA] is a default risk proxy that measures the percentage of the total loan outstanding as a proportion of total assets, and it determines the riskiness of the bank loans. The high level of NLTA signified low liquidity and a higher risk of defaults. Previous studies showed that higher NLTA characterises cooperative banks, a lower proportion of derivatives to total assets, and reduced earnings volatility than commercial banks (Becchetti et al., 2016). The study also found that a greater level of net-loan/total-asset drove value growth for the manufacturing industry and the conventional bank intermediation services fit into this narrative. The positive nexus between finance and growth cannot be under-estimated (King and Levine, 1993; Rousseau and Wachtel, 1998). The cooperative banks offer more loans-to-total-asset than non-cooperative banks. Banks' issuance of loans to firms under the effective traditional mode of generating sustainable interest income by banks.

4.3.8 Burden to Total Asset (BURDENTA) Ratio

The burden to asset ratio [BURDENTA] is the ratio of non-interest-income minus non-interest expenses to the total asset. The burden to asset ratio used in this study explained how bank non-interest gains (such as fees and commissions) could be burdened by off-balance-sheet expenditure. A study had shown that the decrease in burden ratios attributed to burden-bearing capacity (Natarajan and Simon, 2015). The proxy used in this study help quickly to detect the

efficiency directions of banking operations. A study exemplified the burden ratio as the proxy for managerial efficiency, and the ratio had a negative association with return on assets (Shen and Cheng, 2008; Huang et al., 2012). The negative average of the BURDENTA ratio symbolised weaker operational efficiency and vice versa. The burden to asset ratio identified bank risk exposure to non-traditional banking services and highlighted the need to start new products or services. Previous studies showed that bank performance was adversely affected by burden ratio, GDP per capita, and inflation (Shen and Chang, 2008).

4.3.9 Earning and Non-Earning Assets Proxies

The total-earning-asset-to-total assets (TEATA) are bank productivity and management efficiency proxies that determine the proportion of assets that generate income (Shen and Chang, 2008). The TEATA played a major role in assessing the efficiency of asset utilisation. The non-earning-asset-to-total assets (NEATA) are the opposite of TEATA. The high level of TEATA ratio signified efficient use of bank assets, indicating that the asset cost may be optimal. The total earning assets ratio can increase operating profits (Kosmidou et al., 2007). Many studies linked greater future loan losses to the faster loan growth rate (Clair, 1992; Keeton, 1999; Salas and Saurina, 2002; Jimenez and Saurina, 2006; Hess et al., 2009). The risk-adjusted interest income had been adversely affected by loan growth (Foos et al., 2010). Excessive loan growth had been observed in a recent study to increase the likelihood of bank insolvency (Amador et al., 2013). The study by Niu (2016) also confirmed that higher loan growths are significantly associated with improved valuations for small and medium-sized banks but not for big banks. The loans are the main earning assets of traditional banking services that generate interest income for banks.

4.3.10 Income diversification (BAAM)

The high degree of bank interconnectedness, risk-sharing practices, bank size, and securitisation led to joint bank failures and systemic crisis leading up to the 2007-2008 banking crisis (Fiordelisi and Marques-Ibanez, 2013). A recent study also showed that larger banks had reduced loans to total earning assets and a higher securitisation activity due to heavy involvement in off-balance sheet activities (Niu, 2016). The study also showed that the asset diversity significantly reduced bank value (proxied by Tobin's Q) before the 2007-2009 financial crisis. The negative effects were not significant during or after the crisis. However, other empiricists have shown that bank diversification strategy focusing on many operations

and off-balance sheet activities negatively affected bank performance (Gamra and Plihon 2011, Stiroh and Rumble 2006). Furthermore, the excessive increase in bank diversification was linked to greater bank income volatility and risk, not higher gains (Lepetit et al., 2008; Baele et al., 2007; De Jonghe 2010). Although the effect of diversification is mixed, the optimal level of diversification can be beneficial. We intend to test the effects empirically using diversification as one of the control variables.

4.4 External Determinants: Industry-related factors

4.4.1 Impact of Bank Concentration on Bank Performance and Managerial Slack

The HHI (Herfindahl-Hirschman-Index) portrayed the market concentration of total assets. The HHI index of bank specialisation is measured yearly at the country level. The HHI index of each European country is measured annually at the bank specialisation level. The higher value of HHI is associated with a higher level of bank concentration and lower competition. The asymmetrical informational problems resulting from agency problems impacted the association between bank competition and access to credit (Beck et al., 2006; Berger et al., 2009; Schaeck et al., 2009; Beck et al., 2013; Cetorelli, 2004; Claessens and Laeven, 2004). The market power hypothesis confirmed that the greater bank concentration enhanced financing constraints and encouraged monopolistic higher lending rates (Paulet et al., 2014). The hypothesis is consistent with the general economic theory that indicated that a higher level of competition could be attributed to lower prices. On the other hand, some studies have shown that the reduction in bank concentration can reduce relationship banking and impede access to credit, which can indirectly undermine bank profitability (Petersen and Rajan, 1995; Dell'Aricca and Marquez, 2006).

The smaller banks were less efficient than larger banks (Berger and Humphrey, 1997). Instead of focusing on bank size, technological innovation and management practice can improve profitability. Many studies found a positive relationship between bank size and profitability (Akhavein et al., 1997; Smirlock, 1985). On the other hand, empiricists suggested that large bank sizes often struggle to achieve effective cost savings (Berger and Humphrey, 1997), implying that banks with high market shares may suffer from scale inefficiencies. Goddard et al. (2004) found a positive relationship between off-balance sheet bank size and its profitability in the United Kingdom, but a negative association was found in Germany and Spain. Hence,

the relationship between performance and size may be positive or negative based on individual bank scale efficiencies or inefficiencies due to external factors.

4.4.1a Competition-Fragility View

According to the traditional competition-fragility view, competition minimises market power, dilutes market share, reduces the profitability of incumbents, and increases banks' risk-taking (Berger et al., 2008; Berger, 2009b). In agreement with Hick's quiet life hypothesis, an empirical study explored the relationship between the United States bank risk and competition during the 1969-1978 period (Rhoades and Roger, 1982). According to Hick's quiet life hypothesis, banks with lesser market power tend to be more risk-oriented than those operating in non-competitive, monopolistic markets (Koetter et al., 2012). The Keeley (1990) study examined the relationship between the market power (proxied by the market to book value of asset ratio) and risk. The Dick (2006) study viewed branching deregulation as a proxy for increasing competition because it increased bank risk-taking behaviour, reduced entry barriers, and improved geographical diversification. The measures of risk used by Dick (2006) are charged-off losses to total loans ratio and loan-loss-provision to total loans. Deregulation that supports bank branching increased loan losses, indicating the importance of competition in escalating credit risk. Berger (2009b) examined the effect of market power [proxied by Lerner index] on risk using data of more than 8000 banks during the 1999-2005 period. All these journals supported the assumptions of the traditional competition-fragility view by indicating that a greater level of competition led to higher overall risk exposures. The Centre for Economic Policy Research [CEPR] policy document also confirmed that competition increased financial fragility due to adverse effects of deposits on the liability side of the balance sheet; the risk of bank panics; and the incentives for excessive risk-taking that predisposed the bank to failures (Vives, 2010).

4.4.1b Competition-Stability View

Many studies countered the traditional competition-fragility view by showing that the deregulation of bank branching controls substantially reduced credit risks such as non-performing loans, net loan charge-offs, and loan-loss provisions (Zigraiova and Havranek, 2016; Louhichi et al., 2019). The study of United States banks over the 1975-1992 period showed that deregulation reduced risk (Jayaratne and Strahan, 1998). Under the charter value hypothesis, management had incentives to take the higher risk under the deposit insurance scheme (De Nicolo, 2000; De Nicolo et al., 2004). The empirical study carried out also pointed

out higher probabilities of insolvency (measured by z-score) when there was a high level of market concentration in the form of deposits market; and the bank size was negatively correlated with higher probabilities of default, measured by Z-score (Boyd and De Nicolo, 2005).

The Yeyati and Micco (2007) study of Latin American nations over the 1993-2002 period also reinforced that competition minimised bank riskiness. The Beck et al. (2013) study examined cross-country heterogeneity in the competition-stability association in banking and found a positive association between market power (proxied by Lerner index) and stability (proxied by the Z-score). However, there were cross-nation variations in this relationship. The higher level of competition enabled CEOs to screen and monitor investments for better credit quality control. Policymakers faced the challenges of enhancing competition without taking excessive risks and without jeopardising shareholder values. Most empiricists use different proxies for competition and risk. Moreover, the choice of samples and methodologies vary for different studies.

The Uhde and Heimeshoff (2009) study showed that the national banking market concentration negatively influenced European bank financial soundness (proxied by Z-score) while adjusting for macroeconomic-, bank-related-, regulatory-, and institutional factors. Furthermore, the study also showed that the Eastern European banking markets face lower competitive pressure, reduced diversification potential, and more government-controlled banks are more susceptible to financial fragility. However, the capital regulation had helped to support financial stability in Europe.

4.4.2 The Effects of Concentration and Anti-trust Policy on European Bank Performance

Many studies have shown that bank concentration led to quiet life scenarios and is linked to managerial slack. This thesis expanded on Giroud and Mueller's (2010) study by focusing on the impact of bank concentration and antitrust policy interaction on bank performance in developed and developing European banks. First, the CEOs manipulated earnings via improper accounting, re-statement of financial statements, and over-investment after a misreporting period (McNichols and Stubben, 2008). Second, the intensity level of competition is linked to profit persistence in the financial industry, which is related to anti-competitive measures by incumbent banks and information opacity (Berger et al., 2000). Third, the capital requirements made the banking industry one of the most regulated industries and created a high barrier to entry. Hence, banks are expected to benefit from profit persistence due to regulation. Fourth,

the transformations and developments of banks in most countries contributed to improvements in operational activities, business efficiency, performance, margins, and profitability (Demirguc-Kunt and Huizinga, 1998a; Claessens et al., 1998; Levine, 2003; Clarke et al., 2003; Carbo and Fernandez, 2007; Maudo and Fernandez de Guevara, 2004; Maudos and Fernandez de Guevara, 2007; Berger, 2007). These empirical chapters attempted to address the managerial slack of European banks using competition law in the form of antitrust law.

A study had shown that competition linked managerial actions more closely to the market (Hart, 1983). Other studies also associated the increasing level of competition with a rise in market transparency (Scharfstein, 1988; Hermalin, 1992). A recent study examined the effect of bank concentration on financing constraints of non-financial firms in 14 European countries during the 1992-2005 period (Ratti et al., 2008). The Ratti et al. (2008) study found that highly concentrated banking sector firms experienced lowered financial constraints. The financial constraint measure was calculated using the Euler equation derived from the dynamic investment model. However, another study examined the evolution of bank competition for all European banks and found no significant improvement in European bank competition during the 2000 period (Weill, 2013). Instead, the increase in bank competition led to a rise in the cost of credit, and the beneficial effects of bank competition became robust for smaller firms (Fungacova et al., 2017). The Fungacova et al. (2017) study result was consistent with the information hypothesis, which showed that a lack of competition incentivised banks to invest in soft information. Therefore, instead of banks responding to a crisis as it happens, the antitrust law enforcement will be robust in maximising values for the depositors and investors at large in the long run.

The Nickell (1996) study found that a higher level of productivity growth linked to an increasing level of competition in a sample of United Kingdom manufacturing companies. The outcome was relevant in explaining managerial agency problems and certain aspects of corporate governance. The Giroud and Mueller (2010) study examined if corporate governance in business combination laws was important in the United States competitive and non-competitive industries. The study confirmed that competition minimised managerial slack for United States firms. The result is noticeably in support of the quiet life hypothesis because there is a significant decline in firms' operating performance and stock prices in non-competitive industries and no significance in competitive industries. In alignment with the quiet-life hypothesis, the study also showed that input costs, wages, and overhead costs

increased after the law passage in the non-competitive industries. The effects of business combination laws on return-on-equity in competitive industries were economically non-significant. The recent study examined the integration process in 15 European countries and tested the convergence in operational capability among the commercial banks (Matousek et al., 2015). The Mautousek et al. (2015) study showed that competition declined post-crisis, indicating the impact of the financial crisis on the integration process.

Business combination laws increase the chances of managerial slack and contribute to a decline in return on equity by 0.6% point on average, especially for firms in non-competitive industries (Giroud and Mueller, 2010). The business combination law has no effects on companies in the competitive industry because the competitive pressure instil discipline on management and minimises managerial slack. The reduced return on equity can be attributed to earnings manipulation for managerial self-utility functions and not necessarily because of the regulation (Gunny, 2010; Cohen et al., 2008). Managerial earning manipulations can be associated with managerial agency problems, characterised by deviation from value-maximising behaviour and rent appropriation (Crocker and Slemrod, 2007; Markarian and Juan, 2014). Some studies have shown that product market competition played a major role in efficient resource allocation and countered managerial agency problems and rent-seeking behaviour (Giroud and Mueller, 2011). The Shelanski (2018) study showed that the antitrust laws helped manage the gaps in the deregulatory cycles and helped govern markets more effectively and effectively than regulation. Therefore, it is important to test whether antitrust laws offer governance benefits to deal with competition-related legislative recede and protect consumers from gaps in competition enforcements.

This study empirically tested the interactive effect of antitrust law and concentration on bank performance. We also examined the effect of bank age and concentration interaction on bank performance in Europe. It is interesting to examine the conundrum about the liability of newness, adolescence, and aging (Henderson, 1999). Stinchcombe's liability of newness hypothesis assumed that younger firms are more at risk of failure while the liability of adolescence introduces an inverted u-shaped risk pattern (Abatecola and Uli, 2016). The inverted-U shape pattern means a high risk of failure at the early firm age, followed by growth and decline (Bruderl and Schussler, 1990). To this point, none of the recent studies examine antitrust policy (ATPolicy), bank longevity (i.e., age), bank concentration (HHI), HHIxAge, HHIxATPolicy as the determinant of bank profitability in 19 European countries (Austria,

Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, France, Germany, Spain, Hungary, Lithuania, Luxembourg, Romania, Italy, Slovakia, Slovenia, Sweden, and the U.K.). The expected findings are in Table 1 and the calculated variables in Table 2 (External: Appendix 7).

4.5 European Bank Model Specification and Variables Explained

This chapter followed previous studies on the determinants of bank profitability (Athanasoglou et al., 2006; Giroud and Mueller, 2010). This thesis also contributed to bank performance literature by examining ways to reduce bank agency problems while improving profitability. The high level of expense preference behaviour by savings and loan associations (i.e., deposit-taking banks) had been linked to monopolistic power, large size, and complexity (Blair and Placone, 1988). The measure of bank performance used in this study is return-on-average-equity. The experience preference behaviour occurred in the form of over-employment of labour and excessive personnel expenses (induced by concentration and market power) about the technical efficiency of the employees in maximising profit. The measure of bank quiet life (also known as managerial slack) used in this chapter are QLPEE (ratio of personnel expenses to the number of employees deflated by inflation) and QLTTTA (ratio of total expenses [interest expenses + non-interest expenses] to total assets). The explanatory variables used in this study as the determinants of bank profits addressed some of the negative effects of consolidation and managerial slack. The effects of these explanatory variables are categorised into bank-specifics, industry-related factors, macro-economic factors, and their effects are compared amongst banks in different European countries.

4.5.1 Empirical Methodology: Econometric Model Specification

The method in this empirical chapter followed a quantitative methodological choice to evaluate the research problems. Most bank-specific variables were used to relate to previous empirical studies (Berger and Humphrey, 1997; Altunbas et al., 2001; Fu and Heffernan, 2007; Assaf et al., 2013). The dependent variables were quantitatively obtained and analysed using a well-known econometric equation as in a previous study (Athanasoglou et al., 2006). We examined whether the passage of the 2004 European antitrust law influenced bank concentration differently in 19 competitive and less competitive European economies. The 19 European country data was re-categorised into different bank specialisations, and similar econometric analysis was carried. The main model in this study is below:

$$\delta_i = \alpha + \beta_1 Age + \beta_2 HHI + \beta_3 AT + \beta_4 HHI \times Age + \beta_5 HHI \times AT + \beta_6 X_6 + \beta_7 X_7 \beta_8 FC + \varepsilon_{it} \quad \text{.....(3.0)}$$

where $\varepsilon_{it} \sim NID(0, \sigma^2)$

We also estimate a panel data model for every individual country, using the model (Pooled OLS),

$$\delta_{it} = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 AT + \beta_4 X_4 + \beta_5 year + \beta_6 spec + \beta_7 bank + \varepsilon_{it} \quad \text{.....(4.0)}$$

Where,

$\varepsilon_{it} \sim NID(0, \sigma^2)$ and NID mean normally and independently distributed.

δ_i (Bank Profits) is the return on average equity (ROAE). Bank age is a measure of bank experience. HHI represents bank concentration. AT = Anti-trust policy, X_4 = HHI x Age, X_5 = HHI x AT, X_6 = Vector of bank-specific internal factors. , X_7 = Vector of macro-economic factors, FC is the Financial crisis dummy,

β_i = is the matrix of variable coefficients for explanatory variables.

We also estimated in equation 1 using a difference-in-difference approach. For instance, where we used return on average equity [ROAE] as dependent variables, the first difference compared ROAE before and after the introduction of antitrust laws separately for banks in developed (Western) and less developed (Eastern) European economies. We also extended this to different bank specialisations in Europe. The second difference is estimated by the effect of the interaction of bank concentration and antitrust laws on performance measures, similarly to Giroud and Muller et al. (2010). Again, the effects of bank concentration served as the control group. The macro-economic factors are GDP per capita (GDPC) and inflation (CPI). Bank-specific factors are capital-fund to liabilities (CFL), cost-income (CI), net-loan-to-total-asset (NLTA), equity-to-total-asset (ETA), fixed asset (FA), overhead, total assets (TA), market share (MS), burden-to-total-asset (BURDENTA), total-earning asset to total asset (TEATA), non-earning assets to the total asset (NEATA), cost efficiency (EFF1 and EFF2), asset utilization (AU), income diversification (BAAM), lending, credit risk (CR), bank equity capital (BECR), liquidity risk (LR).

A STATA software was used to test the model specification, and we carried out different econometric regression analyses. The robustness tests (i.e., Hausman test and Breusch-Pagan Lagan Multiplier test) were conducted to test the validity of different panel data estimators, and

the robustness check helped to choose amongst different panel models tested. The impact of bank-specific, macro-economic, and industry-wide determinants on bank performance was carried out using the multi-variable equation framework. In recent years, functional methods have been increasingly used to capture the determinants of bank profitability. However, linear functions still provide almost precise results similar to other functional methods (Short, 1979). However, the study by Swamy et al. (1996) argued non-linearity in the relationship between a firm's profit and independent variables. Regardless of these previous authors' views, the use of linear regressions, either static or dynamic, persisted in later studies (Goddard et al., 2004b; Athanasoglou et al., 2006; 2008). Our study addressed our research questions using the linear and non-linear regression models.

The F.E. model assumed that individual bank-specific factors would capture unobserved heterogeneity across individuals (αi). Therefore, the correlation of αi and explanatory variables signified the validity of F.E. However, non-correlation meant that REM is a preferential model. This is because the fixed effect model (FEM) allowed individual bank-specific effects 'αi' to be correlated with the explanatory variable, and the FEM for this study is indicated as follow:

$$\delta_{it} = \alpha_i + \beta_1 X_1 + \beta_2 X_2 + \beta_3 AT + \beta_4 X_4 + \beta_5 year + \beta_6 spec + \beta_7 bank + \varepsilon_{it} \ldots\ldots\ldots (5.0)$$

The individual bank-specific factors (α_i) are the remaining variations that the explanatory variables cannot explain. The fixed-effect model allowed the use of dummy variables as regressors. The random effect models (REM) assumed that the individual bank-specific effects αi are distributed independently of the explanatory variables. The individual bank was characterised by the same slope parameters and a composite error term, $\varepsilon_{it} = \alpha_i + e_{it}$

The REM is indicated below:

$$\delta_{it} = \alpha_i + \beta_1 X_1 + \beta_2 X_2 + \beta_3 AT + \beta_4 X_4 + \beta_5 year + \beta_6 spec + \beta_7 bank + E_{it} \ldots\ldots\ldots\ldots\ldots (6.0)$$

where, $E_{it} = \alpha_{it} + u_{it}$.

ρ can be explained as the inter-class correlation of the error terms. It is the proportion of the variation in the error due to the individual bank-specific effects. The ρ-value approaching 1 meant that the individual bank-specific effects dominated the idiosyncratic error.

4.5.2 Dependent variables – Performance and agency problem proxies

The main dependent variables used in this study include return-on-average-asset (ROAE) and the two measures of managerial slack – namely, QLTTTA and QLPEE. The formula for the two measures of managerial slack is defined as follows: QLPEE is the ratio of personnel expenses to the number of employees deflated by inflation. QLTTTA is the ratio of total expenses [interest expenses + non-interest expenses] to total assets.

4.5.3 Explanatory variables

We categorised explanatory variables into bank-specific, industry-specific, and macro-economic factors. The explanatory variables used in this study are the determinants of bank performance and quiet life, with some variables calculated from the Bankscope database. The main explanatory variables in this chapter include bank concentration and antitrust policy.

4.5.3.1 Industry-related factors – Bank Concentration

The HHI is a measure of market competitiveness well-rooted in industrial organisation theory (Tirole, 1988). The level of bank concentration in each country measured using the Herfindahl-Hirschman index (HHI) and proxied by total assets. The differences in bank concentration amongst European banks are indicated in the figure below:

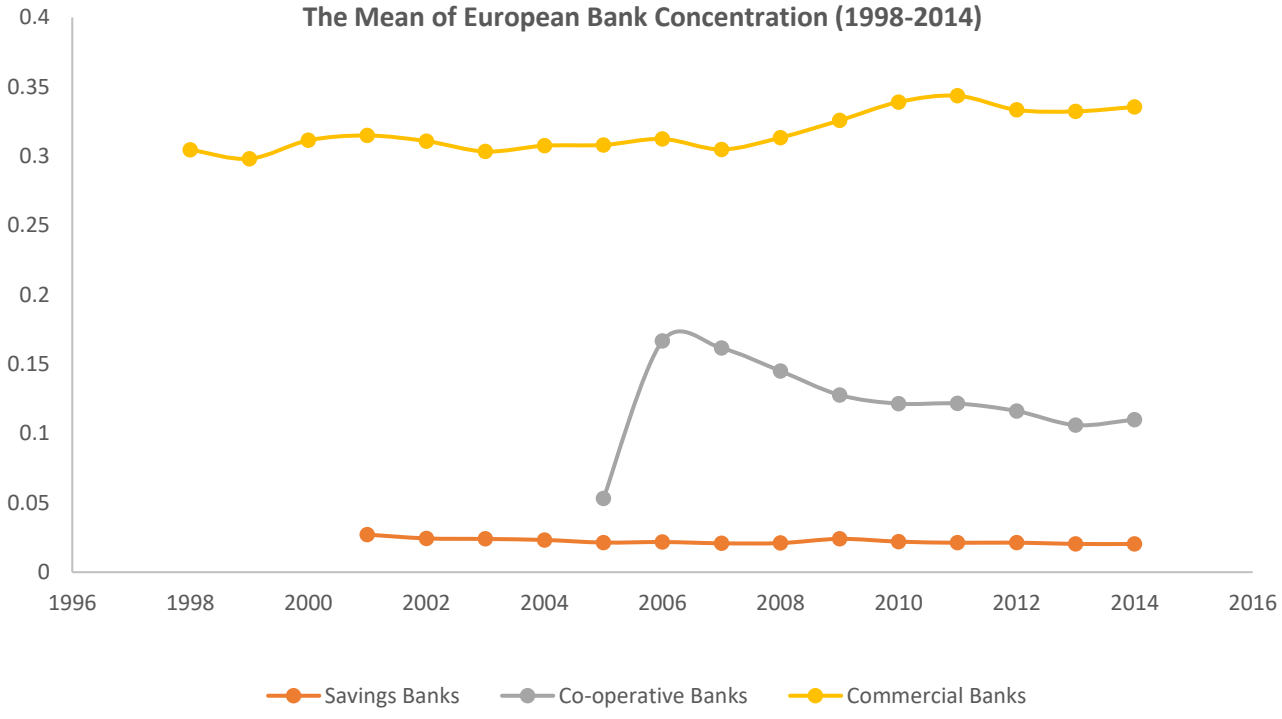


Figure 1: The Mean of European Bank Concentration (HHI)

An increasing level of HHI is linked to weaker competition. Bank concentration can be referred to as the group of banks in the same industry offering similar services. HHI utilises the market share of specific financial institutions as a proxy. The market share is calculated using total assets. The squaring of market share helped obtain the HHI value for each bank in a particular year of a country. The HHI calculation varied from 0 to 100.
The bank concentration, proxied by total asset,

$$HHI = n(S_{it})^2 = S_1^2 + S_2^2 + S_3^2 + S_4^2 + S_5^2 + \ldots\ldots + S_n^2$$

Where S_{it} indicates the market share of bank total asset (i = 1, 2, 3, …, n) in each year t.

Table 2: The treatments indicate the impacts of European Antitrust laws and bank concentration interaction

	Control	2004
Treatment 1: AT2004	0 (Before and after 2004)	1
Treatment 1A: ATSC	0 (Before 2004)	1 (2004-2014)
Treatment 2: hHHIxAT2004	hHHI	hHHIxAT2004
Treatment 3: hHHIxAge	hHHI	hHHIxAge
Treatment 4: mHHIxAge	mHHI	mHHIxAge
Treatment 5: lHHIxAge	lHHI	lHHIxAge

4.5.3.2 Bank-Specific Control Variables

4.5.3.2a Income diversification

Many studies have shown a shift from interest to fee-earning activities for European banks (Busch and Kick, 2009; Demirgüç-Kunt and Huizinga, 2010). The Demirguc-Kunt and Huizinga (2010) study examined the impact of banking activity and funding strategies on the risk and returns of 1,334 banks from 101 countries before the 2008 financial crisis. An empirical study tested the different managerial hypotheses to examine the effect of loan portfolio diversification on risk, efficiency, and capitalisation of Austria commercial banks. The Italian banks with less non-interest income gained from increasing non-interest income and maximised their risk-adjusted returns (Chiorazzo et al., 2008). The result showed that diversification increased cost efficiency, profit efficiency, and bank capitalisation; and minimised banks' realised risk (Ross et al., 2009).

4.5.3.2b Bank equity capital

Under a condition of market imperfections, a previous study found a positive association between capital ratio and profitability (Bourke, 1989). The Berger (1995b) study attributed the positive relationship between capital ratio and profits to the expected bankruptcy cost hypothesis and the signalling hypothesis. In this case, the assumptions of the asymmetrical informational problem are relaxed, permitting CEOs to access private information about the future sources of cashflow. The expected bankruptcy costs can be relatively higher for banks with lower than the equilibrium CAR value (Goddard et al., 2004). The negative relationship between capital ratio and bank profits indicates that banks are risk-averse and possibly ignore potentially profitable trading opportunities, consistent with the efficiency-risk and franchise-value hypotheses (Hoffmann, 2011). The Bank regulators can minimize excessive risk-taking by setting the minimum equity capital with serious implications for bank capital structure decisions and earnings.

The Bourke (1989) study found a positive relationship between capital and bank profits in Europe, Australia, and North America. The equity to total asset ratio is a proxy for risk (Goddard et al., 2004). Theoretically, the banks with excessively high capital ratios are linked to risk aversion and ignoring possibly investment opportunities (Gale and Ozgur, 2005). According to the Granger-causality tests, Berger (1995b) found a positive association between capital and return-on-equity. Jensen and Meckling's (1976) study also emphasised that the high capital reserve minimised the agency cost of debt and increased bank profitability. However, the likelihood of bankruptcy and financial distress increases when the agency cost of debts and the asymmetrical informational problems exceed the agency cost of equity. With two arguments, the Berger and Bonaccorsi di Patti (2006) study posits the reverse causation from performance to capital structure. Firstly, the efficiency risk hypothesis assumed that more efficient companies rely on a low equity ratio due to higher expected gains from profit efficiency, which replaced the equity ratio. On the other hand, the franchise-value hypothesis state that efficient firms tend to maintain a relatively high equity ratio to protect future income obtained via better profit efficiency.

4.5.3.2c Cost Efficiency

The passage of business combination laws increased input costs, wages, and overhead costs in non-competitive industries (Giroud and Mueller, 2010). This study examined whether Antitrust

laws in 2004 had a diverse effect on bank-based and market-based economies. The bank-based economies considered in this study are Austria, Belgium, Cyprus, Portugal, Italy, France, Germany, Spain, Denmark, Luxembourg, Hungary, while the market-based economies are the U.K., Sweden, Spain (Levine, 2002; Girardone et al., 2009). The empirical analysis of 10 European bank profit and cost efficiency over the 1993-1996 period showed that the cost efficiency level higher than profit efficiency (Maudos et al., 2002). The performance of banks and economic growth depends on financial development and its degree of openness (Beck, 2001). Foreign-owned banks with a large share of total assets in 15 Eastern European countries had been associated with lower costs at the early stage of banking reform and not later (Fries and Tacies, 2005). This study implied that the European cross-border bank concentration and monopolistic power might not be cost-efficient in the long term.

4.5.3.2d Credit Risk

Credit risk is more prevalent in financial institutions than non-financial institutions. For example, the Jimenez and Saurina (2004) study showed that collateralised loans linked to a higher probability of default. In addition, the loan grants by savings banks carried risk due to the close bank-borrower relationship.

4.5.3.2e Age

The persistence of bank profit over time can result from barriers to entry, informational opacity, and the responses to external shocks (Levine et al., 2000). Age signified bank experience. The timeline of explanatory variables is below:

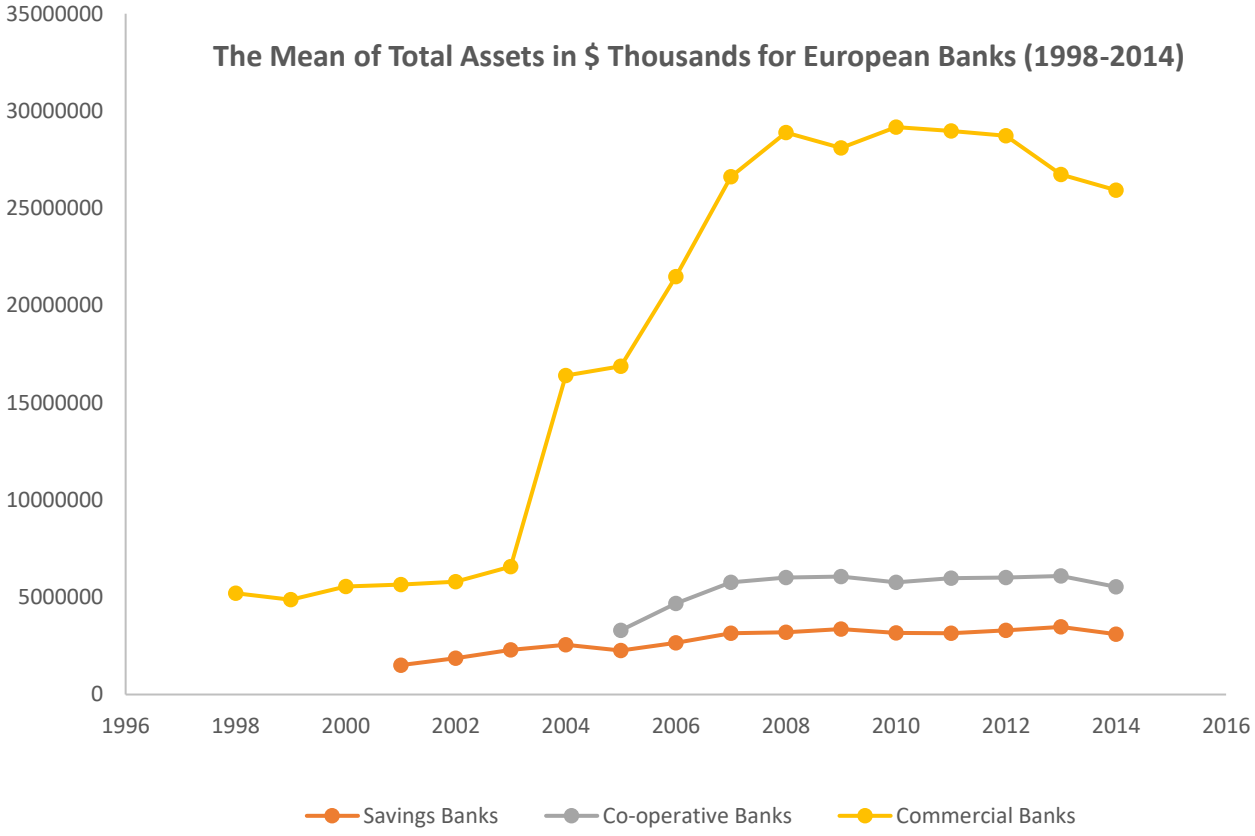


Figure 2: The Mean of Bank Total Asset in Nineteen European Countries

Figure 3: The Mean of Bank Total Earning Assets in Nineteen European countries

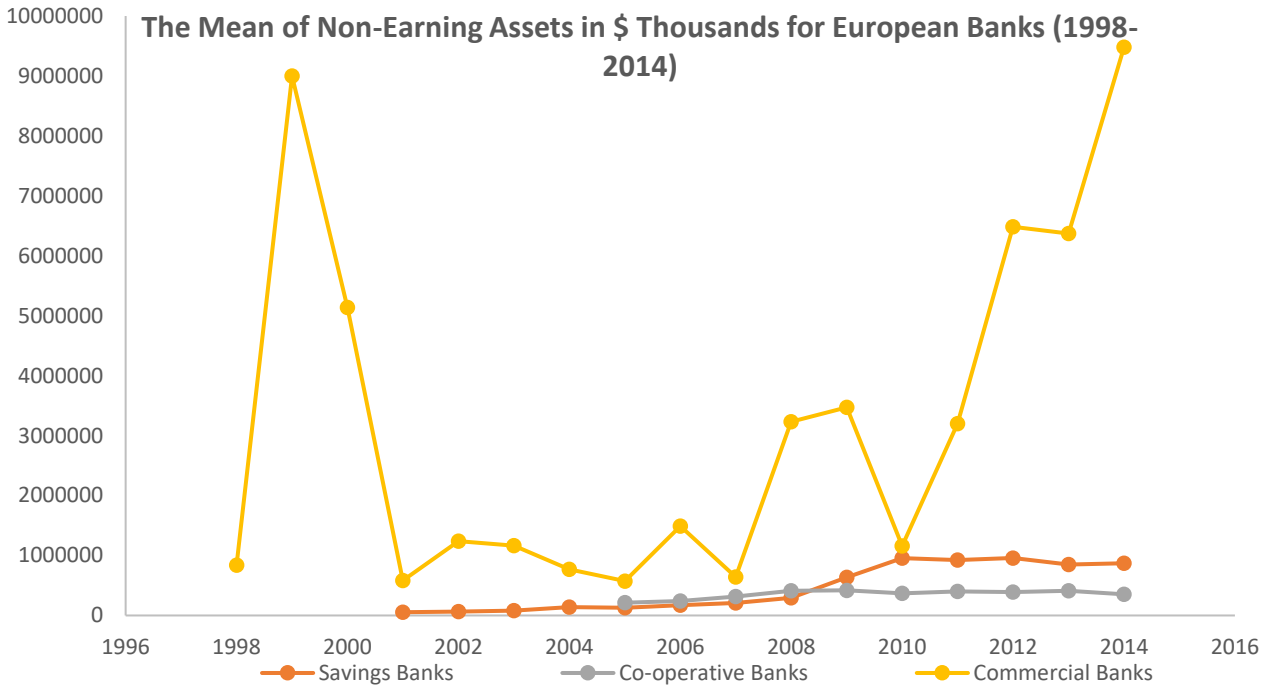


Figure 4: The Mean of Bank Non-Earning Assets in Nineteen European countries

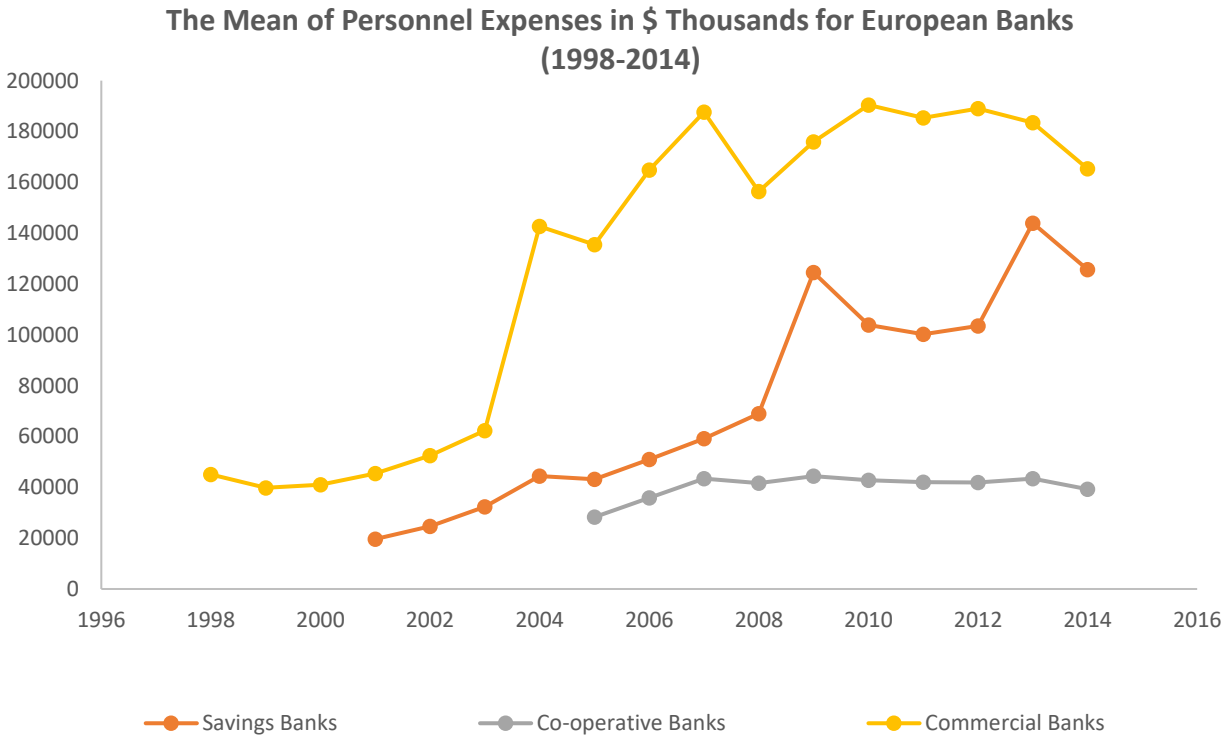


Figure 5: The Mean of European Bank Personnel Expenses in Nineteen European countries

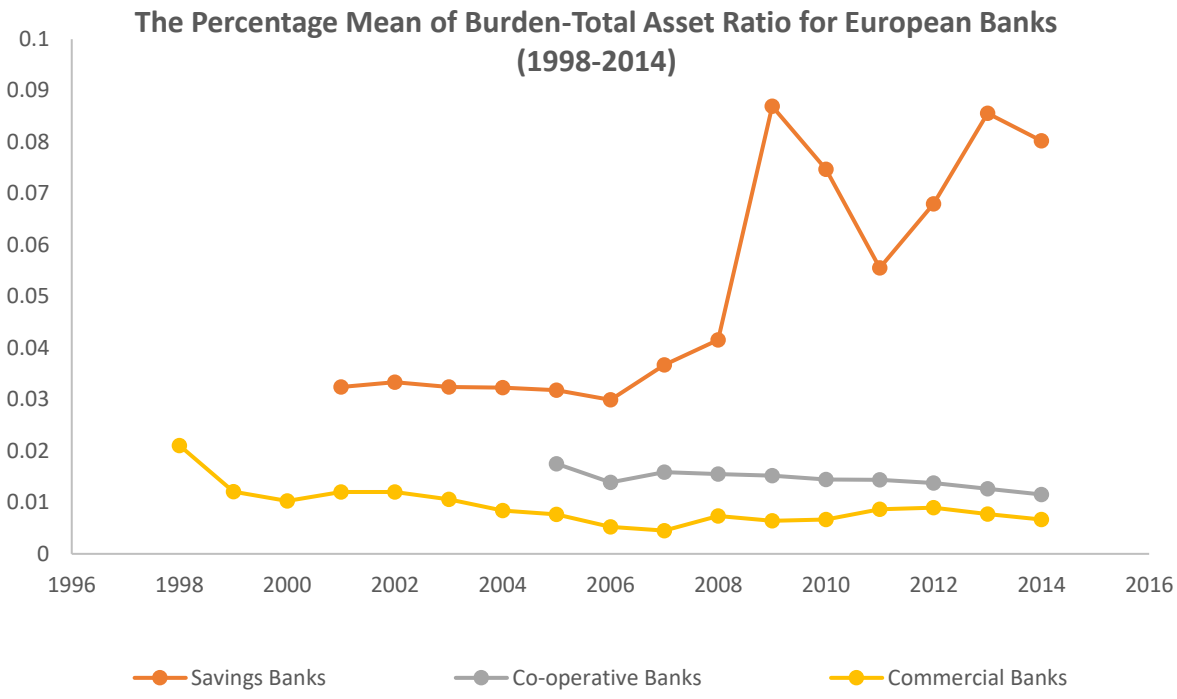


Figure 6: The Mean of Bank Burden-Total Asset Ratio in Nineteen European countries

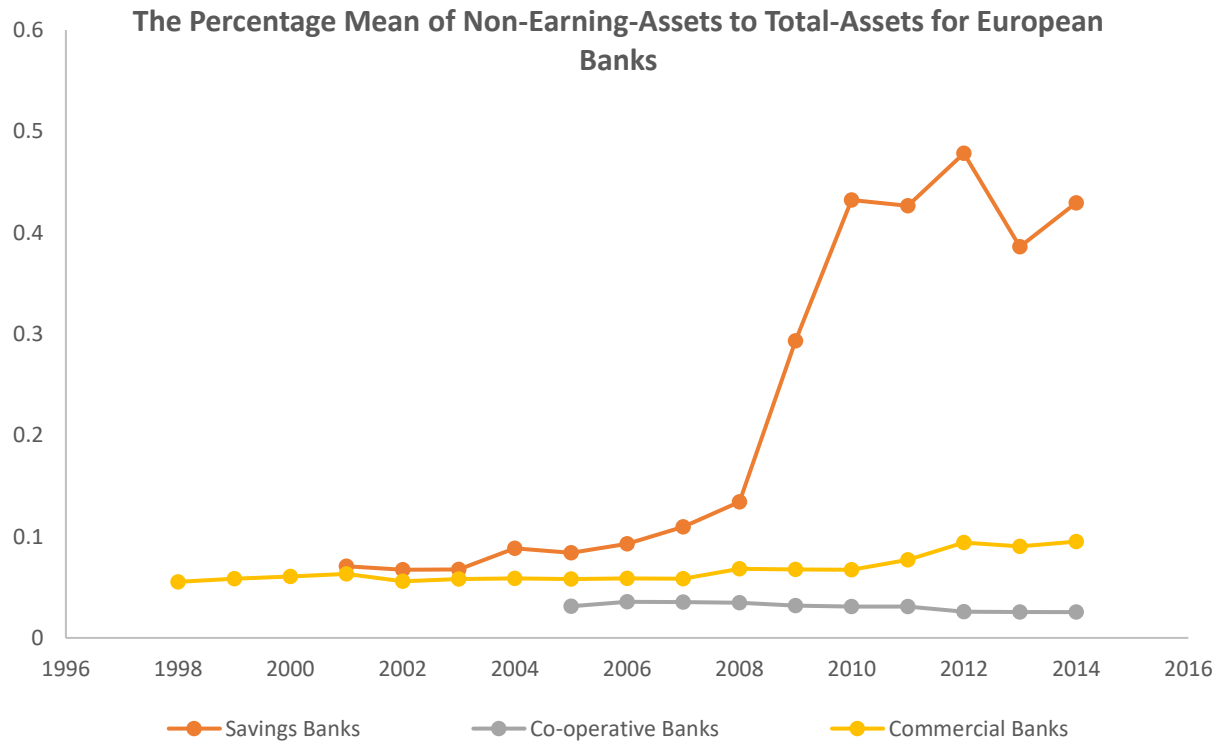


Figure 7: The Mean of Bank Non-Earning-Assets to Total-Assets in Nineteen European countries

4.5.3.4 Macro-economic Factors

The macro-economic factors are GDP per capita and inflation. The gross domestic product per capita and inflation were obtained from the WorldBank database (Worldbank, 2017). GDP per capita is the ratio of GDP to mid-year population. The gross domestic per capita (GDPC) is the ratio of country wealth relative to population size (Morgan et al., 2015). GDPC can also be explained as the wealth of individuals within a nation (Cope et al., 2012). The GDPC is a proxy that measures a nation's standard of living. Previous empirical studies showed that faster economic growth positively affects bank profits (Naceur and Goaied, 2008), and the GDP trends had influenced bank performance similarly (Athanasoglou et al., 2006).

4.5.3.5 Financial Crisis and Antitrust policy Dummies

The financial crisis dummy is proxied by '0' for the pre-crisis period and '1' for the post-crisis period. Likewise, the antitrust policy year is proxied by '1', and other years are proxied by '0'.
The expected outcomes from this chapter's econometric analysis are in Appendices 1 and 2.

Table 3: Top 5 European banks by specialisation in terms of the total asset ($) in 2014

Bank	Country	Total Asset ($)
European Investment Banks		
Goldman Sachs International	United Kingdom	967,425,000
Merrill Lynch International	United Kingdom	616,422,000
Morgan Stanley & Co. International Plc	United Kingdom	448,526,000
Compagnie de Financement Foncier SA	France	106,773,093
Caisse de Refinancement de l'Habitat SA-CRH	France	59,586,133
European Commercial Banks		
Caisse d'épargne et de prévoyance Ile-de-France SA	France	69,443,606
Caisse d'épargne et de prévoyance Rhône Alpes	France	42,134,149
Caisse d'épargne et de prévoyance Provence Alpes Corse SA	France	35,665,411
Caisse d'Epargne et de Prévoyance Bretagne-Pays de Loire		
Caisse d'épargne et de prévoyance de Lorraine Champagne-Ardenne	France	35,330,094
European Cooperative Banks		
Crédit Agricole-Crédit Agricole Group	France	2,139,995,080
Crédit Agricole S.A.	France	1,929,153,761
Fédération du Crédit Mutuel	France	660,112,885
DZ Bank AG-Deutsche Zentral-Genossenschaftsbank	Germany	488,700,969
Unione di Banche Italiane Scpa-UBI Banca	Italy	147,853,219
European Savings Banks		
Caisse d'épargne et de prévoyance Ile-de-France SA	France	69,443,606
Caisse d'épargne et de prévoyance Rhône Alpes	France	42,134,150
Caisse d'épargne et de prévoyance Provence Alpes Corse SA	France	35,665,411
Caisse d'Epargne et de Prévoyance Bretagne-Pays de Loire		
Caisse d'épargne et de prévoyance de Lorraine Champagne-Ardenne	France	35,330,095

Source: Bankscope

Conceptual framework

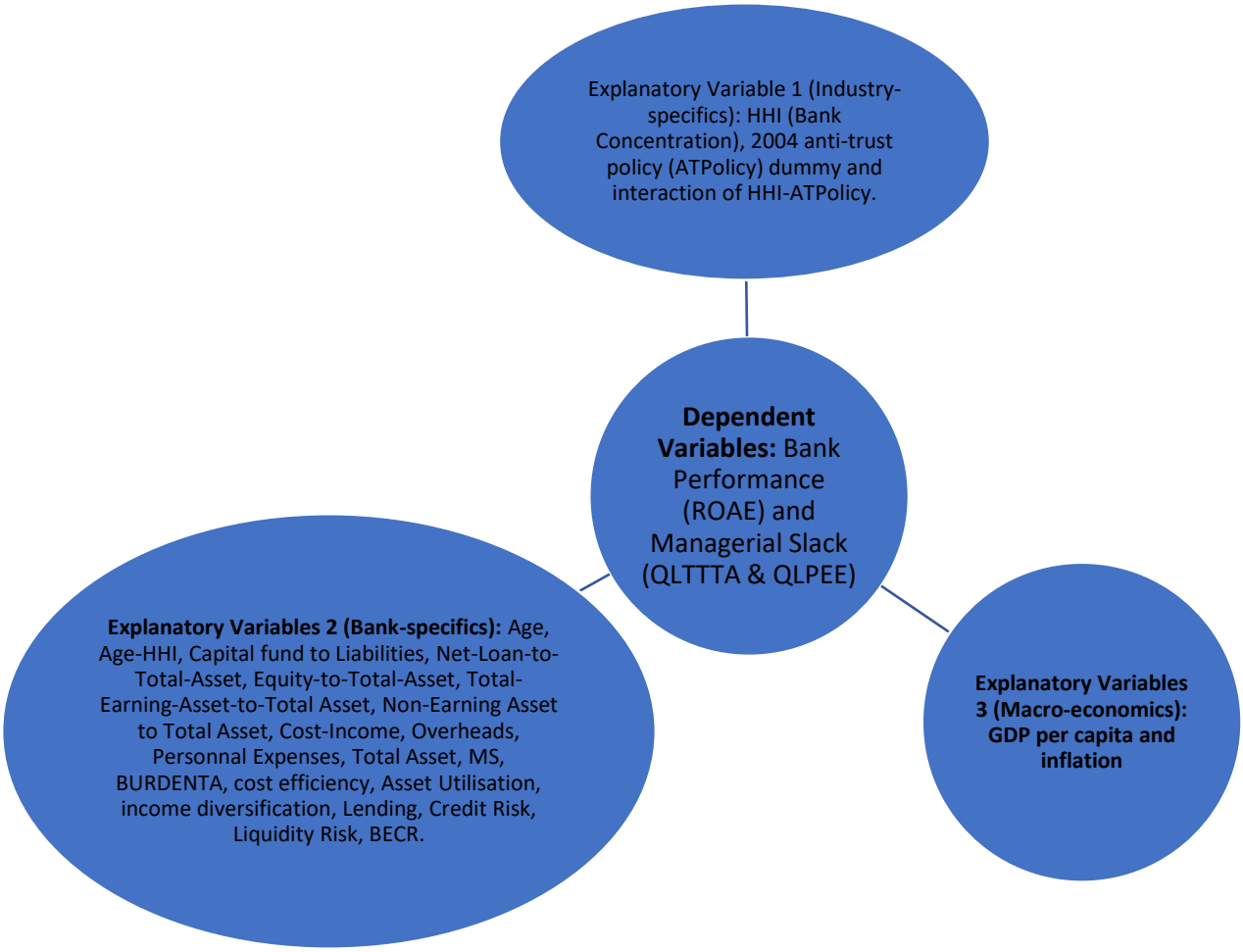


Figure 8: Conceptual Framework as the Determinants of Bank Performance

4.5.4 Data Collection Design

The "S.B.," "C.B.," "COOP," & "CCS" stands for savings bank (2001-2014), commercial banks (1998-2014), cooperative banks (2005-2014), and the combination of the three banks. The unconsolidated financial data for commercial-, cooperating-, and savings-banks in nineteen E.U. countries during 1998-2014 period (CCS – Austria, Belgium, France, and Germany; C.B. and S.B. – Denmark; S.B. – Sweden; COOP – Italy and Spain; C.B. – Bulgaria, Croatia, Cyprus, Czech Republic, Hungary, Lithuania, Luxembourg, Romania, Slovakia, Slovenia, and United Kingdom) were obtained from Bankscope.

4.5.5 Variables Explained - Data Description

The European banking system explored comprises 802 commercial banks, 756 savings banks, and 1623 cooperative banks from 19 E.U. countries. In this empirical study, after data cleaning, we used a panel data sample of 306 commercial banks (1998-2014); 512 savings banks (2001-2014); 1,447 cooperative banks (2005-2014); and 78 investment banks/investment trusts and corporation (2003-2014). This research utilised bank-specific and macro-economic factors for E.U. banks varying from 1998 till 2014. The bank-specific factors were obtained from Bankscope in 2016 via the Middlesex University database. Macro-economic factors from the WorldBank database. Bank age was obtained from the Bloomberg website, Bankscope history, and individual websites. All the studied European bank specialisations were analysed as balanced panel regression. Also, most country panel data regression is sorted on software as balanced panel data except for countries like Austria, Belgium, Germany, the United Kingdom, Luxembourg, and Denmark with more than one bank specialisation.

The majority of the data for the European banking industry over 1998-2014 was obtained from Bankscope at Middlesex Business School financial lab. The total population of banks analysed in this study was 2,265. The mean total assets for cooperative -, commercial-, and savings-banks are $1714888, $12300000, and $2661917 in thousands, respectively. The European commercial banks had the highest level of total assets as in tables 5-7.

Table 4: The Total Number of savings, commercial, and cooperative banks studied

Country	Commercial Banks		Cooperative Banks		Savings Banks	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**
AUSTRIA	25	8.17	51	3.52	45	8.79
BELGIUM	10	3.27	6	0.41		
BULGARIA	5	1.63				
CROATIA	12	3.92				
CYPRUS	10	3.27				
CZECH-REP	7	2.29				
DENMARK	15	4.90			15	2.93
FRANCE	59	19.28	45	3.11	13	2.54
GERMANY	67	21.90	929	64.20	397	77.54
HUNGARY	9	2.94				
ITALY			360	24.88		
LITHUANIA	5	1.63				
LUXEMBOURG	31	10.13				
ROMANIA	8	2.61				
SPAIN			56	3.87		
SLOVENIA	7	2.29				
SLOVAKIA	5	1.63				
SWEDEN					42	8.20
UNITED KINGDOM	31	10.13				
Total	**306**	**100**	**1447**	**100**	**512**	**100**

Data Source: Bankscope

Table 5: Summary of European Co-operative Banks Data over 2005-2014 Period

Variable	Obs	Mean	Std. Dev.	Min	Max
ROAE	14,415	4.64	3.61	-9.09	17.99
QLTTTA	14,337	0.04	0.01	0.01	0.12
Age	14,470	86.62	43.16	4.00	160.00
hHHI	14,470	3.00	12.82	0.00	75.02
mHHI	14,410	0.00018	0.00077	0.00000	0.00504
lHHI	14,410	0.00001	0.00003	0.00000	0.00023
hHHIxAge	14,470	193.42	1002.71	0.00	14029.62
mHHIxAge	14,470	0.01	0.06	0.00	0.69
lHHIxAge	14,470	0.0003	0.0020	0.0000	0.03
LR	14,329	0.15	0.10	0.02	0.53
CFL	10,027	8.53	2.61	4.13	17.90
CI	14,296	67.88	10.55	38.46	97.18
Overheads	14,310	70250.36	851514.20	258.77	29000000.00
NLTA	14,326	60.03	13.57	23.42	85.96
TA	14,470	1714888.00	5504601.00	14074.94	44200000.00
MS	14,448	0.000260	0.001103	0.000002	0.01
BURDENTA	14,299	0.01	0.01	0.00	0.04
NLTA	14,326	60.03	13.57	23.42	85.96
TA	14,470	1714888.00	5504601.00	14074.94	44200000.00
TEATA	14,325	0.97	0.20	0.33	2.49
NEATA	14,324	0.03	0.02	0.01	0.11
AU	14,312	0.01	0.00	-0.01	0.02
BAAM	14,126	1.01	0.89	-1.48	5.00
CR	14,199	0.01	0.01	-0.03	0.04
GDPC	14,470	40745.57	5279.92	26510.72	51717.50
CPI	14,470	1.71	0.81	-0.29	4.49

Table 6: Summary of European Savings Bank over 2001-2014 Period

Variable	Obs	Mean	Std. Dev.	Min	Max
ROAE	7,123	3.61	2.93	-4.44	14.43
QLTTTA	7,113	0.10	0.19	0.00	1.30
Age	7,168	85.29	73.93	-2.00	265.00
hHHI	7,168	0.02	0.04	0.00	0.36
mHHI	6,986	0.0005	0.0016	0.0000	0.01
lHHI	7,168	0.0003	0.0020	0.0000	0.02
hHHIxAge	7,168	1.56	5.04	0.00	61.76
mHHIxAge	7,168	0.05	0.20	0.00	2.55
lHHIxAge	7,168	0.03	0.24	0.00	3.64
AT2004	7,168	0.07	0.26	0.00	1.00
hHHIxAT2004	7,168	0.001	0.013	0.000	0.26
LR	6,233	0.15	0.11	0.02	0.57
ETA	6,233	7.83	4.55	3.06	31.30
CFL	5,199	8.87	3.28	4.37	23.31
CI	6,211	67.23	9.50	41.38	94.92
Overheads	6,224	73407.12	136046.20	570.66	972030.00
NLTA	6,200	60.70	13.98	23.96	90.74
TA	7,113	2661917.00	3507757.00	43530.85	21300000.00
MS	7,113	0.0006	0.0015	0.0000	0.01
BURDENTA	6,193	0.03	0.05	0.00	0.34
NLTA	6,200	60.70	13.98	23.96	90.74
TA	7,113	2661917.00	3507757.00	43530.85	21300000.00
TEATA	6,207	2.71	5.46	0.01	40.79
NEATA	6,200	0.08	0.19	0.00	1.44
AU	6,198	0.02	0.04	-0.01	0.28
BAAM	6,163	1.06	7.08	-48.00	516.00
CR	6,186	0.01	0.01	-0.04	0.04
GDPC	7,168	40110.41	8908.33	22433.56	64322.07
CPI	7,168	1.61	0.69	-0.49	3.44

Table 7: Summary of European Commercial Banks over 1998-2014 Period

Variable	Obs	Mean	Std. Dev.	Min	Max
ROAE	4,960	7.46	14.28	-58.59	47.73
ROAA	4,961	0.71	1.49	-5.59	6.83
Age	5,200	52.56	55.88	1.00	286.00
hHHI	5,116	0.30	0.22	0.02	0.92
mHHI	3,885	0.002	0.011	0.000	0.21
lHHI	4,335	0.01	0.04	0.00	0.33
Age	5,200	52.56	55.88	1.00	286.00
hHHIxAge	5,202	16.47	26.47	0.00	157.49
mHHIxAge	5,230	0.08	0.53	0.00	18.04
lHHIxAge	5,230	0.08	0.57	0.00	7.73
ETA	4,973	12.51	13.44	1.40	84.04
CFL	3,494	17.67	27.35	2.46	214.48
CI	4,886	65.47	25.43	7.70	177.74
NLTA	4,949	48.02	25.92	0.56	96.03
TA	4,973	12300000.00	65700000.00	26376.26	553000000.00
MS	4,973	0.003	0.008	0.000	0.04
BURDENTA	4,920	0.01	0.02	-0.07	0.08
TEATA	4,973	0.92	0.09	0.43	1.00
NEATA	4,965	0.07	0.08	0.00	0.54
AU	4,923	0.01	0.02	-0.06	0.09
BAAM	4,652	1.03	2.50	-8.31	16.00
CR	4,362	0.01	0.04	-0.08	0.33
LR	4,947	0.42	0.38	0.01	2.62
CE	4,973	632392.40	2764803.00	5808.22	23300000.00
Overheads	4,934	169382.30	722498.80	601.08	5802965.00
LA	4,962	3243960.00	16500000.00	2458.27	138000000.00

The decreasing order of European bank concentration proxied by HHI is commercial, investment, cooperative, and savings banks. The overall mean values (standard deviation of the mean, minimum, and maximum) of high HHI for savings-, co-operative-, and commercial banks are 0.02 (0.04, 0.001 and 0.359), 2.996 (12.815, 0.005 and 75.025), and 0.148 (0.007, 0.049, and 0.153), respectively. Other summary statistics is in the external appendix for North American commercial banks.

4.6 Empirical Analysis and Findings

4.6.0 Summary Statistics

Tables 5-7 and external appendix for North American banks, represent summary statistics for the European commercial bank-, European cooperative, European savings, United States commercial, and Canada commercial banks - final sample observations of 2180, 9901, 5060, 89396, and 100, respectively. The information about the European commercial banks with the highest increasing level of variables of interest analysed in this thesis can be found in Figures 1-4 (European. commercial bank total assets, total-earning-assets, non-earning-asset personnel expenses). Figures 6 and 7 showed that European savings banks had the highest Burden-Total-Asset and non-earning-assets-to-total-assets.

4.6.1 Panel Data Analysis of European Commercial Bank Return on Average Equity - ROAE

Fixed effects or random effects estimation techniques cannot differentiate between endogenous, weakly exogenous, and strictly exogenous explanatory variables (Wooldridge, 2002; Baltagi, 2005). Cross-sectional correlation is a major concern because the same antitrust law shock affects the banks in a specific year. The antitrust law dummy being one when the antitrust policy was legislated and zero otherwise raises major cross-sectional and serial correlation issues (Bertrand et al., 2004). The fixed effect estimator is not the most efficient and gives a consistent estimate. If the Hausman test is significant, the FEM is the true model while the REM is inconsistent. The REM estimators are the most consistent and most efficient if the Hausman test is not-significant and the Breusch-Pagan LM test is significant. The robustness test for the empirical chapters firstly compared REM and pooled using the Breusch-Pagan LM test where significant outcomes make REM preferential. Then, a significant Hausman test between FEM and REM makes the FEM estimates preferential. The final robustness test outcomes for the panel data analysis form the main basis of the thesis discussion for empirical chapters 1-3.

Table 8: Does antitrust laws matter in competitive and less competitive industries? The Panel Data Regression of European Commercial Banks' Performance (1998-2014) using pooled OLS, fixed effects-, and random effects estimators, comparatively.

The anti-trust law is a dummy variable as we assumed that all banks in the 19 European countries were affected by the antitrust law changes in 2004. The dependent variable is return-on-average-equity (ROAE). The Independent variable is the Herfindahl Hirschman Index (HHI).

Return on average equity	**Pooled OLS**		**REM**		**FEM**	
No. of Group			200		200	
No. of Obs	2180		2180		2180	
F(29, 2150)	158					
Prob > F	0.0000					
R-sq.	0.68					
R-sq.: wtn, btw, overall			0.68, 0.64, 0.67		0.69, 0.55 & 0.62	
Root MSE and corr(u_i, Xb)	7.39 and NA		na and 0 assumed		na and -0.12	
	Coeff.	**t**	**Coeff.**	**z**	**Coeff.**	**t**
AT2004	9.19*	1.66	10.90**	2.24	11.94**	2.42
AT2004xhHHI	-25.12*	-1.81	-18.21*	-1.5		
ETA	-0.47***	-12.5	-0.46***	-8.94	-0.46***	-7.2
CFL	0.05***	3.34	0.05***	2.64	0.05**	2.11
CI	-0.06***	-6.24	-0.09***	-8.37	-0.09***	-8.8
MS	115.81**	Found 2.23	108.05*	1.5		
BURDENTA			81.12***	4.28	123.13***	5.65
TEATA	31.17***	5.15				
NEATA	29.72***	4.61				
AU	727.88***	45.7	738.56***	46.4	754.69***	44.68
BAAM	0.18***	2.73	0.16***	2.61	0.17***	2.64
CR	-5.92*	-1.57				
LA	-0.0000001*	-1.83				
GDPC	-0.00000000001*	-2.42				
Fin_crisis			-0.92**	-1.98	-1.38***	-2.63
_cons	-20.53***	-3.29				
Theta (Lambda, λ: REM Vs OLS)			0.69			
sigma_u, sigma_e, and rho			4.61, 6.13, and 0.36		6.29, 6.13 & 0.52	

Significance levels: *** 1%; ** 5%, *10%

The Breusch-Pagan LM test is significant (Prob > chibar^2 = 0.0000. The Hausman test (FEM vs. REM) is significant (Prob>chi^2 = 0.0000). Hence, the fixed-effect model (FEM) is a

preferential model – Appendix 1 indicates the full (Hausman test, Breusch-Pagan LM test, and individual-specific effects) robustness results. Rho is a proportion of variation due to the individual specific term. Rho that approaches 1 indicates that the individual effects dominate the idiosyncratic error. The FEM rho of 0.52 indicated that the individual effects averagely dominate the idiosyncratic error. Our table only presented significant findings.

Interpretation of FEM – The result showed that 2004-antitrust trust laws (AT2004), higher values of the current capital fund-to-total-liabilities (CFL), burden ratio (BURDENTA), asset utilisation, and income diversification (BAAM) positively and significantly linked to higher values of return-on-average-equity (ROAE). In contrast, total earning asset to total asset, market share, and non-earning asset to total asset are significantly enhanced return on average equity with other panel estimators. On the other hand, higher values of capital strength (ETA), cost-income ratio (CI), and the financial crisis (fin_crisis) were significantly negatively associated with reduced return on equity. Hence, a 1 unit increase in CFL and BAAM increased ROAE by 5% and 17%, respectively. The time-invariant regressors cannot get co-efficient from some estimators. The FEM rho of 0.52 explained the individual-specific term, and the 0.48 can be linked to an idiosyncratic error. The FEM R^2 showed that the FEM estimators could explain 69%, 55%, and 62% of within-, between-, and overall-variation, respectively. The REM lambda (λ) is 69% which implies that the REM estimates are closer to the FEM estimates than the pooled OLS estimates.

4.6.2 Panel Data Analysis of European Co-operative Bank Return-on-Average-Equity (ROAE)

Table 9: The Panel Data Regression of European Cooperative Banks' Performance (2005-2014) using pooled OLS, fixed effects-, and random effects estimators, comparatively.

The dependent variable is return-on-average-equity. The Main Independent variable is the Herfindahl Hirschman Index (HHI).

Return on average equity	**Pooled OLS**		**REM**		**FEM**	
	Coeff.	**t**	**Coeff.**	**z**	**Coeff.**	**t**
No. of Group			1113		1113	
No. of Obs	9901		9901		9901	
F(23, 9877)	802.20				F(23,8765)	756.44
Prob > F	0.0000				0.000	
R-sq.	0.65					
R-sq.: wtn, btw, overall			0.66, 0.66, 0.65		0.67, 0.17, and 0.26	
Root MSE & corr(u_i, Xb)	1.96 and NA		NA & 0 (assumed)		NA & -0.76	
Age	-0.001**	-2.37	-0.001*	-1.52	-0.08***	-4.82
mHHI			-450.19***	-2.8		
lHHI			4840.10*	1.65		
hHHIxAge					0.0003*	1.73
mHHIxAge					-8.31**	-1.93
lHHIxAge	-63.82*	-1.46	-76.76**	-2.1	-82.98**	-2.18
LR	2.29***	8.76	2.45***	7.56	1.75***	4.37
CFL	-0.38***	-42.21	-0.32***	-26.64	-0.22***	-12.03
CI	0.02***	7.04	0.02***	5.18	0.02***	4.54
NLTA	0.02***	8.94	0.01***	5.12	0.01*	1.49
MS	224.24***	5.57			-454.93**	-2.35
BURDENTA	-66.36***	-9.62	-56.31***	-7.09	-48.99***	-5.32
TEATA	-4.28***	-28.2	-4.92***	-23.53	-4.31***	-11.02
NEATA	-15.81***	-10.19	-4.69***	-2.51	4.69**	2
AU	764.48***	110.11	781.43***	115.53	790.50***	109.65
BAAM	-0.06**	-2.36	0.05**	1.96	0.08***	2.83
CR	5.24*	1.88	5.84**	2.28	7.95***	2.94
GDPC	-0.0001***	-15.46	-0.0001***	-18.04	-0.00006***	-6.81
CPI	0.15***	5.02	0.13***	5.21	0.07***	2.48
_cons	9.95***	4.98	10.47***	5.86	14.59***	6.69
sigma_u, sigma_e, and rho			1.13, 1.61, and 0.33		3.72, 1.61, and 0.84	

Significance levels: *** 1%; ** 5%, *10%

The Hausman test (FEM vs. REM) was significant (Prob>chi^2 = 0.0000). Hence, the fixed-effect model (FEM) is a preferential model – Appendix 1 indicates the full (Hausman test,

Breusch-Pagan LM test, and individual-specific effects) robustness results. The Breusch-Pagan LM test is significant (Prob > chibar^2= 0.0000). The FEM rho of 0.84 indicated that the individual effects dominate the idiosyncratic error in the FEM.

Interpretation of FEM

Due to significant Hausmann test – The result showed that the interaction of age and high concentration (10% significance level: hHHIxAge), higher values of the liquidity risk (L.R.), cost-income ratio (CI), asset utilisation (AU), non-earning-asset-to-total asset (NEATA), credit risk (C.R.), inflation (CPI), and income diversification (BAAM) are positively, significantly associated with higher values of return-on-average-equity (ROAE). On the other hand, the higher values of age, interaction of age and average-/low concentration (mHHIxAge, lHHIxAge), capital-fund-to-liabilities (CFL), market share (MS), burden-total-asset (BURDENTA), total earning asset to total asset (TEATA), and the gross domestic product per capita (GDPC) were significantly, negatively associated with a lower return on average equity. Hence, for European cooperative banks, a 1 unit increase in inflation and income diversification increased ROAE by 7% and 8%, respectively. The FEM rho of 0.84 explained the individual specific term, and the 0.16 is due to an idiosyncratic error. The FEM R^2 showed that FEM estimators could explain 67%, 17%, and 26% of within-, between-, and overall-variation, respectively.

The REM lambda (λ) is 59% which implies that the REM estimates get closer to the FEM estimates than the pooled OLS estimates.

4.6.3 Panel Data Analysis of European Savings Bank Return-on-Average-Equity (ROAE)

Table 10: The Panel Data Regression of European Savings Banks' Performance (2001-2014) using pooled OLS, fixed effects-, and random effects estimators, comparatively.

The dependent variable is ROAE. The Independent variable is the Herfindahl Hirschman Index (HHI).

Return on Average Equity	**Pooled OLS**		**REM**		**FEM**	
	Coeff.	**t**	**Coeff.**	**z**	**Coeff.**	**t**
No. of Group			432		432	
No. of Obs	5060		5060		5060	
F(25, 5034) =	46.29				F(25,4603)	42.97
Prob > F	0		0		0	
R-sq.	0.18					
R-sq.: wtn, btw, overall			0.16, 0.27 & 0.17		0.18, 0.03 & 0.003	
Root MSE & corr(u_i, Xb)	2.36 & NA		NA & 0 assumed		NA & -0.97	t
Age	0.001**	2.28			-0.08***	-4.08
hHHI	22.55***	6.95	10.22***	3.09	-41.27***	-5.85
mHHI	-839.21***	-4.97	-141.934	-0.91	-812.05***	-3.96
lHHI	14666.86***	3.52				
hHHIxAge	-0.09***	-3.28			0.14**	2.42
mHHIxAge					4.08***	2.56
lHHIxAge					56.59**	2
AT2004	0.55***	3.9	0.55***	4.59	0.41***	3.42
hHHIxAT2004	10.35***	3.63	6.33***	2.59		
LR	2.08***	4.89				
CFL	0.04**	2.34				
CI	-0.03***	-7.2			-0.04***	-7.09
Overheads	-0.000001***	-3.3				
NLTA	0.01***	3.44			-0.02**	-2.1
TA					0.0000002***	3.18
MS	388.43***	9.91	172.43***	2.87	-655.25***	-6.17
TEATA	0.04*	1.58				
AU	-3.56**	-2.07	-2.54*	-1.55		
CR	-20.42***	-4.6	-21.65***	-5.27	-23.93***	-5.65
GDPC	-0.0001***	-21.3	-0.0001***	-23.1	-0.0001***	-8.6
CPI	-0.11**	-2.01	-0.13***	-2.66	-0.21***	-4.33
_cons	8.68***	19.59	9.92***	19.88	17.05***	12.28
sigma_u, sigma_e, & rho			1.22, 1.95 & 0.28		7.16, 1.95 & 0.93	

Significance levels: *** 1%; ** 5%, *10%

The Hausman test (FEM vs. REM) is significant (Prob>chi^2 = 0.0000). Hence, the fixed-effect model (FEM) is a preferential model – Appendix 1 indicates the full (Hausman test, Breusch-Pagan LM test, and individual-specific effects) robustness results. The Breusch-Pagan LM test is significant (Prob > chibar^2= 0.0000). The FEM rho of 0.93 indicated that the individual effects dominate the idiosyncratic error in the FEM.

Interpretation of FEM due to significant Hausmann test – The result showed that the interaction of age and low-/medium-/high-concentration (1-5% significance level: lHHIxAge; mHHIxAge; hHHIxAge), antitrust policy (AT2004), and higher values of total assets (TA) are positively, significantly associated with higher values of return-on-average-equity (ROAE). On the other hand, higher values of age, medium-/high-concentration (mHHI; hHHI), cost-income ratio (CI), net-loan-to-total-assets (NLTA), market share (MS), credit risk (CR), GDP per Capita (GDPC), and inflation (CPI) are significantly, negatively associated with lower values of ROAE. Hence, for European Savings banks, a 1 unit increase in hHHIxAge interaction increased ROAE by 14% in FEM, and hHHIxAT2004 interaction also increased ROAE significantly in the REM analysis. The FEM rho of 0.93 explains the individual-specific term, and the 0.07 is due to an idiosyncratic error. The FEM R^2 showed that FEM estimators only explained 18%, 3%, and 0.3% of within-, between-, and overall-variation, respectively.
The REM lambda (λ) is 61% which implies that the REM estimates are getting moderately closer to the FEM estimates than the pooled OLS estimates.

4.6.4 Panel Data Analysis of European Co-operative Bank Managerial Slack (QLTTTA)

Table 11: The Panel Data Regression of European Cooperative Banks' Quiet Life (2005-2014) using pooled OLS, fixed effects-, and random effects estimators, comparatively.

QLTTTA	**Pooled OLS**		**REM**		**FEM**	
	Coeff.	**t**	**Coeff.**	**z**	**Coeff.**	**t**
No. of Group			1113		1113	
No. of Obs	9916		9916		9916	
F(23, 9892)	1893.51				F(23,8780)	1430.7
Prob > F	0					
R-sq.	0.82					
R-sq.: wtn, btw, overall			0.66. 0.83 & 0.80		0.79, 0.004 & 0.006	
Root MSE & corr (u_i, Xb)	0.006 & NA		NA & 0		NA & -0.99	
Age	-0.000004***	-2.82	-.00002***	-5.04	-0.003***	-72.12
hHHI	0.0003***	4.46	.0004***	8.13		
mHHI	-1.62***	-2.94	-2.29***	-4.43	1.88*	1.87
lHHI	25.58**	2.26			16.64**	2.42
hHHIxAge	-0.000002***	-3.05	-2.01e-06***	-4.18		
mHHIxAge	0.013*	1.92			-0.02**	-2.11
LR	0.01***	7.09	.01***	12	-0.004***	-4.48
CFL	-0.0001***	-4.52	-.001***	-11.91	0.0001***	2.73
CI	0.0003***	31.1	.0003***	26.73	0.0002***	24.46
Overheads	-0.000000001***	-8.94	-4.49e-10***	-2.45	-0.000000001***	-2.54
NLTA	0.0001***	20.74	.0001***	13.15		
TA	-0.0000000002***	-6.59	-9.50e-11**	-2.02		
MS	-0.37***	-2.81	-.86***	-3.14	1.76***	4.03
BURDENTA	0.26***	11.8	.18***	7.54	0.12***	5.59
TEATA	0.03***	61.38	.03***	41.09	0.03***	35.69
NEATA	0.27***	52.46	.28***	47.36	0.16***	29.48
AU	0.34***	15.1	.14***	7.1		
BAAM	0.0004***	5.02	.001***	5.84		
CR	0.22***	24.45	.14***	18.16	0.06***	10.28
GDPC	-0.000001***	-30.15	-6.37e-07***	-44.46	0.000001***	26.59
CPI	0.0024***	25.13	.002***	33.15	0.0001**	2.09
Fincrisis	-0.014**	-2.15	-.02***	-3.68	-0.01***	-2.57
_cons			.02***	3.41	0.21***	43.36
sigma_u, sigma_e, & rho			0.004, 0.004, & 0.57		.11, 0.004 & 0.99	

Significance levels: *** 1%; ** 5%, *10%

The dependent variable is QLTTTA. The Independent variable is the Herfindahl Hirschman Index (HHI). QLTTA is the ratio of Total interest expenses and Total non-interest expenses summation to Total assets.

The QLTTTA measures managerial slack and indulgence in a quiet life. QLTTTA is the ratio of total interest expenses and total non-interest-expenses-to-total-asset. The Hausman test (FEM vs. REM) is not significant (Prob>chi^2 = N.S.). Hence, the random effect model (REM) is a preferential model – Appendix 1 indicates the full (Hausman test, Breusch-Pagan LM test, and individual-specific effects) robustness results. The Breusch-Pagan LM test was not significant (Prob > chibar^2= 0.0000). Hence, the random effect model (REM) is preferentially chosen. The rho of 0.57 indicated that the individual effects moderately dominate the idiosyncratic error in the REM. The rho of 0.99 indicated that the individual effects dominated the idiosyncratic error in the FEM.

Interpretation of REM result for European cooperative banks - non-significant Hausmann test results. The result showed that the higher values of the liquidity risk (LR), high concentration (hHHI), cost-income ratio, net loan to the total asset (NLTA), burden ratio (BURDENTA), asset utilisation (AU), non-earning-asset-to-total asset (NEATA), total-earning-asset-to-total asset (TEATA), credit risk (CR), inflation (CPI), and income diversification (BAAM) are positively and significantly associated with higher values of managerial slack. On the other hand, old banks, higher values of medium-concentration interaction with age (mHHIxAge), the interaction of age and high HHI (hHHIxAge), capital-fund-to-liabilities (CFL), market share (MS), financial crisis (fin_crisis), and the gross domestic product per capita (GDPC) are significantly reduced managerial slack. A 1 unit increase in liquidity risk and NEATA increased managerial slack by 1% and 28% for European cooperative banks, respectively. Beneficially, a 1 unit increase in CFL, total assets, GDP per capita, and high-HHI to age interaction reduced managerial slack significantly. The REM rho of 0.57 explained the individual specific term, and the remaining 0.43 linked to idiosyncratic error. The REM R^2 showed that the REM estimators could explain 0.4%, 0.4%, and 57% of within-, between-, and overall-variation, respectively. The REM lambda (λ) is 73% which implies that the REM estimates were closer to the FEM estimates than the pooled OLS estimates.

4.6.5 Panel Data Analysis of European Savings Bank Managerial Slack (QLTTTA)

Table 12: The Panel Data Regression of European Savings Banks' Quiet Life (2001-2014) using pooled OLS, fixed effects-, and random effects estimators, comparatively.

The dependent variable is QLTTTA. The Main Independent variable is the Herfindahl Hirschman Index (HHI).

QLTTTA	Pooled OLS		REM		FEM	
	Coeff.	t	Coeff.	z	Coeff.	t
No. of Group			432		432	
No. of Obs	5085		5085		5085	
F(25, 5059) =	8088.67				F(25,4628)	480.16
Prob > F	0				0	
R-sq.	0.98					
R-sq.: within, between, overall			0.70, 0.99 & 0.97			
Root MSE & corr (u_i, Xb)	0.03 & NA		NA & 0 (assumed)		NA & -0.81	
Age	0.00002***	2.84			-0.004***	-14.72
hHHI	-0.18***	-3.91	-0.08*	-1.62	-0.89***	-9.44
mHHI	10.15***	4.35	5.38***	2.53	-18.21***	-6.69
lHHI	-151.73***	-2.63	-100.17**	-1.98	-114.31**	-2.28
hHHIxAge					0.01***	12.27
mHHIxAge	-0.03*	-1.73			0.18***	8.29
AT2004			-0.004***	-2.46	-0.01***	-6.07
LR	0.07***	11.1	0.04***	5.2		
ETA	-0.001**	-2.31	-0.003***	-6.37	-0.003***	-4.16
CFL			0.001**	1.93	0.002***	3.36
CI	-0.0004***	-6.42	-0.0004***	-6.22	-0.0004***	-5.83
Overheads			-0.00000003***	-3.09	-0.0000001***	-4.44
NLTA	-0.0003***	6.4			-0.0003***	-3.21
TA	-0.000000001**	-2.34			0.00000001***	6.94
BURDENTA	1.75***	64.45	1.71***	47.04	1.67***	38.78
TEATA	0.02***	53.52	0.02***	42.97	0.02***	37.17
NEATA	0.07***	10.02	0.09***	11.48	0.08***	10.1
AU	-0.45***	-18.8	-0.42***	-18.9	-0.43***	-18.59
CR	-0.38***	-6.2	-0.31***	-5.55	-0.38***	-6.76
GDPC	-0.000001***	-16.7	-0.000001***	-13.4	0.000001***	4.85
CPI	0.01***	9.77	0.01***	13.04	0.01***	8.13
_cons	0.05***	8.41	0.07***	9.85	0.33***	18.01
sigma_u, sigma_e & rho			0.02, 0.03 & 0.35		0.29, 0.03 & 0.99	

Significance levels: *** 1%; ** 5%, *10%

The Hausman test (FEM vs. REM) is significant (Prob>chi^2 = 0.0000). Hence, the fixed-effect model (FEM) is a preferential model – Appendix 1 indicates the full (Hausman test, Breusch-Pagan LM test, and individual-specific effects) robustness results. The Breusch-Pagan LM test is significant (Prob > chibar^2= 0.0000). The FEM rho of 0.99 indicated that the individual effects dominate the idiosyncratic error in the FEM.

Interpretation of FEM due to significant Hausmann Test – The result showed that the higher values of the interaction of age and medium-/high-concentration (1% significance level: hHHIxAge; mHHIxAge), capital-fund-to-liabilities (CFL), burden ratio, earning asset ratio (TEATA), non-earning asset ratio (NEATA), GDP per capita, inflation, and the total assets (TA) are positively and significantly associated with higher return-on-average-equity (ROAE). On the other hand, higher values of age, low-/medium-/high-concentration (lHHI; mHHI; lHHI), AT2004 antitrust policy, cost-income ratio (CI), net-loan-to-total-assets (NLTA), equity-total-asset (ETA), overhead, credit risk (CR), asset utilisation (AU) are significantly, negatively associated with lower values of QLTTTA. According to the FEM result, a 1 unit increase in asset utilisation and credit risk significantly reduced managerial slack - QLTTTA. The FEM rho of 0.99 explains the individual-specific term, and the 0.01 is due to an idiosyncratic error. The FEM R^2 showed that FEM estimators only explained 8%, 0.2%, and 0.2% of within-, between-, and overall-variation, respectively. The REM lambda (λ) is 66% which implies that the REM estimates are getting moderately closer to the FEM estimates than the pooled OLS estimates.

4.6.6 Country Level Empirical findings

The tables of findings in (external) Appendix 2.

4.6.6.1 Interpretation of Random Effect Modelling due to non-significant Hausmann Test (Austrian Banks)

The non-significance (Prob>chi^2 = N.S.) of the Hausman test (FEM vs. REM) implied that the random effect model (REM) is a preferential model. The significance of the Breusch-Pagan Lagrange multiplier test significance (Prob > chibar^2= 0.0000) implied that the random effect model (REM) is preferentially chosen. The REM rho of 0.15 indicated that the individual-specific effects do not dominate the idiosyncratic error in the REM. The result showed that the higher values of lHHI, total assets, asset utilisation (AU), non-earning-asset-to-total asset (NEATA), credit risk (CR), inflation (CPI), and income diversification (BAAM), and GDP per capita are positively, significantly associated with higher profitability. On the other hand, the higher values of cost-income ratio (CI), the interaction of age and average-concentration (mHHIxAge), net-loan-total assets (NLTA), market share (MS), burden-total-asset (BURDENTA), total earning asset to total asset (TEATA), inflation (CPI), and the financial crisis were significantly, negatively associated with reduced return on average equity. Hence, for Austrian banks (cooperative, commercial, and savings-banks), a 1 unit increase in the cost-income ratio, NLTA, and CPI significantly minimised ROAE by 19%, 3%, and 47%, respectively. The REM rho of 0.15 explains the individual specific term, and the remaining 0.85 is due to an idiosyncratic error. The REM R^2 showed that REM estimators could explain 43%, 56%, and 48% of within-, between-, and overall-variation, respectively. The REM lambda (λ) of 50% implied that the REM estimates were averagely closer to the FEM estimates than the pooled OLS estimates.

4.6.6.2 Interpretation of pooled Ordinary Least Square due to Non-Significant Difference between Hausmann Test and Breusch-Pagan Lagrange Multiplier test (Belgian banks)

The non-significance of the Hausman test (Prob>chi^2 = N.S.) and the estimations from the random-effect model produced no results meant that the pooled ordinary least square is a preferential model to explain our findings. The result showed that the higher values of total assets, asset utilisation, and market share are positively, significantly associated with higher values of return-on-average-equity. On the other hand, the higher values of cost-income ratio and credit risk were significantly and negatively associated with lower performance. Hence,

for Belgian banks (comprising cooperative and commercial banks), a 1 unit increase in market share and asset utilisation significantly raised ROAE by 14% and 31%, respectively.

4.6.6.3 Interpretation of pooled Ordinary Least Square due to non-significant Hausmann Test and Breusch-Pagan Lagrange Multiplier test (Bulgarian Commercial Banks)

The non-significance of the Hausman test (Prob>chi^2 = N.S.) and the estimations from the random-effect model produced no result. Hence, the pooled ordinary least square preferentially explained findings. The result showed that the higher values of total assets, asset utilisation (AU), total earning asset ratio, non-earning asset ratio, and GDP per capita are positively and significantly enhanced the return-on-average-equity (ROAE). On the other hand, the higher values of credit risk and the financial crisis period were significantly reduced ROAE. Hence, a 1 unit increase in total assets, total earning asset ratio, and non-earning asset ratio for Bulgarian commercial banks significantly increased ROAE.

4.6.6.4 Interpretation of Fixed Effect Model due to significant Hausmann Test (Croatia Commercial Banks)

The Hausman test is significant (Prob>chi^2 = 0.0000). Hence, the fixed-effect model (FEM) is a preferential model. The rho of 0.42 indicated that the individual effects do not dominate the idiosyncratic error in the fixed-effect model. The result showed that the higher values of total earning asset ratio, asset utilisation, and CPI are positively, significantly associated with higher values of ROAE. On the other hand, the higher values of the cost-income ratio, burden ratio, and credit risk (CR) are significantly, negatively associated with lower values of ROAE. Hence, for Croatian commercial banks, a 1 unit increase in cost-income ratio significantly reduces ROAE by 63%. The FEM rho of 0.42 explains the individual-specific term, and the 0.58 is due to an idiosyncratic error. The FEM R^2 showed that FEM estimators only explained 62%, 34%, and 48% of within-, between-, and overall-variation, respectively.

4.6.6.5 Interpretation of Fixed Effect Model due to significant Hausmann Test (Cyprus Commercial Banks)

The Hausman test (FEM vs. REM) is significant (Prob>chi^2 = 0.0000). Hence, the fixed-effect model (FEM) is a preferential model. The Breusch-Pagan LM test is not significant (Prob > chibar^2= 1.0000). Hence, the random effect model (REM) is preferentially chosen. The rho of 0.99 indicated that the individual effects dominated the idiosyncratic error in the FEM. The

result showed that higher high concentration values, a capital fund to liabilities, burden ratio, asset utilisation, GDP per capita, and financial crisis were positively and significantly associated with greater ROAE. On the other hand, the interaction of age and high-concentration, antitrust policy, greater capital strength (ETA), cost-income ratio, liquidity risk, and net loan to total assets significantly reduced ROAE. Hence, a 1 unit increase in cost-income ratio and net-loan-to-total-asset for Cyprus commercial banks significantly reduced ROAE by 51% and 27%, respectively. The FEM rho of 0.99 explains the individual-specific term, and the 0.01 is due to an idiosyncratic error. The FEM R^2 showed that FEM estimators only explained 95%, 75%, and 11% of within-, between-, and overall-variation, respectively.

4.6.6.6 Interpretation of pooled Ordinary Least Square due to non-significant Breusch Pagan Lagrange Multiplier Test (Czech-Republic commercial banks)

The Hausman test (FEM vs. REM) remained non-significant (Prob>chi^2 = N.S.). Hence, pooled OLS remained the preferential model due to the non-significant Breusch-Pagan Lagrange Multiplier test (Prob > $chibar^2$= 1.0000). Our result showed that the higher values of burden ratio, total earning asset ratio, non-earning asset ratio, asset utilisation, income diversification, and credit risk significantly resulted in higher values of ROAE. On the other hand, the higher values of the capital fund to liabilities, net loan to total asset, and financial crisis significantly reduced ROAE. Hence, for Czech-Republic commercial banks, a 1 unit increase in capital fund to liabilities and net loan to total asset significantly reduced ROAE by 15% and 16%, respectively.

4.6.6.7 Interpretation of Fixed Effect Model due to significant Hausmann Test (Danish Banks)

The Hausman test is significant (Prob>chi^2 = 0.0000). Hence, the fixed-effect model (FEM) is a preferential model. The FEM rho of 0.59 indicated that the individual effects dominate the idiosyncratic error in the REM. The result showed that the higher values of age, liquidity risk, total earning asset ratio, non-earning asset ratio, cost-income ratio, income diversification, asset utilisation, and financial crisis are positively and significantly associated with higher values return-on-average-equity (ROAE). Hence, for Danish commercial and savings banks, a 1 unit increase in age, cost-income, and income diversification significantly increased ROAE by 6%, 6%, and 26%, respectively. The FEM rho of 0.59 explained the individual specific term, and the 0.41 is due to an idiosyncratic error. The R^2 showed that the FEM estimators only explained 92%, 62%, and 83% of within-, between-, and overall-variation, respectively. The REM

lambda (λ) is 9%, implying that the REM estimates were closer to the pooled ordinary least square estimates than the fixed effect estimates.

4.6.6.8 Interpretation of pooled Ordinary Least Square due to non-significant Hausmann Test and Breusch Pagan Lagrange Multiplier Test (French Banks)

The higher values of asset utilisation are significantly associated with enhanced return-on-average equity (ROAE). The pooled OLS result showed that the higher values of asset utilisation were positively and significantly associated with the higher value of ROAE.

4.6.6.9 Interpretation of Fixed Effect Model due to significant Hausmann Test (German Banks)

The fixed-effect model remained a preferential model due to the significant Hausman test result. The Breusch-Pagan Lagrange Multiplier test is significant (Prob > chibar^2= 0.0000). Hence, the random effect model (REM) is preferentially chosen. The rho of 0.75 indicated that the individual effects dominate the idiosyncratic error in the FEM. The result showed that the higher values of low concentration, liquidity risk, net loan to total asset, non-earning asset ratio, market share, asset utilisation, and inflation significantly enhanced return-on-average equity (ROAE). On the other hand, higher values of high-concentration-age interaction, high-/medium-concentration (hHHI, mHHI), age, cost income, burden ratio, income diversification, and financial crisis dummy significantly reduced ROAE. Hence, for German banks (i.e., cooperative, commercial, and savings), a 1 unit increase in hHHI and financial crisis significantly reduced ROAE by 98% and 35%. The FEM rho of 0.75 explained the individual-specific term, and the 0.25 linked to idiosyncratic error. The FEM R^2 showed that the estimators only explained 18%, 1%, and 2% of within-, between-, and overall-variation, respectively. The REM lambda (λ) of 66% implied that the REM estimates were getting closer to the FEM estimates than the pooled ordinary least square estimates.

4.6.6.10 Interpretation of pooled Ordinary Least Square due to significant Hausmann Test (Hungarian Commercial Banks)

The Hausman test is significant (Prob>chi^2 = N.S.). Hence, the fixed-effect model (FEM) is a preferential model. The Breusch-Pagan Lagrange Multiplier test is significant (Prob > chibar^2= N.S.). Hence, the random-effect model (REM) is preferentially chosen. The FEM rho of 0.59 indicated that the individual effects dominated the idiosyncratic error of the random effect model. The result showed that the higher values of high-/low-concentration, age, total assets,

asset utilisation, and financial crisis dummy significantly enhanced return-on-average-equity (ROAE). On the other hand, higher values of age-hHHI interaction, age-mHHI interaction, income diversification, and GDP per capita significantly reduced ROAE. Hence, a 1 unit increase in age and asset utilisation for Hungarian commercial banks significantly reduced ROAE. The FEM rho of 0.63 explained the individual-specific term, and the 0.37 is due to an idiosyncratic error. The R^2 showed that FEM estimators only explained 90%, 59%, and 81% of within-, between-, and overall-variation, respectively.

4.6.6.11 Interpretation of Fixed Effect Model due to non-significant Hausmann Test (Italian Cooperative Banks)

The Hausman test (FEM vs. REM) is not significant (Prob>chi^2 = N.S.). Hence, the random-effect model (REM) is a preferential model. The Breusch-Pagan LM test is significant (Prob > $chibar^2$= 0.0000). Hence, the random effect model (REM) is preferentially chosen. The rho of 0.45 indicated that the individual effects do not dominate the idiosyncratic error in the REM. The result showed that higher values of total assets, cost-income ratio, total earning asset ratio, non-earning asset ratio, asset utilisation, and financial crisis dummy were significantly linked to higher returns-on-average equity (ROAE). On the other hand, the higher values of age-hHHI interaction, low-concentration (lHHI), credit risk, burden ratio, and GDP per capita (GDPC) significantly reduced ROAE. Hence, a 1 unit increase in total earning asset ratio, asset utilisation, and total assets significantly increased Italian cooperative banks' ROAE. The REM rho of 0.45 explained the individual-specific term, and the 0.55 is due to an idiosyncratic error.

4.6.6.12 Interpretation of pooled Ordinary Least Square due to non-significant Breusch Pagan Lagrange Multiplier test (Lithuanian commercial banks)

The result showed that the higher value of total assets, total earning asset ratio, non-earning asset ratio, asset utilisation, and GDP per capita are significantly linked to higher values of return-on-average equity (ROAE). On the other hand, the higher values of age, liquidity risk, and net loan to total asset significantly reduced ROAE. Hence, for Lithuanian commercial banks, a 1 unit increase in net loan to total asset and age significantly decreased ROAE by 34% and 125%, respectively.

4.6.6.13 Interpretation of Fixed Effect Model due to significant Hausmann Test (Luxembourg Commercial Banks)

The fixed-effect model (FEM) remained a preferential model due to the significant (Prob>chi^2 = 0.0000) Hausman test. The Breusch-Pagan LM test is significant (Prob > chibar^2= 0.0000). Hence, the random effect model (REM) is preferentially chosen. The FEM rho of 0.55 indicated that the individual effects averagely dominate the idiosyncratic error. The result showed that the higher values of low concentration, liquidity risk, and asset utilisation significantly enhanced return-on-average-equity (ROAE). On the other hand, the higher values of the cost-income ratio, burden ratio, capital strength, inflation, and GDP per capita significantly reduced ROAE. Hence, for Luxembourg commercial banks, a 1 unit increase in cost-income ratio and inflation significantly increased ROAE by 12% and 82%, respectively. The FEM rho of 0.55 explains the individual-specific term, and the 0.45 is due to an idiosyncratic error. The FEM R^2 showed that the estimators only explained 64%, 59%, and 60% of within-, between-, and overall-variation, respectively. The REM lambda (λ) is 47% implied that the REM estimates are averagely closer to the FEM estimates.

4.6.6.14 Interpretation of Fixed Effect Model due to significant Hausmann Test (Romanian commercial banks)

The fixed-effect model (FEM) remained a preferential model due to the significant (Prob>chi^2 = 0.0000) Hausman test. The Breusch-Pagan LM test is not significant (Prob > chibar^2= 1.0000). The FEM rho of 0.71 indicated that the individual effects dominate the idiosyncratic error in the FEM. The result showed that the higher values of total asset and asset utilisation are positively, significantly associated with higher returns-on-average-equity (ROAE). On the other hand, the higher values of credit risk are significantly negatively associated with lower values of ROAE. Hence, a 1 unit increase in asset utilisation for Romanian commercial banks significantly increased ROAE. The FEM rho of 0.71 explains the individual-specific term, and the 0.29 is due to an idiosyncratic error. The FEM R^2 showed that FEM estimators only explained 86%, 28%, and 62% of within-, between-, and overall-variation, respectively.

4.6.6.15 Interpretation of pooled Ordinary Least Square due to the non-significant Hausmann Test and Breusch Pagan Lagrange Multiplier Test (Slovakian commercial banks)

The Hausman test (FEM vs. REM) and the BPLM test are not significant (Prob>chi^2 = N.S.). Hence, the pooled OLS preferentially explained the results. The result showed that the higher

values of total assets and net loan to total assets significantly enhanced return-on-average-equity. On the other hand, the higher values of burden ratio, TEATA, NEATA, asset utilisation, GDP per capita, and credit risk are significantly, negatively associated with lower values of ROAE. Hence, for Slovakian commercial banks, a 1 unit increase in credit risk, BURDENTA and NEATA significantly decreased ROAE.

4.6.6.16 Interpretation of pooled Ordinary Least Square due to non-significant Hausmann Test and Breusch Pagan Lagrange Multiplier tests (Slovenian Commercial Banks)

The Hausman test (FEM vs. REM) and the BPLM test are not significant (Prob>chi^2 = N.S.). Hence, the pooled OLS is a preferential model to explain. The result showed that the higher values of asset utilisation are positively, significantly associated with higher values of return-on-average-equity (ROAE). On the other hand, the higher values of ETA and credit risk are significantly negatively associated with lower values of ROAE. Hence, for Slovenian commercial banks, a 1 unit increase in credit risk significantly decreased ROAE.

4.6.6.17 Interpretation of Random Effect Model due to non-significant Hausmann Test (Spanish co-operative banks)

The Hausman test (FEM vs. REM) is not significant (Prob>chi^2 = N.S.). Hence, the random effect model (REM) is a preferential model. The Breusch-Pagan LM test is significant (Prob > chibar2= 0.0000). Hence, the random effect model (REM) is preferentially chosen. The rho of 0.38 indicated that the individual effects do not dominate the idiosyncratic error in the REM. The REM rho of 0.47 indicated that the individual effects averagely dominate the idiosyncratic error in the FEM. The result showed higher values of medium-concentration, lHHIxAge-Interaction (OLS), liquidity risk, cost-income ratio, burden ratio, total earning asset ratio, non-earning asset ratio, asset utilisation, credit risk, and inflation positively and significantly increased return-on-average-equity (ROAE). On the other hand, the higher values of high-, and low-concentration significantly reduced ROAE. Hence, for Spanish cooperative banks, a 1 unit increase in asset utilisation and inflation significantly increased ROAE. The REM rho of 0.38 explained the individual-specific term, and the 0.62 linked to idiosyncratic error. The R^2 showed that FEM estimators only explained 88%, 74%, and 83% of within-, between-, and overall-variation, respectively. The REM lambda (λ) is 63% implied that the REM estimates are getting closer to the FEM estimates than the pooled OLS estimates.

4.6.6.18 Interpretation of Fixed Effect Model due to significant Hausmann Test (Swedish savings banks)

The fixed-effect model (FEM) remained a preferential model due to the significant Hausman test. The FEM rho of 0.99 indicated that the individual effects dominate the idiosyncratic error. The result showed that the higher values of low-concentration, cost-income ratio, credit risk, cost-income ratio, asset utilisation, and GDP per capita significantly enhanced the return-on-average-equity (ROAE). On the other hand, higher age and antitrust policy values, total asset, burden ratio, total earning asset ratio, non-earning asset ratio, inflation, and financial crisis significantly reduced ROAE. Hence, for Swedish savings banks, 1 unit increase in age, non-earning ratio, burden ratio, financial crisis dummy, and inflation significantly decreased ROAE. The FEM rho of 0.99 explains the individual-specific term, and the 0.01 is due to an idiosyncratic error. The FEM R^2 showed that the estimators only explained 77%, 1.2%, and 3% of within-, between-, and overall-variation, respectively.

4.6.6.19 Interpretation of Random Effect Model due to non-significant Hausmann Test (UK commercial banks)

The random-effect model (REM) remained a preferential model due to the non-significant (Prob>chi^2 = N.S.) Hausman test and the Breusch-Pagan LM test also confirmed this. The REM rho of 0.10 indicated that the individual effects do not dominate the idiosyncratic error. The result showed that the higher values of Age, liquidity risk, burden ratio, asset utilisation, and income diversification significantly improved return-on-average-equity (ROAE). On the other hand, the higher values of high-concentration-age interaction, capital strength, cost-income ratio, earning asset ratio, and non-earning asset ratio significantly reduced ROAE. Hence, for United Kingdom commercial banks, a 1 unit increase in cost-income and non-earning asset ratios significantly decreased ROAE. The REM rho of 0.10 explained the individual specific term, and the 0.90 is due to an idiosyncratic error. The R^2 showed that the REM estimators only explained 58%, 88%, and 68% of within-, between-, and overall-variation, respectively. The REM lambda (λ) of 42% implied that the REM estimates were not closer to the FEM estimates than the pooled OLS estimates.

5.0 The moderating effect of anti-trust policy on the relationship between concentration and bank performance in North America

5.1 Introduction

The financial intermediaries played a major role in promoting economic growths by converting deposits into productive investments (Levine, 2000). Several papers used the GDP growth rate, Federal Reserve discount rate, and inflation as determinants of bank performance (Alper and Anbar, 2011; Ommeren, 2011; Staikouras, 2008). The Cunat and Guadalupe (2009) study looks at the impact of competition on the slopes of the compensation package and fixed components of pay. The study found no special measures of product market competition but emphasised that competition can be increased through deregulation. However, large-scale deregulation, financial market complexity, and opaqueness enhanced banks excessive risk-taking and raised bank financial leverage unsustainably, leading up to the last global bank crisis (Crotty, 2009). Since the 2007-2009 financial crisis, the bank concentration had increased significantly in the United States and the United Kingdom (Rao-Nicholson and Salaber, 2016). Most consolidation in the banking industry had been driven by episodes of the banking crisis in some countries (Berger et al., 2000; Soussa, 2004).

The previous study had explored the relationship between regulation and competition (Singleton and Verhoef, 2010). The governments can best refrain from bailing out too-big-to-fail (TBTF) financial institutions by splitting up the largest financial institutions before becoming TBTF (Macey and Holdcroft Jr., 2011). The optimal level of bank concentration is subject to cross-country heterogeneity in terms of regulation and the level of financial development (Beck et al., 2013). The intermediate level of bank concentration is optimal for bank profitability and financial stability (Cacile et al., 2021). Canada's anti-competitive behaviour is regulated via the Competition Act, the Bank Act, and securities laws. The merger and acquisitions during the 1867-1935 period had enabled the Canadian banking system to a highly concentrated banking system that reduced systemic risk at the same time (Chu, 2015).

The United States Antitrust Laws

The United States regulators set the criteria for market entry in the banking industry and enforced compliance with the minimum capital requirements and liquidity rules (Valdez, 2007). The Federal Reserve, the Controller of Currency, the FDIC (Federal Deposit Insurance Corporation), and the Federal Home Loan Bank System played a major control role in the banking industry (Stojanovic et al., 2008; Ashcraft et al., 2010). The United States competition

laws aimed to ensure fair prices for the consumer, improve product and service quality, provide more choices, and enhance innovation. The Federal Trade Commission (FTC) ensured that the principles of a competitive marketplace are adhered to by protecting clients from anti-competitive mergers and business practices (Stucke, 2008).

- Sherman Act (1890)
- Federal Trade Commission Act (1914)
- Clayton Act (1914)

The non-bank financial providers had been a threat to the bank antitrust analysis. The first antitrust law in the United States can be dated back to 1890, called the Sherman Act. Antitrust enforcement is the process of creating a better competitive environment by restricting business practices that were termed illegal by antitrust laws (Ghosal, 2011). On the 4th of January 2002, AAG James introduced the modernization of the antitrust division to address new industries, network competition, and other emerging trends in the economy (OECD, 2002). In addition, the Commission's Bureau of Competition created three new task forces, such as the Litigation Task Force, State Action Doctrine, and the Noerr-Pennington Doctrine, with the goals of challenging consummated transactions that may result in anti-competitive price increase. The task forces focused on antitrust enforcement, amicus briefs, and competition advocacy (OECD, 2002).

Canada Antitrust Laws

- **Competition Act**

The investment linked to foreign investment is usually subject to review under the Competition Act, and certain business combinations were usually subject to advance notification requirements (Koch et al., 2021). The Canadian pre-merger process is synonymous with that of the United States, and the amendment to the Canadian Competition Act started in 1986 (Holsten, 2012). The Canadian competition law reforms focused on areas where agreements between competitors, abuse of dominant position, resale price maintenance, merger, and acquisitions occurred. The agreement between the competitors can be hardcore cartel agreements and other agreements that limit competition substantially. Section 77 of the Competition Act prohibited tied selling whereby a firm conditioned the sale of one product or service upon purchasing another. The purpose of the Competition Act is to protect the customer against both anti-competitive business practices and relationship pricing and increase efficiency (Tsiakos, 2020). The Canadian Competition Act represented the oldest antitrust

Statutes in the Western world because it was enacted in 1889 to prohibit price-fixing, resale price maintenance, price discrimination, and predatory pricing (Berlault and Borgers, 2004).

5.2 Literature Review

The relationship between size and earning volatility [proxied by the standard deviation of return on assets] of United States bank holding companies during the 1971-1990 period remained inverse (Boyd and Runkle, 1993). At the same time, the Stiroh (2004) study found no relationship. The Cetorelli and Strahan (2006) study examined how competition in the local United States banking industry influenced the market structure of non-financial firms. The study's outcome confirmed that the increasing bank concentration restricted access to credit compared to a market with more competitive banking environments. The De Haan and Poghosyan (2012) empirical study of United States bank earnings volatility showed that the highly capitalized banks in concentrated markets experienced higher earnings volatility during the 2007-09 financial crisis. Many studies have shown that excessive earning volatility led to unstable capital structure and deterioration of bank soundness (Couto, 2002; Albertazzi and Gambacorta, 2009). The structural pattern of United States bank concentration over nearly 200 years [1820-2019] remained U-shaped (Fohlin and Jaremski, 2020).

5.2.1 Theoretical Framework

The positive relationship between capital and profit is confirmed by the bankruptcy cost hypothesis and signaling hypothesis (Bourke, 1989; Berger, 1995). The expected bankruptcy costs assumed that the higher level of external indicators was linked to an increasing expected bankruptcy cost (Berger, 1995). The signaling hypothesis assumed that the asymmetric informational problems allowed CEOs to have extra information than other stakeholders about future cash flows and earnings. However, the excessive capital ratio level indicated that the bank conservatism ignored certain investment opportunities. The Berger et al. (1995) study also highlighted that the reverse causality could potentially occur between the bank performance and the capital adequacy ratio. Hence, the increasing optimal capital adequacy ratio and the higher expected bankruptcy cost reduced the probability of failure (Li et al., 2016). The banks utilised their available discretion to engage in opportunistic earning and capital management to reduce transparency and regulatory monitoring (Liu and Ryan,2006; Beatty and Liao, 2011; Bushman and Williams, 2012). The bank agency problems can be linked to

bank executives reaping private benefits of managerial slack from their franchises with reduced incentives to support greater financial reporting transparency (Hodder and Hopkins, 2014).

Many agency problems associated with a lender-borrower relationship can be minimised traditionally using bonding, screening, and signaling (Berger and Udell, 1995; 1998). The lender-borrower relationship of Canadian banks had no impact on lending decisions to changes in borrowing terms. The Canadian banking system is highly concentrated (Johan and Wu, 2014), which contrasts the banking industry in the United States (Zhang et al., 2013). The lack of effective oversight on borrowers can be linked to shareholders-bank executive conflicts in the future and this exemplified bank concentration that failed in monitoring duty. The antitrust laws considered in this study provided governance reforms and regulatory re-alignments to combat managerial slack, reduce unproductive capitalisation and non-performing assets.

5.3 Impact of Macro-economic factors on North America Commercial Banks

In the last 130 years, the United States economy has experienced a wave of economic growth as indicated below: the financial sector share of the gross domestic product rose in the 1920s, reduced in the 1960s, and surge after 1980 (Philippon, 2015). The changes in the gross domestic products are driven by changes in the amount of intermediated assets by financial institutions such as stock, consumer, corporate debts, and liquidity. The cost of intermediation rose during a poor economic outlook, recession, and systemic risk (Cebula et al., 2016). Recent studies also showed that a decline in the likelihood of United States bank failures over the 1970-2014 period could be attributed to the percent growth in real GDP and the real interest rate yields on both short-term US Treasury bills and 30-year fixed-rate mortgages.

A study showed that the broadened-inflation-targeting monetary policy benchmark rather than the consumer price index (CPI) matter for greater macro-economic stability (Shah and Ahmad, 2017). The CPI covered certain living costs but excluded asset prices (Mankiw and Reis, 2003; Goodhart, 2001). The Canadian economy experienced two major recessions [1991/1992 and 2008/09] before 2020 (Champagne et al., 2020). The study of OECD countries showed that financial depth is counterproductive for economic growth when credit to private sectors approaches 100% of GDP (Arcand et al., 2015). In the United States, the shadow banking system had created a system whereby total credit to the private sector was four times the credit extended to the private sector by deposit-taking institutions. The study showed that credit

finance at 80-120% of GDP had been recognised to negatively affect economic growth (Arcand et al., 2015). A recent study showed that the bank equity returns were adversely affected by sovereign credit rating downgrades for 37 countries between 1995 and 2011 (Correa et al., 2014).

5.4 Internal Determinants of Northern American Bank Performance

We examined mostly the same sets of explanatory variables as in Chapter 4. Gomez and Ponce (2012) study found an inverted U-shaped relationship between the United States bank competition and the mean of loan quality. The quality of the bank loan portfolio will play a crucial role in bank stability and profitability (Goetz, 2018). The Alali and Romero (2013) study found that the United States banks with higher loan to assets and high personal loans to asset ratios were more likely to survive bank failures. The banks in North America also face the dilemma of adverse selection and moral hazard problems like the European banks. Calmes and Theoret's (2015) study found that the increasing involvement of commercial banks in off-balance-sheet activities enhanced United States bank performance, less diversifiable credit, and shocks. However, the Canadian bank returns remained volatile and procyclical because of their dominance in investment banking services.

The banks with a higher level of Tier-1-capital had reduced risk and were better positioned to cope with market-wide default risk, contagion risk, and asset-backed funding illiquidity (Leung et al., 2015). Previous studies showed that non-performing-loan significantly increased the United States bank-holding-companies risk threefold during the recent financial crisis (Leung et al., 2015). Many researchers also linked managerial shareholding (Demsetz et al., 1997; Anderson and Fraser, 2000), capital requirements (Konishi and Yasuda, 2004), board structure and CEO power (Pathan, 2009), and franchise value (Keeley, 1990, Anderson and Fraser, 2000) to bank stock volatility. Although some European bank sold their non-performing loans to foreign banks to boost banking industry efficiency in the country, the role of antitrust laws in increasing bank competition locally and avoiding systemic risk cannot be underestimated.

Many researchers have examined the effects of off-balance-sheet-activity and market-based fees on bank profits (Stiroh, 2004; De Jonghe, 2010; Calmes and Theoret, 2010; 2013a,b). The bank fee-based activity that is not too divergent from traditional banking services linked to improved bank profitability in earlier studies (Gallo et al., 1996; Vander Vennet et al., 2004; Busch and Kick, 2009). However, high-risk off-balance-sheet banking services (such as trading and capital market fees) significantly increased bank equity volatility, especially during the

financial crisis (Stiroh and Rumble, 2006; Calmès and Théoret, 2012). As a result, US banks have a higher fee-related income level than Canadian banks.

5.5 Industry-related factors affecting North American Commercial Banks

The prevalence of scale economies and geographical diversification in the banking industry has gained popularity in recent decades (Berger and Hannan, 1998; Berger and Mester, 1997; Liang and Rhoades, 1988). Reduced the United States bank branching cost [permitted by the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994] allowed banks to open across regional states (Aguirregabiria et al., 2016). However, the deregulatory measures increased the consolidation of insured deposit funding for top-four United States commercial banks from 15% to 44% during the 1984-2018 period (Corbae and D'Erasmo, 2020). The industry-related factor considered in this study is similar to the bank concentration measure in the previous chapter. Fin_crisis is a financial crisis dummy used to assess the impact of the 2007-2009 financial crisis on bank performance.

5.6 North American Model Specification and Variables Explained

The panel data utilised cross-sectional and time-series data of North-American commercial banks from Bankscope. The panel data managed the unobservable, constant, and heterogeneous characteristics of individual banks. The panel data estimation technique helped control the individual heterogeneity of the observations (Baltagi, 2005; Lopez, 2005).

5.7 Empirical Analysis

5.7.1 Panel Data Analysis of United States Commercial Bank Return on Average Equity

Table 13: The Panel Data Regression of United States Commercial Banks' Performance (1995-2015) using pooled OLS, fixed effects-, and random effects estimators, comparatively.

The dependent variable is the return on average equity. The Independent variable is the Herfindahl Hirschman Index (HHI).

Return on Average Equity	Pooled OLS		REM		FEM	
	Coeff.	t	Coeff.	z	Coeff.	t
No. of Group			6161		6161	
No. of Obs	89396		89396		89396	
F(27, 89368)	15082.09				F(27,83208)	13907.98
Prob > F	0		0		0	
R-sq.	0.82					
R-sq.: wtn, btw, overall			0.82, 0.83 & 0.81		0.82, 0.82 & 0.80	
Root MSE and corr(u_i, Xb)	3.96 & NA		NA & 0 assumed		NA & -0.02	
Age	0.001**	2.12	0.001*	1.82		
hHHI	0.000004*	1.74	0.000004**	2.34	3.92e-06**	2.29
mHHI			19.75*	1.68	28.52**	2.16
lHHI			-124.19*	-1.67	-164.19**	-1.97
hHHIxAge	-0.00000003*	-1.54	-0.00000003**	-1.96	-2.93e-08**	-1.9
AT2002	0.13**	1.98	0.13**	2.4	0.12**	2.27
AT2002xhHHI	0.11***	4.58	0.07**	3.51	0.06***	3.15
LR	-0.44***	-39.34	-0.39***	-33.69	-0.37***	-29.91
ETA	-0.93***	-52.52	-0.65***	-36.33	-0.57***	-30.97
CFL	0.40***	32.31	0.36***	29.03	0.36***	27.79
CI	0.005***	3.96	0.01***	4.55	0.01***	4
Overheads	-0.00001***	-10.22	-0.0000***	-11.25	-.00001***	-8.88
NLTA	-0.0113***	-11.65	-0.01***	-6.65	-.01***	-7.33
TA			-0.0000001***	-2.66	-2.05e-0***	-4.06
MS	808.29**	2.22	3265.35***	9.36	5057.40***	12.14
BURDENTA	17.17***	7.59	-7.97***	-3.06	-20.83***	-7.42
Fin_crisis	-0.35***	-6.21	-0.38***	-8.41	-.35***	-6.76
NEATA	-4.17***	-16.65	-4.10***	-16.85	-3.88***	-15.5
AU	744.89***	351.44	729.19***	362.1	726.40***	351.07
BAAM	-0.009**	-2.12	-0.009***	-2.59	-.009***	-2.58
CR	-0.07***	-4.18	-0.07***	-5.28	-.07***	-5.14
GDPC	0.0001***	12.02	0.00005***	12.18	.00006***	2.72
CPI	0.06***	3.76	0.06***	5.15	.056***	4.76

GDGDP	-0.01***	-3.85	-0.007***	-4.05	-.01***	-2.31
_cons	4.48***	22.1	2.71***	14.04		
sigma_u, sigma_e & rho			2.39, 3.13 & 0.37		2.94, 3.13 & 0.47	
Significance levels: *** 1%; ** 5%, *10%						

The Hausman test (FEM vs. REM) is significant (Prob>chi2 = 0.0000). Hence, the fixed-effect model (FEM) is a preferential model – Appendix 1 indicates the full (Hausman test, Breusch-Pagan LM test, and individual-specific effects) robustness results. The Breusch-Pagan LM test is significant (Prob > chibar2= 0.0000). The FEM rho of 0.47 indicated that the individual effects averagely dominate the idiosyncratic error in the FEM.

Interpretation of fixed effect model due to significant Hausman Test – The result showed that the higher values of medium-/high-concentration, antitrust law [AT2002], the interaction of antitrust law and high-concentration (1% significance level: hHHIxAT2002), capital funding to liabilities, cost income, market share, asset utilisation, GDP per capita, and inflation significantly enhanced return-on-average-equity. On the other hand, the higher values of high-concentration-age, interaction, low-concentration (lHHI), liquidity risk, capital strength, overheads, net loan to total asset, total asset, burden ratio, financial crisis, non-earning asset ratio, income diversification, credit risk, and central government debt percentage of GDP (GDGDP) significantly reduced ROAE. Hence, for United States commercial banks, a 1 unit increase in hHHIxAT2002 interaction and capital funding to liabilities ratio increased ROAE by 6% and 36%, respectively. The FEM rho of 0.47 explained the individual-specific term, and the 0.53 related to the idiosyncratic error. On the other hand, the FEM R^2 showed that the estimators only explained 82%, 82%, and 80% of within-, between-, and overall-variation, respectively.

The REM lambda (λ) of 69% implied that the REM estimates got closer to the FEM estimates than the pooled OLS estimates.

5.7.2 Panel Data Analysis of United States Commercial Bank Managerial Slack

Table 14: The impact of Industry related concentration and bank-specific factors on United States commercial bank managerial slack (QLTTTA).

Panel Data Regression of United States Commercial Banks (1995-2015) using pooled OLS, fixed effects-, and random effects estimators, comparatively. The dependent variable is QLTTTA [Total interest expenses + Total non-interest expenses)/Total assets]. The Independent variable is the Herfindahl Hirschman Index (HHI).

QLTTTA	Pooled OLS		REM		FEM	
Variables	Coeff.	t	Coeff.	z	Coeff.	t
No. of Group			6161		6161	
No. of Obs	89396		89396		89396	
F(27, 89368) =	3903.28				F(27,83208) =	4991
Prob > F	0		0		0	
R-sq.	0.54					
R-sq.: wtn, btw, overall			0.61, 0.40 & 0.51		0.62, 0.02, & 0.02	
Root MSE and corr(u_i, Xb)	0.012 & NA		NA & 0 assumed		NA & -0.99	
Age	-0.00002***	-17.05	-0.00002***	-8.11	-0.003***	-25.99
hHHI	-0.00000002**	-2.44	-0.00000002***	-5.27	-0.00000002***	-5.43
mHHI			0.16***	5.16	0.18***	5.3
lHHI	-0.31*	-1.67	-0.81***	-4.04	-0.81***	-3.82
hHHIxAge	0.0000000001*	1.57	0.00000000014***	3.49	0.0000000001***	3.58
mHHIxAge	-0.0000983	-0.38	-0.001***	-3.16	-0.001***	-3.48
lHHIxAge			0.004***	2.52	0.01***	2.58
AT2002	-0.001***	-3.36	-0.001***	-6.06	-0.001***	-8.01
LR	0.002***	45.47	0.001***	40.45	0.001***	38.24
ETA	-0.0005***	-8.47	-0.0004***	-7.44	-0.0004***	-8.39
CFL	0.0004***	10.95	0.0002***	7.23	0.0002***	6.86
CI	0.0004***	96.59	0.00012***	48.96	0.0001***	42.47
Overheads	0.0000004***	125.07	0.0000003***	92.09	0.0000003***	81.94
NLTA	0.0002***	61.44	0.0002***	40.06	0.00014***	35.73
TA	-0.00000001***	-74.35	-0.00000001****	-69.7	-0.00000001***	-64.32
MS	-5.65***	-5.1				
BURDENTA	0.11***	16.18	0.31***	44.72	0.35***	49.35
Fin_crisis	0.007***	37.4	0.01***	49.9	0.01***	56.15
TEATA	0.0002*	1.58	0.0003***	3.34	0.0002***	3.02
NEATA	0.03***	32.26	0.014***	21.66	0.01***	20.37
AU	0.44***	67.77	0.15***	27.65	0.13***	24.46

BAAM	0.00002*	1.45				
CR	0.001***	11.07	0.001***	13.66	0.001***	13.5
GDPC	0.0000001***	3.19	0.0000001***	8.47	0.000001***	27.03
CPI	-0.0003***	-6.3	-0.0003***	-8.33	-0.001***	-17.18
GDGDP	-0.001***	-99.37	-0.001***	-140	-0.0004***	-44.23
_cons	0.04***	61.15	0.05***	102.8	0.18***	37.03
sigma_u, sigma_e & rho			0.01, 0.01 & 0.55		0.12, 0.008, & 0.99	
Significance levels: *** 1%; ** 5%, *10%						

The rho of 0.55 indicated that the individual effects averagely dominate the idiosyncratic error in the REM. The rho of 0.99 indicated that the individual effects dominate the idiosyncratic error in the FEM.

Interpretation of fixed effect model due to significant Hausmann Test – The result showed that the higher values of medium-concentration (5% significance level: mHHI), hHHIxAge interaction, lHHIxAge interaction, liquidity risk, capital funding to liabilities, CI, overheads, net loan to total asset, burden ratio, financial crisis, non-earning asset ratio, total earning asset ratio, asset utilisation, credit risk, and GDP per capita are positively, significantly associated with higher values of QLTTTA. On the other hand, higher values of age, low-/high-concentration (lHHI; hHHI), mHHIxAge interactions, 2002 antitrust law, capital strength, total asset, inflation, and central government debt (GDGDP) are significantly negatively associated with lower values of QLTTTA. According to the FEM results, a 1 unit increase in mHHIxAge and lHHI significantly reduced managerial slack, QLTTTA. The FEM rho of 0.99 explains the individual-specific term and the 0.01 linked to an idiosyncratic error. The FEM R^2 showed that the estimators only explained 62%, 2%, and 2% of within-, between-, and overall-variation, respectively. The REM lambda (λ) is 78% which implies that the REM estimates are getting moderately closer to the FEM estimates than the pooled OLS estimates.

Table 15: Panel Data Regression of United States. Commercial Banks (1995-2015) using pooled OLS, fixed effects-, and random effects estimators, comparatively.

The dependent variable is QLPEE { [Personnel expenses/No of employees]/CPI), deflated by CPI}. The Independent variable is the Herfindahl Hirschman Index (HHI).

QLPEE	Pooled OLS		REM		FEM	
Variables	Coeff.	t	Coeff.	z	Coeff.	t
No. of Group			6159		6159	
No. of Obs	89396		88199		88199	
F(27, 89368) =	3903.28				F(27,82013) =	1089
Prob > F	0		0		0	
R-sq.	0.54					
R-sq.: wtn, btw, overall			0.25, 0.52 & 0.26		0.26, 0.03 & 0.001	
Root MSE and corr(u_i, Xb)			NA & 0 assumed		NA & -0.99	
Age	-0.03**	-2.42	-0.03**	-2.42	-62.83***	-34.63
mHHI	744.98**	2.33	744.98**	2.33	2587.44***	4.43
lHHI	-4084.78**	-1.96	-4084.78**	-1.96	-12846.86***	-3.49
mHHIxAge					-10.36**	-2.12
AT2002	7.06***	3.15	7.06***	3.15		
LR	-2.37***	-6.16	-2.37***	-6.16	-1.76***	-3.25
ETA	0.96*	1.51	0.96*	1.51		
CFL	-0.69*	-1.55	-0.69*	-1.55		
CI	0.34***	7.8	0.34***	7.8	0.26***	4.75
Overheads	0.0001*	1.81	0.0001*	1.81	0.0002***	3.17
NLTA	-0.08**	-2.23	-0.08**	-2.23	-0.69***	-10.08
TA	-0.0001***	-4.86	-0.00001***	-4.86	-0.00001***	-4.25
MS	149669.9***	11.83	149669.9***	11.83	257993.6***	13.8
BURDENTA	647.78***	8.29	647.782***	8.29	1654.16***	13.27
Fin_crisis	-144.95***	-74.72	-144.95***	-74.7	-99.67***	-43.53
TEATA	-31.19***	-24.12	-31.19***	-24.1	-31.76***	-23.37
NEATA	-78.68***	-9.08	-78.68***	-9.08	-75.10***	-6.74
AU	1998.91***	27.28	1998.91***	27.28	3164.54***	34.41
GDPC	0.01***	50.98	0.01***	50.98	0.04***	44.45
CPI	-17.75***	-34.83	-17.75***	-34.8	-25.51***	-45.52
GDGDP	3.33***	46.19	3.33***	46.19	8.06***	50.13
_cons	-511.83***	-73.12	-511.83***	-73.1	2427.19***	28.43
sigma_u, sigma_e & rho			0, 138.03, & 0		2885.50, 138.03, & 0.99	

Significance levels: *** 1%; ** 5%, *10%

The rho of 0.99 indicated that the individual effects dominate the idiosyncratic error in the FEM.

Interpretation of fixed effect model due to significant Hausmann Test – The result showed that the high values of medium-concentration (1% significance level: mHHI), cost-income ratio, overheads, market share, burden ratio, asset utilisation, GDP per capita, and government debt percentage of GDP significantly increased the values of QLPEE. On the other hand, the higher values of age, low-/high-concentration (lHHI; hHHI), mHHIxAge, liquidity risk, net loan to total asset, total asset, financial crisis, total earning asset ratio, non-earning asset ratio, and inflation (CPI) significantly reduced QLPEE. Hence, for US commercial banks, a 1 unit increase in NLTA reduced QLPEE by 69%. The FEM rho of 0.99 explains the individual specific term and the 0.01 is due to an idiosyncratic error. The FEM R^2 showed that the estimators only explained 26%, 3%, and 0.1% of within-, between-, and overall-variation, respectively. The REM lambda (λ) is 0% which implied that the REM estimates are closer to the OLS estimates compared to the FEM estimates.

5.7.3 Panel Data Analysis of Canadian Commercial Bank Return on Average Equity

Table 16: The Impact of Bank Concentration on Canadian Commercial Bank Returns. The Panel Data Regression of Canadian Commercial Banks' Performance (2010-2015) using pooled OLS, fixed effects-, and random effects estimators, comparatively.

The dependent variable is the return on average equity. The Independent variable is different levels of bank concentration [HHI] – low-, medium-, and high-HHI.

Return on Average Equity	**Pooled OLS**		**REM**		**FEM**	
Variables	Coeff.	t	Coeff.	z	Coeff.	t
No. of Group			25		25	
No. of Obs			100		100	
F(20, 79) =	25.21				F(19,56) =	19.82
Prob > F			0		0	
R-sq.	0.86					
R-sq.: wtn, btw, overall			0.79, 0.82 & 0.80		0.87, 0.17 & 0.23	
Root MSE and corr(u_i, Xb)			NA & 0 assumed		NA & -0.99	
Age					5.53**	2.15
hHHI	3559.03*	1.91	2059.06*	1.66	-8199.72**	-2.02
mHHI	-647363.9*	-1.66	-524409.2**	1.9	2772545**	2.02
lHHI					653000000**	2.08
mHHIxAge					8654.75**	2.21
lHHIxAge					1381889*	1.61
LR			9.43**	2.13	16.56***	3.13
ETA			-0.53**	1.93	0.42*	1.49
CFL			0.34***	2.72		
CI	-0.02**	-2.33	-0.02***	2.48	-0.04***	-4.41
Overheads	0.0000002*	1.78				
BURDENTA	114.59**	2.41			-257.69***	-3.23
TEATA					-1.73*	-1.87
NEATA	13.55*	1.56	18.86**	2.14		
AU	456.17***	11.92	367.85***	7.63		
CR			-0.97***	3.11		
GDPC	0.003*	1.71			-0.006**	-2.05
_cons	-655.84*	-1.81	-370.77*	1.61		
sigma_u, sigma_e & rho			2.14, 1.41, & 0.70		364.34, 1.41 & 0.99	

Significance levels: *** 1%; ** 5%, *10%

The Hausman test (FEM vs. REM) is not significant (Prob>chi^2 = 0.81). Hence, the random effect model (REM) is a preferential model – Appendix 1 indicates the full (Hausman test, Breusch-Pagan LM test, and individual-specific effects) robustness results. The Breusch-Pagan

LM test is significant (Prob > chibar^2= 0.0000). Hence, the random effect model (REM) is preferentially chosen. The rho of 0.70 indicated that the individual effects dominate the idiosyncratic error in the REM. The rho of 0.99 indicated that the individual effects strongly dominate the idiosyncratic error in the FEM.

Interpretation of REM due to non-significant Hausmann test – The result showed that the higher values of capital funding to liabilities, liquidity risk, non-earning asset ratio, and asset utilisation significantly enhanced return-on-average-equity (ROAE). On the other hand, higher values of medium concentration (mHHI), capital strength, cost income, and credit risk significantly lower values of ROAE. Hence, a 1 unit increase in capital funding to liabilities for Canadian commercial increased ROAE by 34% in REM. The REM rho of 0.70 explained the individual specific term, and the 0.30 is due to an idiosyncratic error. The REM R^2 showed that the estimators only explained 79%, 82%, and 80% of within-, between-, and overall-variation, respectively. The REM lambda (λ) is 74% implied that the estimates are more linked to the FEM estimates than the pooled OLS estimates.

5.7.4 Panel Data Analysis of Canadian Commercial Bank Quiet Life - QLTTTA

Table 17: The Impact of Bank Concentration on Canadian Commercial Bank Managerial Slack of QLTTTA. The Panel Data Regression of Canadian Commercial Banks' Quiet Life (2010-2015) using pooled OLS, fixed effects-, and random effects estimators, comparatively.

The dependent variable is QLTTTA (Ratio of Total Interest Expenses and Total Non-lnterest Expenses to Total Asset). The Independent variable is the bank concentration - Herfindahl Hirschman Index (HHI).

QLTTTA	Pooled OLS		REM		FEM	
Variables	Coeff.	t	Coeff.	z	Coeff.	t
No. of Group			25		25	
No. of Obs	100		100		100	
F(20, 79) =	433.44					
Prob > F	0		0		0	
R-sq.	0.99					
R-sq.: wtn, btw, overall			0.63, 0.99, & 0.99		0.71, 0.57, & 0.55	
Root MSE and corr(u_i, Xb)	16094		NA & 0 assumed		NA & -0.99	
Age			1912.29*	1.68		
lHHI			-992000000000*	-1.9		
hHHIxAge			-13397.38*	-1.9	-19544.76***	-2.57
lHHIxAge	19600000000**	2.49			10900000000***	2.54
LR	26091.29*	1.61				
ETA	2101.26*	1.53				
CI			-61.99*	-1.6		
Overheads	0.03***	50.98	0.03***	21.9	0.01***	2.74
CR	-2808.65*	-1.64				
sigma_u, sigma_e & rho			16,448.1, 7067.05, & 0.84		624709, 7067.05, & 0.99	
Significance levels: *** 1%; ** 5%, *10%						

The rho of 0.84 indicated that the individual effects dominate the idiosyncratic error in the REM. The rho of 0.99 indicated that the individual effects strongly dominate the idiosyncratic error in the FEM.

Interpretation of fixed effect model due to significant Hausmann test – The result showed that the higher values of iHHIxAge and overheads are positively, significantly associated with higher values of QLTTTA. On the other hand, higher values of hHHIxAge interaction are

significantly negatively associated with lower values of QLTTTA. The FEM rho of 0.99 explains the individual-specific term, and the 0.01 is due to an idiosyncratic error. The FEM R^2 showed that the estimators only explained 71%, 57%, and 55% of within-, between-, and overall-variation, respectively. The REM lambda (λ) is 83% which implies that the REM estimates are closely linked to FEM estimates compared to the pooled OLS estimates.

6.0 The Combined Effects of Competition and Governance on Listed Bank Performance in the Europe, Canada, and the United States.

6.1 Introduction

Most countries protect banks from hostile takeover unless approved by the country's bank regulators (Cheng et al., 1989; Mester, 1989; Laeven, 2013). The bank executives prioritise mergers and acquisitions to pursue self-interest or attain a too-big-to-fail status (Penas and Unal, 2004). The bank executives of target banks benefitted from greater prestige and higher compensation packages after merger activity (Bliss and Rosen, 2001). Agency theory had been used to investigate the board members and played a major role in monitoring the non-divergence of managerial interests from those of the shareholders (Dalton et al., 2007). The board and board composition role had been used as the monitoring proxy in corporate governance research (Hermalin, 2005; Kroll et al., 2008). However, the Tuggle et al. (2010) study argued the need to look beyond board composition and structure. The interest of the shareholders can be fulfilled by using the board members to monitor CEO activities, but the board members had failed to maintain a constant level of attention to their monitoring role (Tuggle et al., 2010). The process of monitoring the activities of executives can be challenging and excessively expensive. Certain governance mechanisms are needed to ensure that the management is acting in the interest of shareholders.

The antitrust laws can be used to enforce incentive compliance by countervailing incentives to collude and highlighting the failure of governing board to create a genuine corporate culture of antitrust law compliance (Markham, 2013). Performance-oriented incentives can be utilized in aligning the interests of the CEOs and shareholders (Jensen and Meckling, 1976; Hart and Holmstrom, 1987). However, co-opted boards are less likely to instigate the removal of under-performing CEOs because offices assumed post-CEO employment and could support longer CEOs' tenure to benefit from long-term investments (Coles et al., 2014; Chintrakarn et al., 2016). The Chintrakarn et al. (2016) study examined the impact of board governance (i.e., board co-option) on managerial myopia (research and development investment). Managerial myopia refers to short-term profit maximisation at the expense of long-term investment decisions to create shareholder value (Bushee, 1998; Chen et al., 2015).

A compensation plan is a contract that attempts to align the shareholders and the agents (Watts and Zimmerman, 1978). The divergence in principal and agent choices can be attributed to CEO adverse selection and moral hazards. In agreement with this study, agency theory influenced CEO compensation in the form of governance by allowing poorer governance structures to cause relatively excessive CEO compensation and poor performance in the long run (Eisenhardt, 1989; Core et al., 1999). A study also confirmed that the CEOs and senior executives could exercise their discretionary power to control the board members, manipulate earnings, and take advantage of operational protocols (Bebchuk et al., 2002). Some empiricists concluded that board independence and operational complexity are related to board size (Adams and Mehran, 2012; Linck et al., 2009). The main elements of corporate governance are independent outside directors and audit committees (Black and Kim, 2012). The Cornett et al. (2009) study showed that earnings positively associated with board independence, capital, and CEO pay-for-performance sensitivity [PPS]. Even though PPS and board independence contributes to higher earnings, the Cornett et al. (2009) findings emphasised that earnings management is more likely to be restrained by increasing board independence while more PPS can continue to enhance corporate earnings.

Over-confident CEO tends to over-invested by using substantially available internal funds but under-invested when external funds are needed (Malmendier and Tate, 2008). Biases associated with over-confidence are self-attribution bias and confirmation bias. Self-attribution bias entails taking higher credits than necessary in the case of positive performance. With confirmation bias, individuals interpret information in a way that supports and confirms the decisions they have already concluded. These two biases play an influential role in that CEO overconfidence can affect profit persistence, cash retention, and liquidity holding by the CEOs. The risk-taking behaviour of CEOs can be enhanced by over-confidence (Li and Tang, 2010). The board's independence is an important proxy for effective board monitoring. Board independence has reduced explanatory power about CEO pay-performance sensitivity, CEO turnover-performance sensitivity, CEO salary, and investment (Coles et al., 2014). The Rock and Rubinfeld (2017) study identified the role of Antitrust Guidelines in encouraging institutional investors' involvement in corporate governance. This also motivated our inquiry into the role of antitrust laws and bank concentration in improving bank performance prior. Given this, the natural question is to examine the effect of internal corporate governance and bank concentration on bank performance.

A high shareholding by non-CEO managers encouraged high risk-orientation due to moral hazard compensations, which contributed to bank failures. The Berger et al. (2016) study also found that non-interest-income (i.e., off-balance-sheet activities) increased the tail risks that were the inherent risk-taking channel of lower-level bank management. The OECD report indicated that the poor risk management and misaligned compensations contributed to the poor board decision-making (OECD, 2009). The risk-averse agent underperformed, but the principals may be idle because of the managers' access to private control and non-diversifiable human capital investment (Faleye and Krishnan, 2017). Weak governance was recognized as a major cause of the 2007-09 financial crisis (Kirkpatrick, 2009). A report questioned the way banks were run by the board leading up to the banking crisis (Heagreaves, 2009). However, the board governance via optimal incentive by non-executive directors can be enhanced to bring solutions. The Basel committees recognised the role of an effective board in the implementation and execution of sound corporate governance practices (Bank for International Settlements, 2010). The effects of corporate governance mechanisms on banks vary based on the banking industry weighting in each country, the ownership of banks, regulatory and institutional differences.

The bank agency problems are usually resolved by the presence of government guarantees, bailouts, and deposit insurance, causing misrepresentation of bank executive incentives, performance, and encouraged risk-taking behaviour at the expense of the public (De Haan and Vlahu, 2016). The adverse externalities of bank failures and the unique role of banks make the agency problems of banks expensive for the global economy at large. The corporate governance of financial institutions must align the interests of the managers and other stakeholders such as shareholders, debtholders, depositors (Acharya et al., 2009), and regulators (Dewatripont and Tirole, 1994). An empirical study confirmed a complementary relationship between governance and regulation (Hagendorff et al., 2010). Therefore, this empirical chapter examined how internal corporate governance affected the relationship between bank concentration and bank performance. This study also contributed to empirical studies and policy issues on the role of competition laws and corporate governance in improving bank performance.

6.2 The Impact of Corporate Governance and Bank Concentration on the Performance of the listed European and North American Commercial Bank

A study emphasised the intersection between antitrust laws and corporate governance by indicating that a good corporate governance structure may be established to minimise both conflicting incentives and cartel-like behaviour (Waller, 2011). The Giroud and Mueller (2010) study tested the hypothesis that competition mitigated managerial slack by using exogenous variation in corporate governance in terms of 30 United States business combination laws between 1985 and 1991 on a state-by-state basis. The business combination laws are regarded as a legal framework vested in the American state of incorporation. The study showed that competitive pressure increased managerial slack in non-competitive industries while enhancing management discipline in hugely competitive industries. The different measures of competition considered by Giroud and Mueller's (2011) study include HHI (proxied by assets, census, and firm sales), import penetration, and the industry net profit margin (or Lerner index). Furthermore, the study findings showed that the protection of CEOs from competitive pressure and hostile takeover encouraged managerial risk aversions and poor business decisions, which is consistent with the quiet life hypothesis. Examples of quiet life hypotheses are poor input cost negotiation, trade unions, and misreporting.

According to the competition and fragility hypothesis, the market power can be reduced by enhancing competition to reduce monopolistic incumbent profitability. Hence, encouraging more financial institutions to escalate risk-taking to earn higher returns (Marcus, 1984; Keeley, 1990; Demsetz et al., 1997; Carletti and Hartmann, 2003; Allen and Gale, 2004). Comparatively, other studies on the competition and stability hypothesis argued that banking systems with reduced competition are more at risk of increased fragility (Mishkin, 1999; Boyd and DeNicolo, 2005). Despite the deregulatory measures of the European banking system during the 1992-1999 period, a persistent increase in market power and consolidation was observed owing to lowered cross-border banking penetration (De Guevara et al., 2005). The changes to regulation, technology advancements, and economic conditions are designed to increase competition. The McMillan and McMillan (2016) study also confirmed that bank consolidation is attributable to higher bank concentration and market power in the industry.
This study research question is similar to previous studies, productivity enhanced due to an increase in competition in a 1976-1995 sample of United Kingdom manufacturing companies (Nickell, 1996); and competition minimised managerial slack in a sample of 10,960

incorporated United States firms over the 1976-1995 period (Giroud and Mueller, 2010). These studies provided background to resolving managerial agency problems. The alternative explanations of productivity unrelated to corporate governance showed that firms in competitive industries benefitted from greater productivity growth because of the industry peers' information (Giroud and Mueller, 2010). This thesis contributed to growing empirical findings that examined the association between competition and corporate governance like managerial compensation schemes (Aggarwal and Samwick, 1999), board structure (Karuna, 2008), and firm-level takeover defense (Cremers et al., 2008). The Giroud and Mueller (2010) study found no evidence that competition minimised empire building. The Dasgupta and Zaldokas (2019) study showed that stronger global antitrust enforcement caused an equilibrium shift from collusion to oligopolistic competition, encouraging firms to invest, minimise debt, and increase equity issuance. The identification strategy used by this researcher is DID estimation that relied on the staggered introduction of leniency initiatives in 63 economies during the 1990-2012 period.

6.3 Literature on Internal Corporate Governance, Compensation and Bank Performance

6.3.1 Internal Corporate Governance

Many empiricists emphasised that agency problems can be managed through internal corporate governance mechanisms and managerial compensation (Klein, 2002; Park and Shin, 2004; Zhao and Chen, 2008; Cornett et al., 2009; Leventis and Dimitropoulos, 2012). Our paper contributed to the literature on the relationship between shareholders' interests and managerial agency problems by examining how corporate governance mechanisms and competition enhance bank performance. The antitrust laws and corporate governance analysed corporations' external and internal behaviour, respectively (Muralidharan and Deshpande, 2016). The antitrust laws are the component of corporate governance laws that focus on the behaviour and structure of firms within the market.

Many empiricists showed that firms with stronger internal corporate governance benefitted from reduced borrowing costs (Anderson et al., 2004; Ashbaugh-Skaife et al., 2006; Bhojraj and Sengupta, 2003). The Ge et al. (2012) study examined the impacts of firm-level governance on various features of loan contracting in the global loan market for non-United States companies over 2003-2007. The study found that banks' agency and information risk can be

mitigated via borrowers' internal governance, the country-level legal forms, and the company-level governance mechanisms (Ge et al., 2012). The purpose of internal corporate governance is to protect the shareholder's interests. The conflicts of interest between shareholders and debt holders can be worsened by the internal corporate governance designed to protect shareholder interests only (Ashbaugh-Skaife et al., 2006; Chava et al., 2009; Klock et al., 2005). Many researchers examined the effect of different firm-level corporate governance on bond yield and credit ratings in the United States market (Ashbaugh-Skaife et al., 2006; Bhojraj and Sengupta, 2003). Other researchers also examined how bank loan contracting may be influenced by cross-country differences in laws and enforcements (Bae and Goyal, 2009; Qian and Strahan, 2007). According to the optimal contracting opinion, boards of directors prolonged negotiations with the CEOs on salaries and compensations to galvanise the agents toward shareholder value maximisation (Holstrom, 1979). Contrary to this view, the managerial power view suggested lengthy negotiations about CEO pay and compensations linked to agency problems (Bebchuk and Fried, 2003). This is because the shareholders usually expect high variability of compensation, while the risk-averse CEOs may be more interested in certainty on an upside compensatory contract. Therefore, the managerial power view suggests that the CEOs with executive power tend to negotiate better deals for themselves, and such pay plans are viewed as part of agency problems (Bebchuk and Fried, 2004). This chapter intends to use a simple dynamic model to examine the hypothesis that internal corporate governance improved investment return. Also, compared to previous studies, this empirical finding explored the inter-relationship amidst the coefficients of internal corporate governance measures, governance index, bank concentration, and bank returns.

6.3.1.1 Institutional Shares Ownership

The institutional investors offered corporate monitoring role to restrict adverse managerial behaviour (McConnell and Servaes, 1990; Nesbitt, 1994; Smith, 1996; Del Guercio and Hawkins, 1999; Hartzell and Starks, 2003). The large institutional investors have the technical know-how to restrict, discipline, and influence the CEOs. The previous studies concluded that the institutional investors monitoring aligned CEOs' activities to corporate performance and minimized the CEO self-interests.

6.3.1.2 CEO and Board attributes

The effectiveness of a bank in managing operations may be determined by CEO age and tenure (Cornett et al., 2008). The Alderfer (1986) study showed that managers with reduced experience, age, and tenure are less effective because they have a low understanding of the company and the industry. The older CEOs with longer tenure are less likely to utilize discretionary accruals while enhancing firm performance. Even though older long-tenured CEOs were linked to short-term earning management (Dechow and Sloan, 1991). Jensen (1993) emphasised that a small board group is associated with more effective CEO monitoring. In comparison, the large board is less effective in monitoring (Yermack, 1996). Hence, board size is inversely proportional to firm performance.

Many empiricists examined how the internal and external board of directors can influence firm performance. Many outside directors improved shareholders' financial performance and wealth maximization (Brickley et al., 1994; Byrd and Hickman, 1992; Rosenstein and Wyatt, 1990). The significant presence of outsider directors in the board room improved equity return and enhanced operating performance, and their monitoring role helped minimize discretionary accruals. Black and Kim's (2012) study used laws enacted as an exogenous shock to examine how board structure influenced firm market valuation. The external shocks can be captured using event study, difference-in-differences, and instrumental variable methods, within a general regression discontinuity design approach (Black and Kim, 2012). Previous studies attempted to address endogeneity issues by utilising the Arellano-Bond internal instruments and found no relationship between board composition and the United States firm performance (Wintoki et al., 2009). The United Kingdom companies that voluntarily complied with the Cadbury Committee recommendation with at least three non-executive directors experienced an improved performance (Dahya and McConnell, 2007). The principal contribution in this third empirical chapter is the interaction of antitrust laws with governance measures to minimise managerial slack and improve bank performance in Western economies. Also, our study considered the instrumental variable regression to capture the variable instrumental to better bank performance. Out of all the explanatory variables considered in this thesis, our study showed that non-executive total compensation and dividend per share are key instruments for improved performance.

6.3.1.3 Other Control Variables

6.3.1.3a Loan Loss Provision to Total Loan, Loan loss Reserve, and loan-loss-provision

The loan loss provision [LLP] has been observed to play a crucial role in capital and earnings management (Hong et al., 2019). The LLPs were generally linked to the deterioration of loan portfolio quality via an increase in non-performing loans (Skala, 2021). A previous study confirmed that the banking industry was more susceptible to earnings manipulation than other industries (Greenawalt and Sinkey, 1988). The recent loan loss reserve add-backs had a significant positive effect on the probability of bank failure during the 2007-09 financial crisis, especially in situations where the add-backs increased the bank's total regulatory capital (Ng and Roychowdhury, 2014). The loan loss provision is subject to managerial discretion, which can be a major tool for earnings and capital management (Bouvatier, V. and Lepetit, L., 2008). Earnings management behaviour is more pronounced for risk-oriented banks than less risky ones. During the 2007-09 financial crisis, foreign banks spread negative shocks and curbed loan supply in the emerging economies (De Haas and Van Lelyveld, 2014; Choi et al., 2016). Bouvatier et al. (2014) study showed that European commercial banks with highly concentrated ownership structures often use discretionary LLP to engage in earning smoothing, and the approach is less pronounced in economies with stricter regulatory regimes and greater external audit quality. The Western European governed owned bank had higher LLP than private banks during the 1999-2004 (Iannotta et al., 2007).

The loan loss reserves [LLR] are components of banks' balance sheets that can be increased by the level of loan loss provisions (Beck and Narayanamoorthy, 2013). Hence, the LLR accumulates loan loss provision over many years. The purpose of the loan loss reserve is to cover estimated loan losses linked to loan defaults, bad debts, and non-payment. The United States Securities and Exchange Commission (SEC) alleged that banks exaggerate loan loss allowances to create cookie jar reserves (Beck and Narayanamoorthy, 2013). The SEC intervention led to a significant association between LLR and prior loss experience; and a reduced association with non-performing-loans. The higher regulatory scrutiny brought by SEC's intervention affects larger banks more. In alignment with information-signaling perspectives, significant announcement effects are significantly and negatively associated with the bank LLR announcement between 1985 and 1990 (Docking et al., 1997). The contagious

property of the LLR announcement by the regional banks minimised the valuation of money-center banks. Hence, an increase in LLR may contribute to decreasing in bank profitability. However, the effect of loan loss reserve is non-significant in the model confirmed by the Breusch-Pagan-LM robustness test.

6.3.1.3b Common Share Outstanding

The larger banks are more susceptible to systemic risk and less idiosyncratic risk because of diversification (Yang et al., 2020). Before the 2007 financial crisis, securitising banks did not lead to systematic risk, but there was a structural break in 2007 where bank securitization increased both systemic and non-systemic risks (Battaglia et al. 2014; Davis et al., 2019). As a result, the bank management faced the challenges of minimising the cost of capital and managing risk in the balance sheet (Hainaut et al., 2018). This can be achieved by putting in place an automated recapitalisation system (i.e., contingent convertible debts) in case of insolvency, which can help to mitigate bankruptcy risk. Previous literature showed that balance sheet problems were inherent in banks with a high prospect of insolvency risk that discouraged country financing by domestic and international investors (Corsetti et al., 1999; Radelet and Sachs, 1998; Kaminsky and Reinhart, 1999; Penas and Tumer-Alkan, 2010).

6.3.1.3c Capital Expenditure

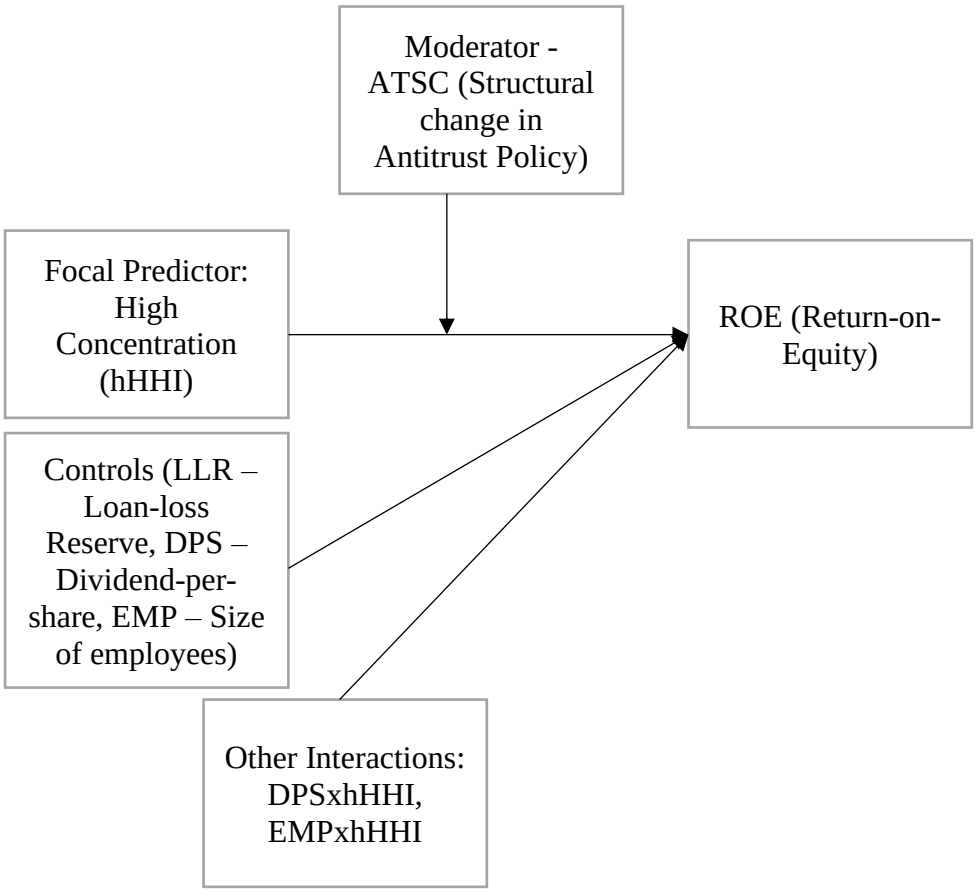
In recent years, equity repurchases have become an interesting means of releasing cash to investors compared to conventional dividends. The risk-averse companies were characterised by reduced capital funding, lower CEO compensation, readily predictable managerial actions, reduced use of both option and bonus incentive plans (Palia, 2001). The managerial perception indicated that the repurchases offer better flexibility than dividends because firms may forego viable investments for the sake of dividend policies (Brav et al., 2005; Iyer et al., 2017). The executives can adjust the stock repurchase to meet capital funding requirements with fewer concerns about shareholder backlash. The Iyer et al. (2017) study found an inverse relationship between stock repurchase and capital expenditure during the financial crisis period. The adverse capital shocks influenced borrowers' performance adversely (Chava and Purnanandam, 2011). The total non-interest expenses are higher by more than $50 billion annually for the United States bank holding companies post-Dodd-Frank Act period (Hogan and Burns, 2019). On the other hand, the Government Accountability Office [GAO] emphasised that the United States bank's non-interest expenses had fallen since the end of 2010 (GAO, 2015).

6.3.1.3d Non-Executive Total Compensation

Previous studies examined the impact of managerial compensation on firm valuation. The instruments are related to managerial compensation. Many empirical and theoretical studies indicated that the determinants of optimal compensation contracts are current performance, managerial ability, experience, and company age (Palia, 2001). The Palia (2001) study confirmed a positive link between the structure of managerial compensation and firm-related features such as capital structure, capital intensity, size, and CEO experience. However, the study showed that firm value is not significantly influenced by shareholder incentive-compatible compensation when estimated using fixed effects and two-stage-least-square estimators. The use of antitrust policies and non-executive compensations in our thesis aid increase in bank competitiveness and also improve bank governance practices. Scholarly literature showed that the CEOs and senior executives were generally over-optimistic and overconfident about future performance (Taylor and Brown, 1988; Otto, 2014). The managerial fixed effects explained a significant fraction of the variation incorporate practices and executive incentives (Bertrand and Schoar, 2003). Previous studies emphasised that managerial irrationality can be exploited by using sophisticated principal compensation mechanisms (Heaton, 2002). The He (2011) study examined the optimal compensation issues between the shareholders and the agents. Some studies explored how effective governance helped the IPO firms align agents' interests and the principals (Chahine and Goergen, 2014; Bruton et al., 2010). The implementation of say-on-pay laws in some countries increased firm value, and this is consistent with managerial entrenchment policies in other studies (Bebchuk et al., 2011). The decrease in CEO incentives following the adoption of say-on-pays strengthened the links between CEO pay and performance (Correa and Lel, 2016). The say-on-pay laws aimed to address weak incentives and governance policies.

6.3.1.3e Investment Performance Proxies and the macro-economic factors

The net-loan-to-total-asset (NLTA) measures the banks' risk-taking behavior where banks with high liquidity are risk-averse. The Gunsel (2010) study indicated that the low asset quality [NLTA], low liquidity [LATL], and high credit utilisation by private sectors (private credit to GDP) explained the survivability of banks in North Cyprus. The low ratio of NLTA of banks is an indication of high liquidity. In addition, macroeconomic stability had contributed to the bank's growth and improved bank efficiency (De Guevara et al., 2005).



Conceptual Framework for Table 25 – DID: Testing and plotting interaction

6.4 Model Specification and variables explanation for listed commercial bank

The main model in this last empirical chapter part A is indicated below:

$$\delta_i = \alpha + \beta_1 HHI + \beta_2 ATSC + \beta_3 HHIxATSC + \beta_4 X_4 + \beta_5 Fincrisis + \varepsilon_{it}$$

where $\varepsilon_{it} \sim NID(0, \sigma^2)$

We also estimated panel data models for every individual country, using the model (Panel Data Regression OLS, FEM and REM),

$$\delta_{it} = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 AT + \beta_4 X_4 + \beta_5 X_5 + \varepsilon_{it}$$

Where,

$\varepsilon_{it} \sim NID(0, \sigma^2)$ and NID signified normally and independently distributed.

δ_i = The dependent variables (Bank Profits) include the return-on-equity (ROE) and ROE-dummy. X_1 = HHI represented bank concentration at low (lHHI), medium (mHHI), and high (hHHI) levels. X_2 = ATSC (Structural changes in anti-trust policy), and X_3 = lHHI/mHHI/hHHI x ATSC represented the main independent variables. X_4 = Vector of bank-specific internal factors. X_5 = Fincrisis is the financial crisis dummy.

β_i = is the matrix of variable coefficients for explanatory variables.

The bank-specific factors include common shareholdings (CSO), capital expenditure (CEXP), loan-loss-reserve (LLR), Loan-loss-provision-to-total-loan (LLPTL).

The model specification for part B of the last empirical chapter below:

$$\delta_i = \alpha + \beta_1 HHI + \beta_2 ATSC + \beta_3 HHIxATSC + \beta_4 X_4 + \beta_5 Fincrisis + \varepsilon_{it}$$

where $\varepsilon_{it} \sim NID(0, \sigma^2)$

We also estimate a panel data model for every individual country, using the model (Panel Data Regression OLS, FEM, and REM),

$$\delta_{it} = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 AT + \beta_4 X_4 + \beta_5 X_5 + \varepsilon_{it}$$

Where,

$\varepsilon_{it} \sim NID(0, \sigma^2)$ and NID mean normally and independently distributed.

δ_i = The dependent variables (Bank Profits) include equity return and negative return dummy. X_1 = HHI represents bank concentration at low (lHHI), medium (mHHI), and high (hHHI) levels and the related governance interactions with high HHI are the main independent variables i.e. BSSIBMxhHHI [strictly-independent-board-member x High-concentration], BSSIBMxhHHI [Independent-board-member x High-concentration], BSSSxhHHI [Board specific skills x High-concentration]. X_4 = Vector of bank-specific internal factors. X_5 = Fincrisis is the financial crisis dummy.

β_i = is the matrix of variable coefficients for explanatory variables.

The bank-specific and internal-corporate-governance factors are non-executive-total-compensation (NETC), trailing earnings per share (TEPS), non-performing loan to total loan

(NPLTL), staggered board structure (SBS), experienced board (BSEB), external consultant (EC), nomination committee independence (NCI), corporate governance committee (CGC), audit committee independence (ACI), compensation committee (CC), CEO-Chairman-Separation (CCS).

We employ a data reduction technique (principal component analysis) to estimate the following corporate governance indexes:

Good corporate governance (GCG) consists of Board structure policy [BSP], individual re-election [BSIR], Succession plan for executives [SUP4E], EC, nomination committee [NC], CGC, Sustainability Compensation Incentives [CPSCI], Compensation Committee Management Independence [BFCCMI], Policy Performance-Oriented [PPO], and CC. Bad corporate governance (BCG) consists of SBS, classified board structure [CBS], CCS, and CEO board member [CBM]. Corporate Governance 1 (CG1) consists of strictly independent board member [BSSIBM], board-specific skill [BSSS], independent board member [BSIBM], Audit committee independence [ACI], Compensation Committee Non-Executive Member [CCNEM], and Compensation Committee Independence [CCI]. We then perform panel data regression using the newly created corporate governance index.

6.5 Empirical Methodology

Our sample period ranges from 1995 till 2018 variably in this empirical chapter. Our panel data for the corporate governance study consists of 233 listed banks over 13 years period (2006-2018). The panel data regression allowed for unobserved heterogeneous effects in the cross-sectional findings. Our empirical methodology is like Giroud and Muller's (2010) study in some areas and the expanded Hou and Robinson (2006) study. Our study contributes to the literature by examining other mechanisms through which competitive industry structure affects bank performance. We extend empirical studies by examining the impact of antitrust policy and its interactions on bank performance in Europe and Northern America.

6.5.1 Dependent Variables

The dependent variables include returns (proxied by share price) and return-on-equity (ROE). The return calculation is the ratio of current year price to past year price minus one. The return on equity is non-calculated acquired data from the database.

6.5.2 Explanatory variables

6.5.2.1 Concentration

The bank concentration was calculated using the same method in Chapters 4 and 5. The HHI in this chapter is calculated using return-on-invested capital (Part A) and price (Part B).

6.5.2.2 Loan-loss-provision-to-total-loan

The loan loss provision is an important tool for earnings and capital management by listed banks (Leventis et al., 2011). The higher loan loss provision to total loan (LLPTL) ratio indicated that the banks have a better capital cushion to withstand future and unexpected losses (Handorf and Zhu, 2006). On the other hand, a high LLPTL ratio indicated the inverse relationship between credit risk and bank performance. The dynamism in credit risk, proxied by LLPTL, reflected the changes in the viability of loan portfolios. Another study also confirmed that changes in bank performance could be associated with changes in credit risk (Duca and McLaughlin, 1990). A dated empirical study showed that commercial banks could manipulate loan loss provision to smooth reported earnings (Ma, 1982). Excessive financial institutions' exposure to high-risk loans raised the accumulation of unpaid loans and minimised bank performance (Miller and Noulas, 1997).

6.5.2.3 Dividend per Share

The dividend policies addressed the agency problems between corporate insiders and minority shareholders (La Porta et al., 2000). The dividend payments reduced the pursuit of self-interest by the manager (Easterbrook, 1984; Jensen, 1986; DeAngelo et al., 2006). However, despite the 2007-09 financial crisis and the role of dividend policies, many troubled banks increased the dividend pay-out (Acharya et al., 2013). This called into question the efficacy of dividend policy in the banking industry. Another study emphasised that banks utilised deposit insurance and the minimum capital requirements to compensate for the lack of effective monitoring and control (Mulbert, 2009). Previous studies showed that countries with stronger minority shareholder protection had banks paying greater dividends (Ashraf and Zheng, 2015). Many empiricists found a positive relationship between dividend payments and corporate governance (La Porta et al., 2000; Mitton, 2004; Michealy and Roberts, 2006; Renneboog and Szilagyi, 2006; Adjaoud and Ben-Amar, 2010). On the other hand, the larger dividend payments may

also result in weaker corporate governance (Jiraporn and Ning, 2006; Nielsen, 2006; Jo and Pan, 2009). Hence, the effect of dividend payments depends on many other factors.

6.5.2.4 Independent Board Member

Board-level governance played a crucial role in curtailing the excessive risk-taking behaviour of banks and the role of the outside directorship matters for bank risk management (Korner, 2017). Some empirical findings showed that board independence led to better board decision-making (Bebchuk and Weisbach, 2010). The oversight provided by outside directors enhanced corporate governance by ensuring transparency and accountability. The study of United States bank holding companies during the 1997-2004 period indicated that large, diversified banks are characterised by greater board independence (Pathan and Skully, 2010). There is a need to develop board-oriented governance mechanisms to safeguard financial stability. The banks with large board members allow bank executives to extract private benefits, and a more independent board reduces managerial monitoring (De Haan and Vlahu, 2016). Part of our empirical analysis focused on the impact of incentivising independent directors optimally to enhance bank performance.

6.5.2.5 Specific Skills of Board Member: Industry Specific/Strong Financial Background

The relationship between non-executive directors and performance is inverted by U-shape (de Andres and Vallelado, 2008). The board of directors' ability to monitor and advise management effectively relied on its board compositions, skill mix, and size. The Drobetz et al. (2018) empirical study confirmed that companies with industry experience were more valuable than companies with inexperienced outside directors. The high proportion of outside dominated board members improved business decision monitoring with minimal managerial interference and minimised free-riding problems (Yermack, 1996; Eisenberg et al., 1998; Weisbach, 1988; Byrd and Hickman, 1992; Borokhovich et al., 1996; Brickley et al., 1994; Hermalin and Weisbach, 2003; Adams et al., 2010). The banks with experienced risk managers improved loan issuance and reduced loan default rates; lowered tailed risk and improved equity returns during the financial crisis (Aebi et al., 2012; Ellul and Yerramilli, 2013).

6.5.2.6 Board Members Hiring External Consultants

The internal audit abilities are needed to achieve ethical ideals of independence and objectivity (Neu et al., 2013; Everett and Tremblay, 2014). The external consultant played a key role in offering independent and unbiased advice to maximise stakeholders' values. A qualitative study showed that the consultants acted as normalisers to promote a cautious approach to risk culture control (Sinha and Arena, 2020). The utilisation of the audit committee by United Kingdom financial institutions had been recognised to improve bank value (Agyemang-Mintah and Schadewitz, 2018). The outside directorship improved managements monitoring (Adam and Mehran, 2012).

6.5.2.7 Experienced Board

Many theoretical and empirical studies confirmed that the endogenous board structure could be attributed to the costs and benefits of board functions (Demsetz and Lehn, 1985; Harris and Raviv, 2008; Adams et al., 2010). In addition, the experienced board can offer improved advisory and monitoring services (Fields et al., 2012). Therefore, there is a need for an optimal board experience to offer effective monitoring and advisory functions.

6.5.2.8 Board Attributes

A small group of board members optimally minimised decision-making cost, but optimum board size is still uncertain (De Haan and Vlahu, 2016). The relationship between bank performance and board size remained an inverted U-shape (de Andres and Vallelado, 2008). The excessive size of board members remained counterproductive in fulfilling the interest of the shareholders because it encouraged free-riding problems (Mehran et al., 2011; Aebi et al., 2012). The Erken et al. (2012) study showed no relationship between board size and bank performance during the crisis. The size does not matter for bank stability (Berger et al., 2012a). The Liang et al. (2013) empirical study of Chinese showed that board size influences bank profits adversely. The panel study of large U.S. BHC during the 1997-2011 period showed that both the board size and independent directors minimize bank performance (Pathan and Faff, 2013). A recent study showed that frequent board meetings and independent boards improve bank performance and asset quality (Liang et al., 2013).

6.5.2.9 Non-Executive Total Compensation [NETC]

Financial institutions' higher level of risks can be linked to higher compensation (Adams and Mehran, 2003; Cheng et al., 2012). For example, the compensation of bank top executives at Bear Stearn and Lehmann Brothers encouraged excessive risk-taking behaviour over the 2000-2008 period (Bebchuk et al., 2010). In comparison, some studies found no relationship between incentives and risk-taking (DeYoung et al., 2013). Since the 2007 financial crisis, the incentive practices of banks have been of interest to policymakers. The equity-based incentives encouraged bank executives to pursue short-term risker investment strategies focusing on short-time price volatility (Peng and Roell, 2008; Bebchuk and Spaman, 2010). The corporate executives and CEOs were compensated with higher pay for good performance and minimally penalised with reduced pay for poor performance (Campbell and Thompson, 2015). The failure of banks during the 2007-09 financial crisis had been empirically attributed to high shareholdings by a low-level manager and non-CEO high-level management team (Berger et al., 2016). Other studies showed that delayed incentives could serve as a governance mechanism to minimise excessive risk-taking by bank executives (De Haan and Vlahu, 2016). In addition, many empirical studies showed that bank management objectives could align with other stakeholders by giving managers contracts with deferred compensation and linking their compensation to default risk (Bebchuk and Spaman, 2010; Bolton et al., 2011; Edman and Liu, 2011). Hence, the relationship between incentives and risk-taking behaviour must be optimally managed to maximise value for shareholders.

6.6 Empirical Analysis (Part A)

6.6.1 Panel Data Analysis of Return-on-Equity for listed US, Canadian, and European Commercial Bank – ROE and Negative ROE dummy

The fixed effect played an important role in controlling all time-invariant omitted variables (Allison, 2009). The limitations of fixed effect regressions include the omission of variables, reduced statistical power, time invariance, unobserved heterogeneity, erroneous causal inferences, among others (Hill et al., 2020). In the longitudinal analysis of panel data, erroneous causal inferences are threatened by reverse causality (Leszczensky and Wolbring, 2019). We utilised the United States pre-modernization of antitrust division in 2002 and the passage of the Sarbanes-Oxley (SOX) Act as the measure of antitrust laws.

Table 18: The Panel Data Regression of listed European and North American Commercial Banks (1995-2018) using pooled OLS, fixed effects-, and random effects estimators.

The dependent variable is the return on equity. The Independent variable is Herfindahl-Hirschman Index (HHI). The HHI was calculated in this section using the return on invested capital.

Return on Equity	**Pooled OLS**		**REM**		**FEM**	
	Coeff.	t	Coeff.	z	Coeff.	t
No. of Group			524		524	
No. of Obs	8577		8577		8577	
F(12, 8564)	69.92				F(12,8041) =	76.47
Prob > F	0		0		0	
R-sq.	0.09					
R-sq.: wtn, btw, overall			0.10, 0.04, & 0.09		0.10, 0.03, & 0.08	
Root MSE and corr(u_i, Xb)	31.37 & NA		NA & 0 Assumed		NA & -0.18	
lHHI			-104839.8*	-0.13		
ATSCxlHHI	10300000**	2.46			7895999**	1.95
LLR	0.000001*	1.66				
LLPTL	-11.74***	-26.07			-13.99***	-27.68
ATSC	-4.69**	-2.17			-4.59**	-2.2
_cons	15.94***	7.6			17.61***	8.67
sigma_u, sigma_e & rho			14.74, 29.83, & 0.20		18.40, 29.83, & 0.28	
Significance levels: *** 1%; ** 5%, *10%						

The Hausman test (FEM vs. REM) is not significant (Prob>chi^2 = 0.07). Hence, the random effect model (REM) is a preferential model. The Breusch-Pagan LM test is significant (Prob > chibar2= 0.0000). Hence, the random effect model (REM) is preferentially chosen. However, only low concentration is significant in REM. The rho of 0.20 indicated that the individual effects poorly dominated the idiosyncratic error in the REM. The rho of 0.28 indicated that the individual effects poorly dominate the idiosyncratic error in the FEM.

Interpretation of random effect model was due to significant Hausmann Test – The result showed that the higher value of low-concentration is negatively, significantly associated with lower values of return-on-equity (ROE). The REM rho of 0.20 explains the individual-specific term, and the 0.80 is due to an idiosyncratic error. The REM R^2 showed that REM estimators only explained 10%, 4%, and 9% of within-, between-, and overall-variation, respectively. The

REM lambda (λ) of 62% implied that the REM estimates were closely linked to the FEM estimates compared to the pooled OLS estimates.

Table 19: The Panel Data Regression of listed European and North American Commercial Banks return (1995-2018) using pooled OLS, fixed effects-, and random effects estimators, comparatively.

The dependent variable is the Negative ROE Dummy. The Independent variable is the Herfindahl Hirschman Index (HHI). This study conducted probit and logit regression because only one variable in the multivariate panel data regression (REM) influenced listed bank returns in Table 18, and the probit/logit regression played a major role in predicting the likelihood of bank failure. In addition, the probit/logit regression had been used as an early warning sign of bank bankruptcy and failures (Casu et al., 2013; Affes and Hentati-Kaffel, 2018).

NEGATIVE_ROE DUMMY	Pooled OLS		REM		FEM	
Variables	Coeff.	t	Coeff.	z	Coeff.	t
No. of Group			524		524	
No. of Obs	8582		8582		8582	
F(12, 8569) =	368.28				F(12,8046) =	426.72
Prob > F	0		0		0	
R-sq.	0.34					
R-sq.: wtn, btw, overall			0.39, 0.15, & 0.34		0.39, 0.13, & 0.33	
Root MSE and corr(u_i, Xb)	0.21 & NA		NA & 0 Assumed		NA & -0.18	
mHHI	-26.24*	-1.73				
ATSCxmHHI			355.39**	1.92	386.33**	2.1
ATSCxlHHI	-104263.5***	-3.64	-82599.91***	-3.21	-73222.49***	-2.85
CSO			0.00000004**	2.15	0.0000001***	3.19
CEXP					0.0000001*	1.5
LLR	-0.00000003***	-5.24	-0.00000002***	-2.55	-0.00000002*	-1.56
LLPTL	0.18***	57.96			0.20***	62.43
ATSC	0.02*	1.6	0.02*	1.66	0.02*	1.5
Fincrisis	0.03**	2.36				
_cons	-0.04***	-2.52	-0.04***	-2.8	-0.05***	-4.05
sigma_u, sigma_e & rho			0.12, 0.19 & 0.28		0.15, 0.19, & 0.38	
Significance levels: *** 1%; ** 5%, *10%						

The Hausman test (FEM vs. REM) is significant (Prob>chi^2 = 0.0000). Hence, the fixed-effect model (FEM) is a preferential model – external Appendix 3 indicates the full (Hausman test, Breusch-Pagan LM test, and individual-specific effects) robustness results. The Breusch-Pagan LM test is significant (Prob > chibar^2= 0.0000). Hence, the random effect model (REM) is preferentially chosen. The rho of 0.28 indicated that the individual effects poorly dominate the

idiosyncratic error in the REM. The rho of 0.38 indicated that the individual effects poorly dominate the idiosyncratic error in the FEM.

Interpretation of fixed effect model due to significant Hausmann Test – The result showed that the interaction of medium bank concentration and structural change in antitrust laws, common shareholding outstanding, capital expenditure, and loan loss provision to total loan significantly increased the likelihood of negative ROE. On the other hand, the interaction of structural changes in antitrust laws and low concentration and loan-loss-reserve (LLR) significantly reduced the likelihood of negative ROE. Hence, for listed European and North American commercial banks, a 1 unit increase in loan loss provision total loan increased the likelihood of negative return on equity by 20%. The FEM rho of 0.38 explains the individual-specific term, and the 0.62 is due to an idiosyncratic error. The FEM R^2 showed that FEM estimators only explained 39%, 13%, and 33% of within-, between-, and overall-variation, respectively. The REM lambda (λ) of 69% implied that the REM estimates are getting closer to the FEM estimates than the pooled OLS estimates.

6.6.2.1 Part A: Binary Outcome Modelling of listed commercial banks with Marginal effects – at means and average marginal effects

The marginal effects indicated the change in the probability of negative ROE equivalent to a unit change in independent variables.

Table 20: Binary Outcome Modelling of listed European and North American commercial banks with Marginal effects – at means and average marginal effects.

Negative ROE	**OLS at the mean**	**OLS Average ME**	**Logit ME at the means**	**Logit Average ME**	**Probit ME at the means**	**Probit Average ME**
lHHI	-21.03**	-21.03**				
CSO	1.42e-08***	0.00000001***	9.88e-09***	0.00000001***	9.92e-09***	0.00000001**
CEXP	-2.61e-08***	-0.00000003***	-1E+77-8**	-0.00000002**		
LLPTL	.15***	0.15***	.05***	0.06***	.06***	0.06***
ATSC	.02***	0.02***	.02***	0.03***	.02***	0.02***
Fincrisis	.02***	0.02***	.02***	0.02***	.02***	0.02***

ME means marginal effects

Significance levels: *** 1%; ** 5%, *10%

Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
NegROEdummy	19,536	0.071	0.256	0.000	1.000
plogit	10,780	0.072	0.142	0.002	0.986
pprobit	10,780	0.070	0.137	0.001	0.987
pols	10,780	0.072	0.135	-0.157	0.941

*Percent correctly predicted values

Marginal effects interpretation – A 1 unit increase in loan loss provisions to total loans is 15% more likely to contribute to negative ROE. The marginal effects at the mean and the average marginal effects are very similar. The signs and magnitude of both the probit and logit model are similar. The forecasted probabilities for negative ROE are about 7%, similar to the fundamental frequency of negative ROE. The logit and probit models correctly predict 94% of the values, and the remaining values are misclassified – please, check external Appendix 4.

6.6.2.2 Part 1A: Binary Outcome Modelling using Continuous and Categorical Variables – Margins

Table 21: Binary Outcome Modelling using Continuous and Categorical Variables – Margins ATSC (Structural Change since Antitrust Policy)

Probit Regression with robust standard error		
No. of Obs = 12,590		
Prob > chi^2 = 0.0000		
Log pseudolikelihood = -3416.7368		
Pseudo R^2 = 0.05		
Wald chi2(10) = 324.81		
NegROEdummy	Coef.	z
1.ATSC	0.39***	8.46
CSO	0.0000001***	2.58
lHHI	141.81**	2.42
ATSC#c.lHHI	-218.87***	-3.4
_cons	-1.78***	-42.46

The result showed that the structural change in antitrust policy, common share outstanding, and low bank concentration significantly increased the likelihood of negative ROE in listed European and North American commercial banks. The interaction of antitrust policy and low bank concentration significantly reduce the likelihood of negative return-on-equity.

Table 22: Binary Outcome Modelling - Marginal Effect of Antitrust Law at Different Bank Concentration Levels on the Likelihood of Negative Return on Equity (post-estimation)

margins ATSC, at(**hHHI**=(0.0005778(3)17.9218)) Predictive margins, Number of obs = 12,590 Model VCE : Robust Expression : Pr(NegROEdummy), predict() 1._at : hHHI = .0005778 2._at : hHHI = 3.000578 3._at : hHHI = 6.000578 4._at : hHHI = 9.000578 5._at : hHHI = 12.00058 6._at : hHHI = 15.00058		
_at#ATSC	Margin	z
1 0	0.05***	7.11
1 1	0.08***	27.54
2 0	0.06***	5.47
2 1	0.12***	25.2
3 0	0.09***	2.56
3 1	0.18***	16.21
4 0		
4 1	0.24***	12.33
5 0		
5 1	0.32***	10.57
6 0		
6 1	0.40***	9.82

margins ATSC, at(**mHHI**=(0(0.05)0.2359512)) Predictive margins, Number of obs = 12,590 Model VCE : Robust Expression : Pr(NegROEdummy), predict() 1._at : mHHI = 0 2._at : mHHI = .05 3._at : mHHI = .1 4._at : mHHI = .15 5._at : mHHI = .2		
_at#ATSC	Margin	z
1 0	0.06***	6.45
1 1	0.09***	25.38
2 0	0.05***	5.29
2 1	0.09***	9.34
3 0	0.04**	2.08
3 1	0.10***	4.41
4 0		
4 1	0.11***	2.9
5 0		
5 1	0.12**	2.17

. margins ATSC, at(**lHHI**=(0(0.002)0.0109236)) Predictive margins, Number of obs = 12,590 Model VCE: Robust Expression : Pr(NegROEdummy), predict() 1._at : lHHI = 0 2._at : lHHI = .002 3._at : lHHI = .004 4._at : lHHI = .006 5._at : lHHI = .008 6._at : lHHI = .01		
_at#ATSC	Margin	z
1 0	0.04***	9.95
1 1	0.09***	28.01
2 0	0.08***	4.88
2 1	0.08***	12.49
3 0	0.13***	2.76
3 1	0.06***	5.62
4 0	0.19**	2.1
4 1	0.04***	3.47
5 0		
5 1	0.03**	2.45
6 0		
6 1		

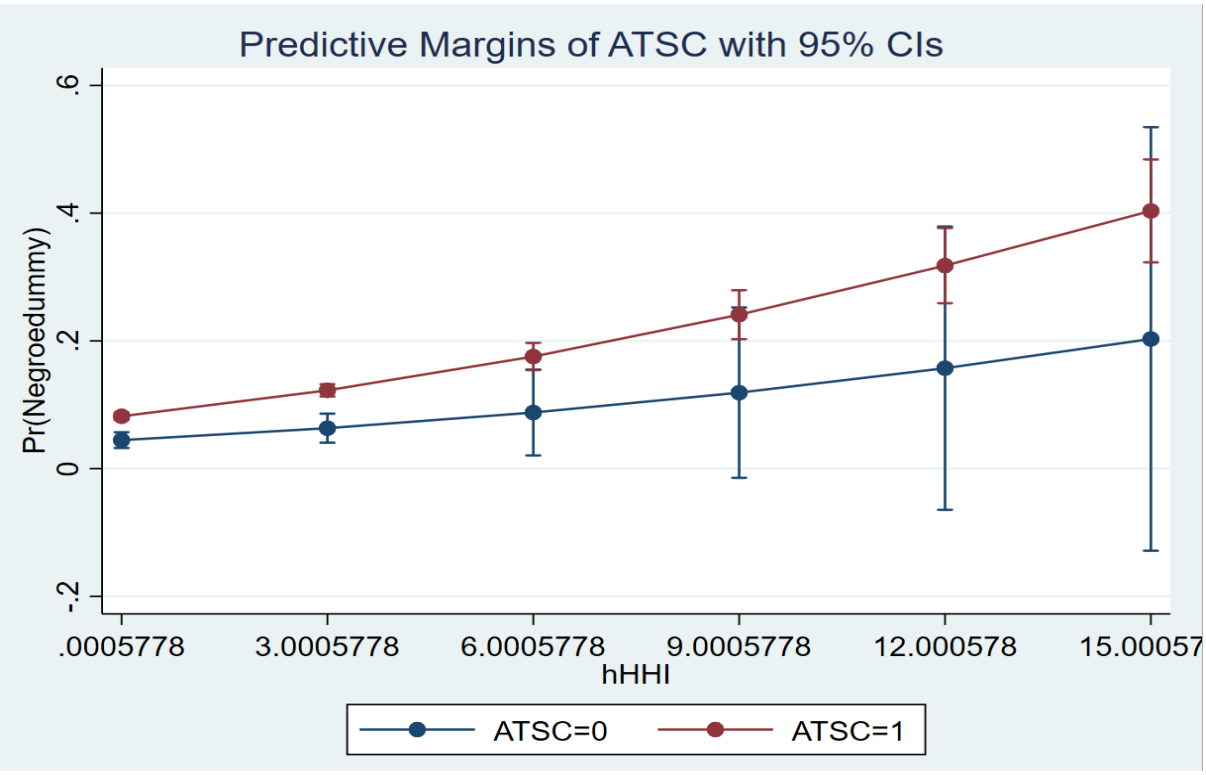


Figure 9: Predictive Margins of Anti-trust Policy with Negative ROE at high bank concentration (Europe and North America)

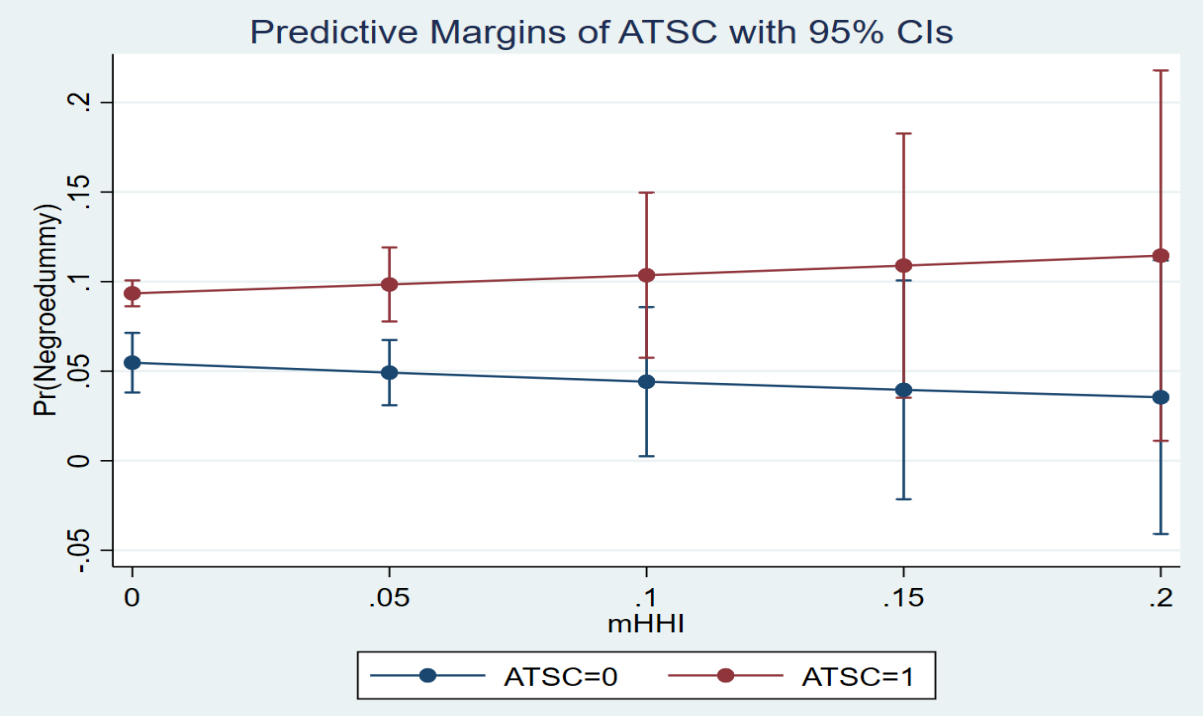


Figure 10: Predictive Margins of Anti-trust Policy with Negative ROE at medium bank concentration (Europe and North America)

The high concentration of 3 during the structural change in antitrust laws showed a predicted probability of 18%. A high concentration of 6 with a structural change in antitrust policy indicated the predicted probability of 40%. Hence, as high concentration increased in the presence of antitrust laws in table 22, Figures 9 and 10, the likelihood of negative ROE increased. The predicted probability of negative return-on-equity increased as the medium and high bank concentration increased during the effects of structural changes in antitrust policy (Figure 9 and 10). However, in figure 11, the predicted probability of negative ROE decreased at low bank concentration. Our findings in figure 11 showed that the predictive probability of negative ROE declined significantly at low bank concentration (high bank competitiveness) due to the structural change since the antitrust policy.

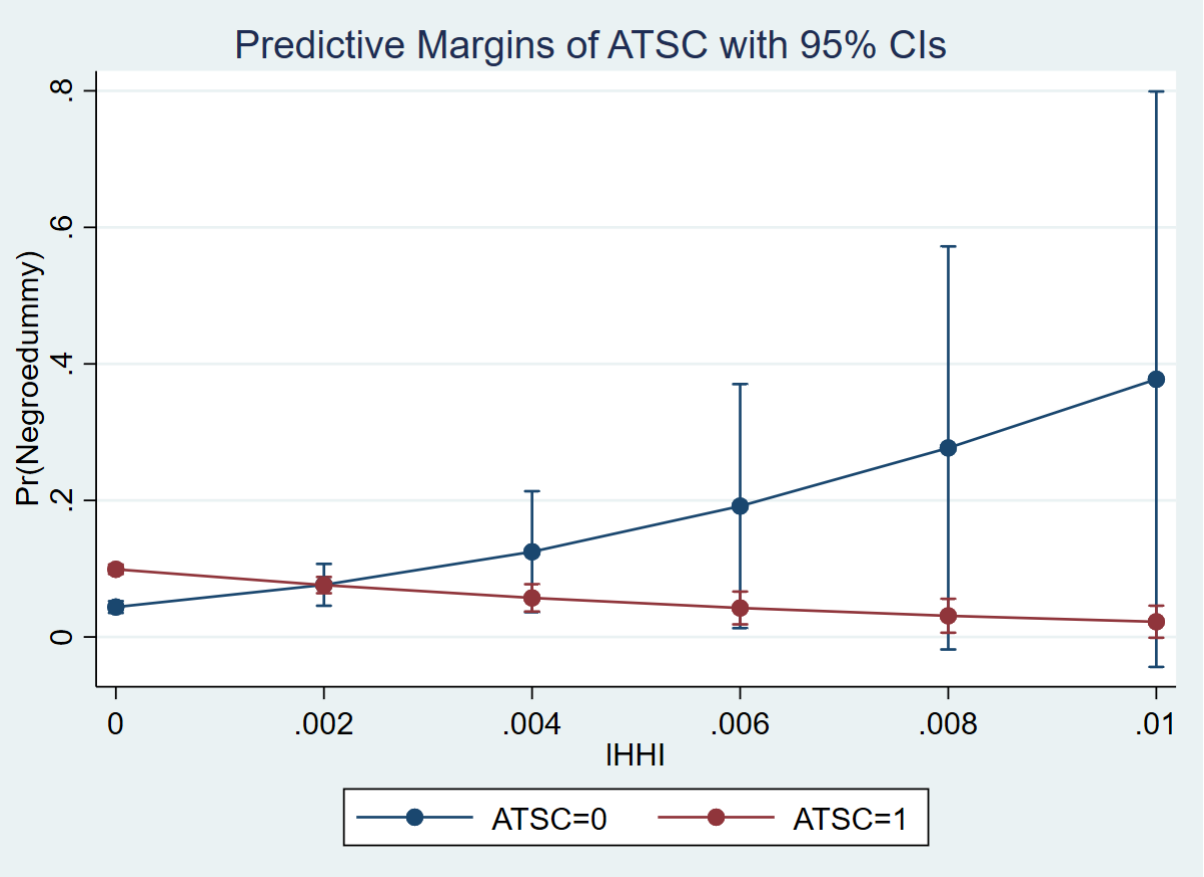


Figure 11: Predictive Marginal Interactions of Anti-trust Policy with Negative ROE at low bank concentration (Europe and North America)

6.6.3 Difference-in-Difference Estimations: Testing and probing the interactions

Table 23: Difference-in-Difference: Impact of HHI and HHI Interactions with Governance Measures on return-on-equity.

Number of obs = 7664		
F(11, 7652) = 70.29		
Prob > F = 0		
R-squared = 0.0918		
Adj R-squared = 0.0905		
Root MSE = 5.7481		
ROE	**Coef.**	**t**
hHHI_c	-0.99***	-5.4
LLR_c	-0.000002***	-20.43
DPS_c	-0.013***	-3.72
LLPTL_c	-1.09***	-8.4
EMP_c	0.0002***	18.58
ATSC#c.hHHI_c	0.69***	3.63
c.DPS_c#c.hHHI_c	0.005***	4.31
c.EMP_c#c.hHHI_c	-0.000004***	-3.28
_cons	10.76***	150.17

Interpretation – The result showed that 1 unit increase in employees (EMP_c), interaction of antitrust policy structural changes and high concentration (ATSC#c.hHHI_c), and interaction of dividend per share and high concentration (c.DPS_c#c.hHHI_c) significantly increased ROE by 0.02%, 69%, 0.5%, respectively. However, 1 unit increase in high bank concentration (hHHI_c), loan loss reserve (LLR_c), dividend per share (DPS_c), provisions for loan loss to total loans (LLPTL_c), and the interaction of employees and high concentration (c.EMP_c#c.hHHI_c) significantly reduced listed banks performance in U.S., Canada, and Europe. Due to the significance of these interactions, we can then test the slope and probe the interactions.

6.6.3.1 Generating and testing simple slopes for bank concentration at -1sd (one standard deviation below the) means and +1sd (one standard deviation above the) mean on the centred dividend-per-share predictor.

Table 24: Marginal Effect of dividend per share on bank concentration

At High Concentration	**At Lower Concentration**
margins, at(**hHHI_c**=(-2.664665 0 2.664665) DPS_c=(-21.86125 0 21.86125))	. margins, at(**mHHI_c**=(-0.006235 0 0.006235) DPS_c=(-21.86125 0 21.86125))
Predictive margins & No. of obs =7,664	Predictive margins & No. of obs = 7,664
Model VCE: OLS	Model VCE: OLS
Expression: Linear prediction, predict()	Expression: Linear prediction, predict()
1._at : hHHI_c = -2.664665 DPS_c = -21.86125	1._at : mHHI_c = -.006235 DPS_c = -21.86125
2._at : hHHI_c = -2.664665 DPS_c = 0	2._at : mHHI_c = -.006235 DPS_c = 0
3._at : hHHI_c = -2.664665 DPS_c = 21.86125	3._at : mHHI_c = -.006235 DPS_c = 21.86125
4._at : hHHI_c = 0 DPS_c = -21.86125	4._at : mHHI_c = 0 DPS_c = -21.86125
5._at : hHHI_c = 0 DPS_c = 0	5._at : mHHI_c = 0 DPS_c = 0
6._at : hHHI_c = 0 DPS_c = 21.86125	6._at : mHHI_c = 0 DPS_c = 21.86125
7._at : hHHI_c = 2.664665 DPS_c = -21.86125	7._at : mHHI_c = .006235 DPS_c = -21.86125
8._at : hHHI_c = 2.664665 DPS_c = 0	8._at : mHHI_c = .006235 DPS_c = 0
9._at : hHHI_c = 2.664665 DPS_c = 21.86125	9._at : mHHI_c = .006235 DPS_c = 21.86125
Margin	Margin
_at	_at
1 12.78***	1 11.23***
2 12.19***	2 10.93***
3 11.61***	3 10.63***
4 11.15***	4 11.36***
5 10.88***	5 11.06***
6 10.61***	6 10.77***
7 9.53***	7 11.49***
8 9.57***	8 11.20***
9 9.60***	9 10.90***

6.6.3.2 Marginal Plot using bank concentration (HHI) as a focal predictor with another independent variable

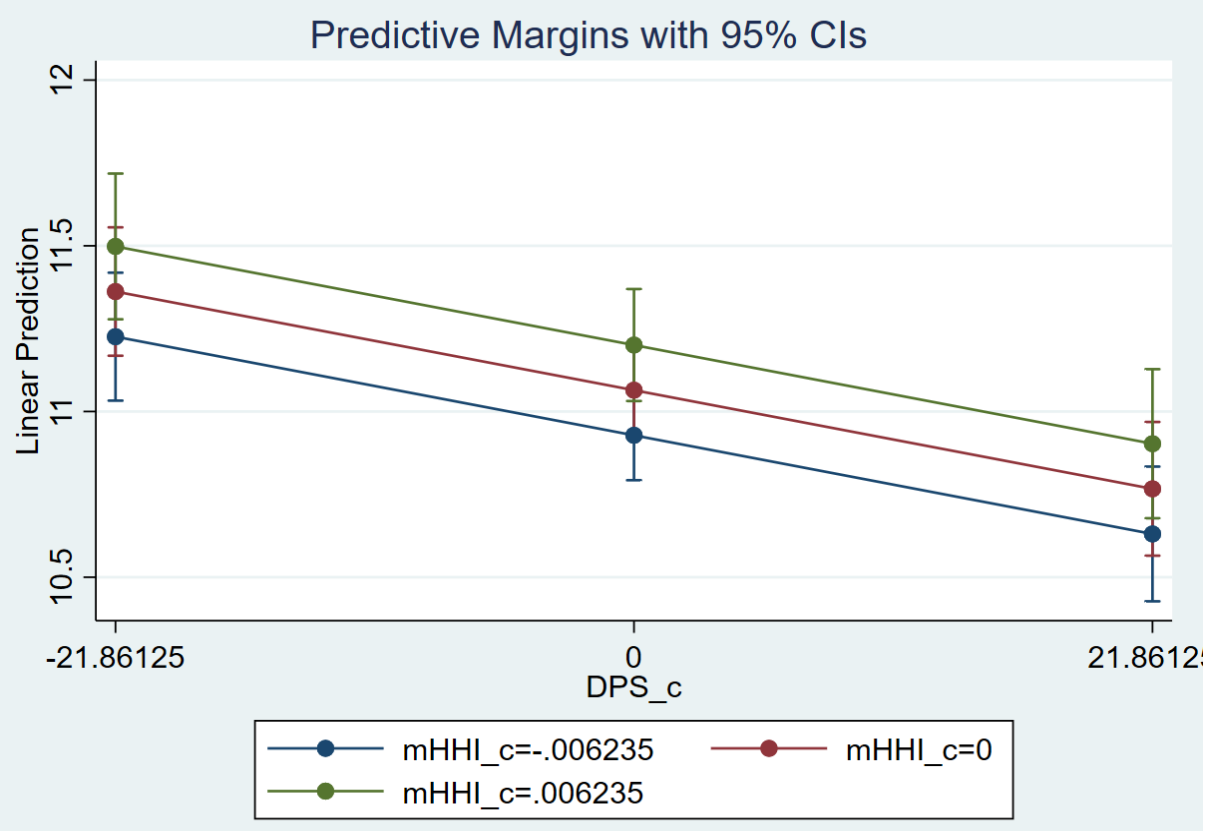


Figure 12: Marginal Plot using medium bank concentration and dividend per share

At 1 standard deviation below or above the mean and at the mean of dividend per share, there is a negative relation between average bank concentration and DPS (Dividend-per-share).

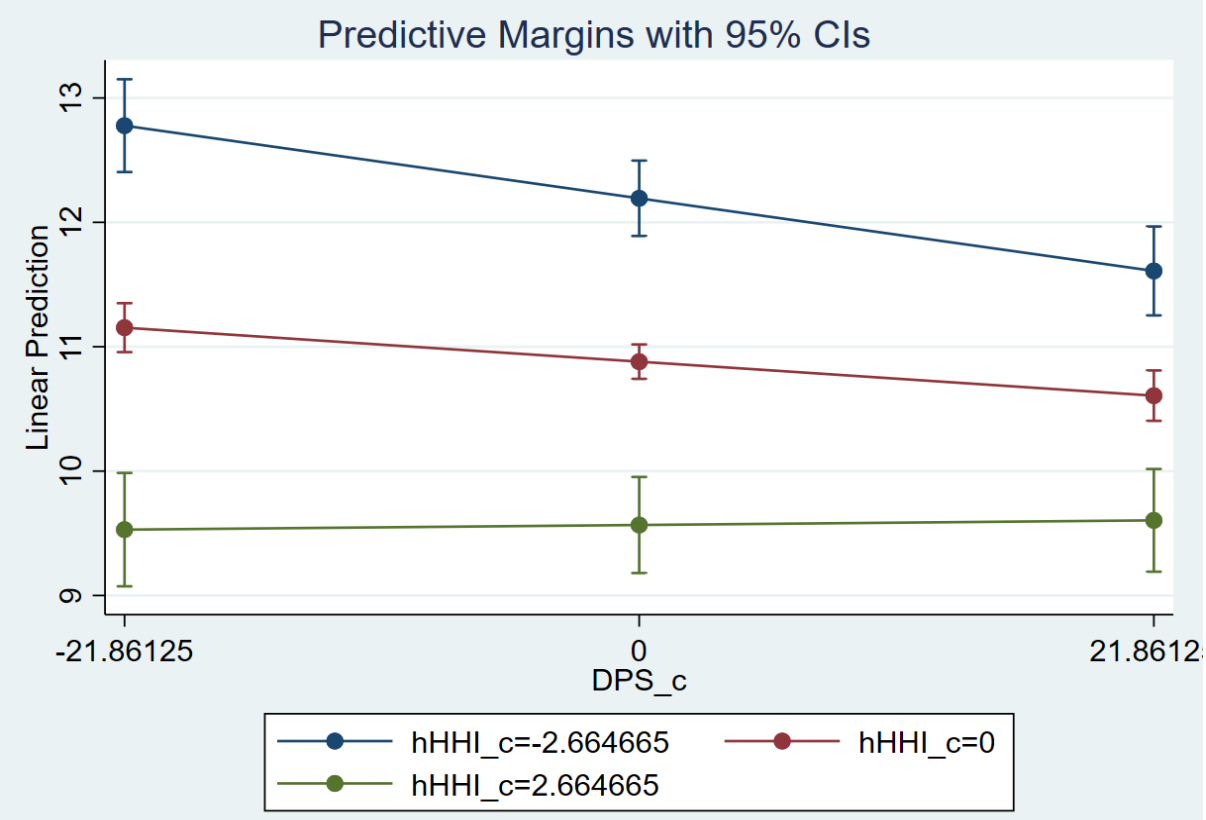


Figure 13: Marginal Plot using high bank concentration and dividend per share

At one standard deviation below and mean of dividend per share, there is a negative relationship between high bank concentration and DPS (Dividend-per-share). This result confirmed the difference-in-difference (DID) estimation table above. The marginal effect test showed that dividend per share had significant positive effects on high and low bank concentration at the mean and below or above the mean. Figure 12: there is a negative predictive relationship between medium concentration and dividend per share at the means, below, or above the means. The margin plot (in Figure 13) found a negative predictive relationship between high bank concentration and DPS at mean and below the mean; and the linear predictive relationship above the mean.

6.6.3.3 Testing Average Marginal Effect of Anti-trust Policy

Table 25: Average Marginal Effect of Anti-trust Policy on Bank Concentration

Model VCE: OLS			Model VCE: OLS		
Expression: Linear prediction, predict()			Expression: Linear prediction, predict()		
dy/dx w.r.t. : hHHI_c			dy/dx w.r.t. : mHHI_c		
1._at : ATSC = 0			1._at : ATSC = 0		
2._at : ATSC = 1			2._at : ATSC = 1		
No. of Obs = 9,268			No. of obs = 9268		
	dy/dx	t		dy/dx	t
hHHI_c: _at			mHHI_c: _at		
1	0.00004	0.02	1	0.064	0.330
2	0.003***	4.58	2	-0.003	-0.040

The average marginal effect test showed that the structural change in antitrust policy significantly and positively influenced high bank concentration.

6.6.3.4 Marginal Plot using antitrust policy structural changes as a focal predictor with bank concentration

Table 26: Marginal Plot using antitrust policy as a focal predictor with bank concentration

High Concentration			Average Concentration	
. margins, at (hHHI_c=(-2.664665 0 2.664665) ATSC=(0 1))			margins, at (mHHI_c=(-0.006235 0 0.006235) ATSC=(0 1))	
Predictive margins			Predictive margins	
Model VCE : OLS			Model VCE : OLS	
No. of obs = 9,268			No. of obs = 9,268	
Expression : Linear prediction, predict()			Expression : Linear prediction, predict()	
1._at : ATSC = 0			1._at : ATSC = 0	
hHHI_c = -2.664665			mHHI_c = -.006235	
2._at : ATSC = 0			2._at : ATSC = 0	
hHHI_c = 0			mHHI_c = 0	
3._at : ATSC = 0			3._at : ATSC = 0	
hHHI_c = 2.664665			mHHI_c = .006235	
4._at : ATSC = 1			4._at : ATSC = 1	
hHHI_c = -2.664665			mHHI_c = -.006235	
5._at : ATSC = 1			5._at : ATSC = 1	
hHHI_c = 0			mHHI_c = 0	
6._at : ATSC = 1			6._at : ATSC = 1	
hHHI_c = 2.664665			mHHI_c = .006235	
_at	**Margin**	**t**	**Margin**	**t**
1	0.004	0.7	0.0038629	1.79
2	0.004**	2.24	0.004**	2.36
3	0.0043141	0.63	0.005**	2.12
4	0.004**	2	0.01***	9.23
5	0.01***	9.83	0.01***	9.53
6	0.02***	9.27	0.01***	8.87

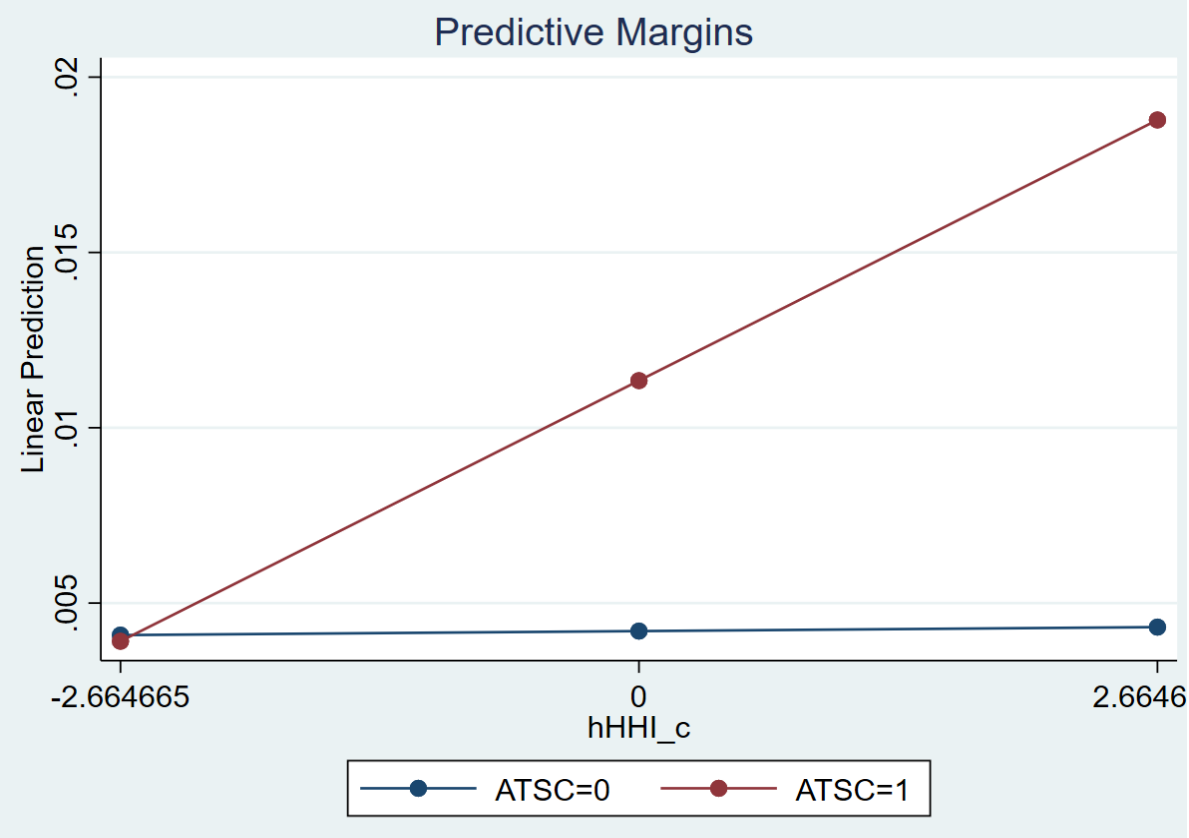


Figure 14: Marginal Plot using high bank concentration and antitrust policy structural changes

At one standard deviation below or above the mean and at the mean of high concentration, the structural changes in antitrust policy had a significant predictive margin and positively moderated bank performance. There is no interaction between ATSC=0 and ATSC=1 at the mean or above the mean of high concentration. Before enacting the antitrust law, at and above the mean, there is little or no linear predictive relationship between high concentration and bank performance. At ATSC=1, there is a significant linear predictive positive relationship between hHHI and antitrust policy. The average marginal effect test showed that antitrust law influenced high bank concentration significantly at the mean, above-, and below-means. Figure 14 also confirmed the positive relationship between high concentration and the structural changes in antitrust laws at the means and around the means.

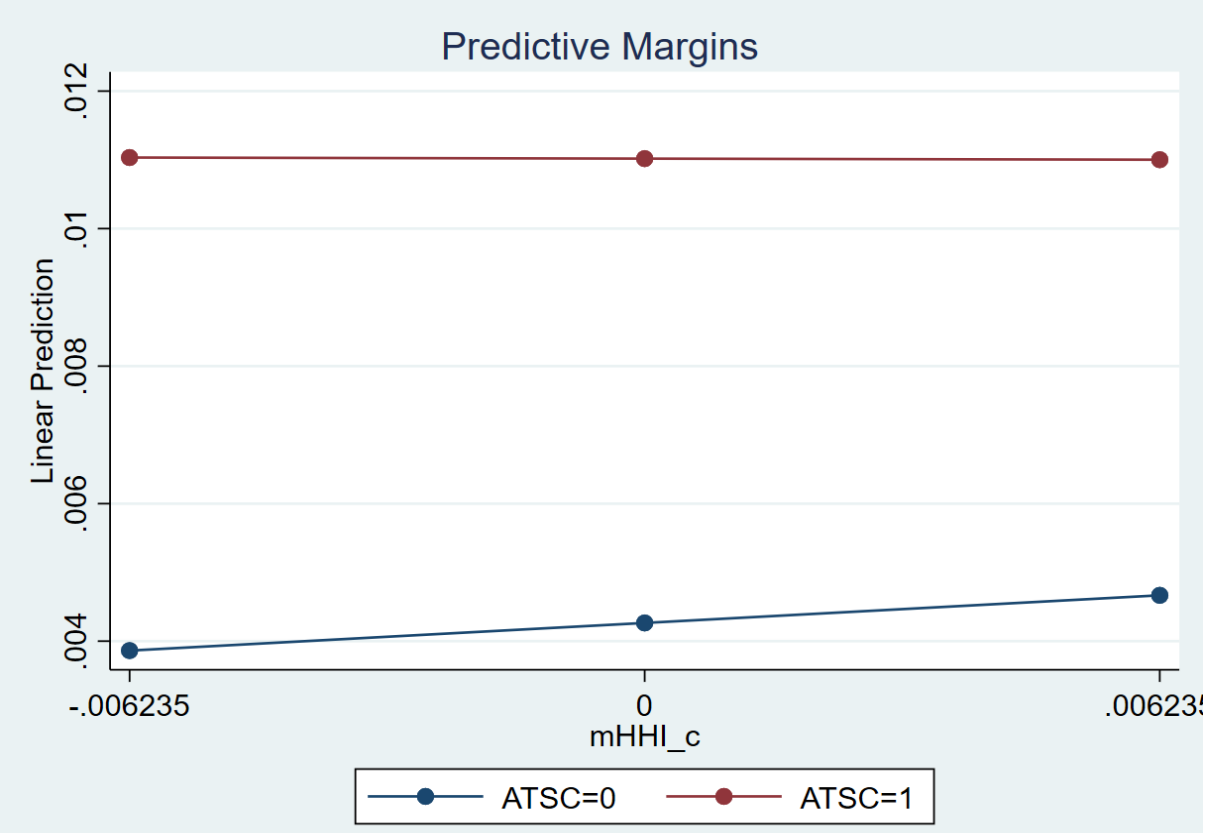


Figure 15: Marginal Plot using medium bank concentration and antitrust policy structural changes

At 1 standard deviation below or above the mean and at the mean of average concentration and ATSC=0, significant positive relationship existed between HHI and anti-trust policy. However, at ATSC=1, there is no relationship. Also, there is no interaction between ATSC=0 and ATSC=1 at 1 standard deviation ‘around the mean’ or ‘at mean’.

6.7 Empirical Analysis (Part B)

Corporate governance variables can influence the performance and behaviour of the bank. The Chatzimanoli (2011) study captured a continually mutating relationship between law and new governance measures about European financial regulation. Even though the empirical findings did not consider the effects of the interaction of governance practices and antitrust laws (e.g., competition laws) on bank performance, there is an evolving relationship between laws and governance practices that merit further investigations. Part B of the last empirical chapter attempted to cover this area to inform policy about bank competitiveness.

6.7.1 Panel Data Analysis of Returns for listed US, Canadian, and European Commercial Bank – Returns and Negative Returns Dummy

Table 27: The Panel Data Regression of listed European and North American Commercial Banks (2006-2018) using pooled OLS, fixed effects-, and random effects estimators, comparatively. The dependent variable returns (proxied by price).

The Independent variables are strictly independent board members (BSSIBM) interaction with hHHI, board-specific skill (BSSS) interaction with hHHI, and HHI (proxied by price).

Returns	**Pooled OLS**		**REM**		**FEM**	
Variables	Coeff.	t	Coeff.	z	Coeff.	t
No. of Group			137		137	
No. of Obs	469		469		469	
F(21, 447) =	7.47				F(21,311) =	4.85
Prob > F	0		0		0	
R-sq.	0.26					
R-sq.: within, between, overall			0.16, 0.52 & 0.26		0.25, 0.07 & 0.03	
Root MSE and corr(u_i, Xb)	0.45 & NA		NA & 0 Assumed		NA & -0.66	
TEPS	0.02**	2.00	0.02**	2	0.10***	4.31
hHHI					-1.49**	-2.21
mHHI	-1.88*	-1.53	-1.88*	-1.53	4.39**	1.97
NPLTL	0.03***	3.00	0.03***	3		
BSSIBMDummy					-0.15*	-1.49
BSSIBMxhHHI					1.49**	2.06
BSSSDummy	0.16***	3.08	0.16***	3.08		
BSSSxhHHI	-1.05***	-3.21	-1.05***	-3.21		
BSIBMDummy	-0.41***	-3.19	-0.42***	-3.19		
EC- Board hiring external consultant	-0.45***	-6.34	-0.45***	-6.34	-0.30**	-1.98
NCI- Nom. Committee Independence				1	0.01*	1.54
CGC-Corporate Governance Committee				-1.23	-0.38*	-1.75
sigma_u, sigma_e and rho			0, 0.47 & 0		0.50, 0.47 and 0.53	

Significance levels: *** 1%; ** 5%, *10%

The significant Hausman test (Prob>chi^2 = 0.0203) implied that the fixed-effect model (FEM) is a preferential model – Appendix 3 indicates the full (Hausman test, Breusch-Pagan Lagrange Multiplier test, and individual-specific effects) robustness results. The Breusch-Pagan LM test is insignificant (Prob > chibar^2= 1.0000). Hence, the pooled OLS is preferentially chosen. The rho of 0.53 indicated that the individual effects dominate the idiosyncratic error in the FEM.

Interpretation of FEM due to significant Hausmann est – The result showed that the higher values of medium-concentration (mHHI), trailing earnings per share (TEPS), the interaction of strictly independent board members and high concentration (BSSIBMxhHHI), and the nomination committee independence significantly increased bank return. On the other hand, higher values of the, Strictly Independent Board Members (BSSIBMDummy), External Consultants (EC), and Corporate Governance Committee (CGC) are significantly, negatively associated with lower values of returns. Hence, for listed European and North American commercial banks, a 1 unit increase in trailing earnings per share and the interaction of strictly independent board members and high concentration increased returns by 10% and 149%, respectively. The FEM rho of 0.53 explained that the individual specific term and the 0.47 are due to an idiosyncratic error. The FEM R^2 showed that the FEM estimators only explained 25%, 7%, and 3% of within-, between-, and overall-variation, respectively.

Table 28: The Panel Data Regression of listed European and North American Commercial Banks (2006-2018) using pooled OLS, fixed effects-, and random effects estimators, comparatively.

The dependent variable is the negative return dummy. The Independent variables are independent board member (BSSIBM) interaction with hHHI, board-specific skill (BSSS) interaction, and HHI (proxied by price).

Negative Return	**Pooled OLS**		**REM**		**FEM**	
	Coeff.	t	Coeff.	z	Coeff.	t
No. of Group			139		139	
No. of Obs	469		579		579	
					F(21,419)	
F(21, 447) =	7.47				=	3.71
Prob > F	0		0.0002		0	
R-sq.	0.26					
R-sq.: wtn, btw, overall			0.11, 0.07 & 0.09		0.16, 0.04 & 0.02	
			NA & 0		NA & -	
Root MSE and corr(u_i, Xb)	0.45 & NA		Assumed		0.78	
TEPS - Trailing earnings per share	-0.02**	-1.94	-0.02**	-1.94	-0.09***	-4.32
BSSSDummy	-0.21***	-4.18	-0.21***	-4.18	-0.22***	-2.88
BSSSxhHHI	0.60*	1.78	0.60*	1.78		
BSIBMxhHHI	-0.72**	-2.18	-0.72**	-2.18	-1.24***	-2.52
CGC - Corporate Governance Committee	0.12**	2.22	0.12**	2.22		
CCS - CEO Duality					-0.23*	-1.55
_cons	0.464**	1.92	0.46**	1.92	1.62**	2.3
sigma_u, sigma_e & rho			0, 0.49 & 0		0.44, 0.49 & 0.45	

Significance levels: *** 1%; ** 5%, *10%

The Hausman test (FEM vs. REM) is significant (Prob>chi^2 = 0.0024). Hence, the fixed-effect model (FEM) is a preferential model – external Appendix 3 indicates the full (Hausman test, Breusch-Pagan LM test, and individual-specific effects) robustness results. The Breusch-Pagan LM test is insignificant (Prob > chibar^2 = 1.0000). Hence, the pooled OLS is preferentially chosen. The rho of 0.28 indicated that the individual effects slightly dominate the idiosyncratic error in the FEM.

Interpretation of FEM due to significant Hausmann Test – On the other hand, the higher values of trailing earnings per share, board member specific skills (BSSSDummy), the interaction of independent board members and high concentration (BSIBMxhHHI), and CEO

duality (CCS) are significantly, negatively associated with a lower likelihood of negative returns. Hence, for the listed commercial banks, a 1 unit increase in trailing earnings per share, board member-specific skills, and CCS reduced the likelihood of negative returns by 9%, 22%, and 23%, respectively. The FEM rho of 0.45 explained the individual-specific term, and the 0.55 was linked to an idiosyncratic error. The FEM R^2 showed that the FEM estimators only explained 16%, 4%, and 2% of within-, between-, and overall-variation, respectively.

6.7.2 Panel Data Analysis of Returns for listed United States, Canadian, and European Commercial Bank – based on the interaction of board Experience and high HHI

Table 29: The Panel Data Regression of listed European and North American Commercial Banks (2006-2018) using pooled OLS, fixed effects-, and random effects estimators, comparatively.

The dependent variable is returned. The Independent variable board experience and HHI-board experience interactions.

Returns	Pooled OLS		REM		FEM	
Variables	Coeff.	t	Coeff.	z	Coeff.	t
No. of Group			151		151	
No. of Obs	551		551		551	
					F(9,	10.5
F(9, 541)	19.05				391) =	5
Prob > F	0		0		0	
R-sq.	0.24					
R-sq.: wtn, btw, overall			0.18, 0.33 & 0.24		0.20, 0.17 & 0.21	
Root MSE and corr(u_i, Xb)	0.44 & NA		NA & 0 Assumed		NA & -0.08	
hHHI	1.61**	2.44	1.61**	2.44	1.34*	1.62
mHHI	-2.97***	-2.97	-2.97***	-2.97		
NPLTL - Non-performing loan % of total loan	0.02***	3.08	0.02***	3.08		
NETC - Non-Executive Total Compensation	0.00000002 *	1.59	0.00000002 *	1.59		
BSEB10Overe#c.hHHI	-0.95*	-1.76	-0.95*	-1.76		
		10.8		10.8		
Fincrisis200709	0.75***	4	0.75***	4		
_cons	-0.09***	-2.46	-0.09***	-2.46		
sigma_u, sigma_e & rho			0, 0.47 & 0		0.27, 0.47 & 0.26	
Significance levels: *** 1%; ** 5%, *10%						

The average board experience group into three categories: BSEB<7 (Less experienced board based on average no of years); BSEB7-10 (Optimally experienced board); and BSEB>10 (Over-experienced board). The non-significant Hausman test (Prob>chi^2 = 0.14) meant that the random effect model (REM) is a preferential model – external Appendix 3 indicated the full (Hausman test, Breusch-Pagan Lagrange Multiplier test, and individual-specific effects) robustness results. The Breusch-Pagan LM test is insignificant (Prob > chibar^2= 1.0000). Hence, the pooled OLS is preferentially chosen. The rho of 0.26 indicated that the individual effects poorly dominate the idiosyncratic error in the FEM.

Interpretation of random effect model due to non-significant Hausmann Test – The result showed that the higher values of high-concentration, non-performing loan to total loan, non-executive total compensation, and financial crisis significantly increased listed commercial bank returns. On the other hand, higher values of medium bank concentration and interaction of over-experienced board members and hHHI (BSEB10Overe#c.hHHI) significantly reduced bank returns. Hence, a 1 unit increase in the interaction of over-experienced board members and hHHI reduced returns by 95% for listed European and North American commercial banks. Furthermore, the REM R^2 showed that the REM estimators only explained 18%, 33%, and 24% of within-, between-, and overall-variation, respectively.

6.7.3 Probit and Logit Regression Part B (With Corporate Governance data)

Table 30: Proportion of negative return dummy

Negative Return Dummy	Freq.	Percent	Cum.
0	1,591	52.65	52.65
1	1,431	47.35	100
Total	3,022	100	

Table 31: Probit and Logit Regression for listed European and North American commercial bank performance

	Probit		Logit	
Number of obs =	579		579	
LR $chi^2(21)$ =	66.6		67.35	
Prob > chi^2 =	0		0	
Pseudo R^2 =	0.0863		0.0873	
Log likelihood =	-352.62		-352.24	
Negative Return	**Coef.**	**P>z**	**Coef.**	**P>z**
TEPS	-0.08***	0.009	-0.12***	0.013
BSSSDummy	-0.61***	0	-0.99***	0
BSIBMxhHHI	-8.24***	0	-14.74***	0
CGC	0.39***	0.009	0.68***	0.008

The banks with an increasing level of trailing earnings per share, board specialised skills (BSSSDummy), and the interaction of independent board members and high concentration (BSIBMxhHHI) significantly reduced negative ROE. At the same time, the presence of a corporate governance committee significantly increased the likelihood of negative returns.

6.7.3.1 Part B: Binary Outcome Modelling of listed commercial banks with Marginal effects – at means and average marginal effects

Table 32: Binary Outcome Modelling of listed commercial banks with Marginal effects (focusing on Corporate Governance as Explanatory Variables)

Negative Return	OLS at means	OLS Average ME	Logit ME at means	Logit Average ME	Probit ME at the means	Probit Average ME
TEPS	-.004*	-.003*				
NPLTL	0.02***	0.02***				
BSSIBMDummy	0.02*	0.02*				
SBS	-0.03***	-0.03***				

ME means marginal effects

Significance levels: *** 1%; ** 5%, *10%

Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
NegativeRe~y	3,016	0.019	0.136	0	1
plogit	95	0.074	0.187	0	0.999
pprobit	95	0.075	0.186	0	0.999
pols	579	0.012	0.042	-0.069	0.307

A 1 unit increase in trailing earnings per share and staggered board structure (SBS) is 0.4% and 3% less likely to increase the likelihood of negative returns significantly. However, NPLTL and strictly independent board members significantly increased the likelihood of negative returns by 2%. The marginal effects at the mean and the average marginal effects were not significant for both logit and probit models. The mean of forecasted probabilities for having a negative return stood at 1.2%, close to the real frequency of negative return. The logit and probit models correctly predict 95% of the values, and the remaining values are misclassified – please, check external Appendix 4 – Part B.

6.7.3.2 Part 1B: Binary Outcome Modelling using Continuous and Categorical Variables – Margins _at#BSSIBMDummy (Does the bank have strictly independent board members or not).

Table 33: The Binary Outcome Modelling (Probit Regression) using Continuous and Categorical Variables

Probit regression	No. of obs = 612	
LR $chi^2(9)$ = 11.21		
Prob > chi^2 = 0.26		
Log likelihood = -57.33		
Pseudo R^2 = 0.09		
Negative Return	**Coef.**	**z**
1.BSSSDummy	0.55*	1.54
BSSSDummy#c.Hhhi1	-14.88*	-1.80

The interaction of board member-specific skills and high-concentration has a weakly significant effect on reducing negative returns.

Table 34: Marginal Effect of strictly independent board member at different levels of non-executive total compensation on the likelihood of negative return

Strictly Independent Board Member: margins BSSIBMDummy, at(NETC=(145019.4(1000000)12900000))
Predictive margins No. of obs = 1044
Model VCE : OIM
Expression : Pr(NegativeReturnDummy), predict()
1._at : NETC = 145019.4
2._at : NETC = 1145019
3._at : NETC = 2145019
4._at : NETC = 3145019
5._at : NETC = 4145019
6._at : NETC = 5145019
7._at : NETC = 6145019
8._at : NETC = 7145019
9._at : NETC = 8145019
10._at : NETC = 9145019
11._at : NETC = 1.01e+07
12._at : NETC = 1.11e+07
13._at : NETC = 1.21e+07

_at#BSSIBMDummy	Margin	z
1 0	0.03**	2.13
2 0	0.03**	2.54
2 1	0.01*	1.76
3 0	0.03***	2.76
3 1	0.02**	2.08
4 0	0.03***	2.61
4 1	0.02**	2.18
5 0	0.03**	2.22
5 1	0.02**	2
6 0	0.03*	1.82
6 1	0.03*	1.73
7 0	0.02*	1.51
7 1	0.04*	1.48

Interpretation: 5._at : NETC = 4145019

When the total compensation of non-executive board members is 4,145,019 and no BSSIBM '0', there predicted probability of negative return was 3%. When the total compensation of non-executive board members is 4,145,019 and there is BSSIBM '1', there predicted probability of negative return was 2%. At a high level of total non-executive total compensation, the predicted probabilities of negative returns remained non-significant. The marginal effect is low and remained less significant as NETC increased above 4,145,019. Table 34 result showed that as the level of non-executive total compensation increased for listed commercial banks with strictly independent board members, the increasing likelihood of negative bank return reduced.

6.7.3.3 Part 2B: Binary Outcome Modelling using Continuous and Categorical Variables – Margins BSEB9, at(hHHI=(0.0041757(10)51.65916))

BSEB9 implied that the bank members' experience is less than and equal to 9 years.

Table 35: Binary outcome modelling (Probit Regression) using continuous and categorical variables – with board experience of less than or equal to 9 years (BSEB9).

margins BSEB9, at(hHHI=(0.0041757(10)51.65916))			
Predictive margins		No. of Obs = 1044	
Model VCE: OIM			
Expression : Pr(Negative Return Dummy), predict()			
1._at	: hHHI	=	.0041757
2._at	: hHHI	=	10.00418
3._at	: hHHI	=	20.00418
4._at	: hHHI	=	30.00418
5._at	: hHHI	=	40.00418
6._at	: hHHI	=	50.00418

_at#BSEB9	Margin	z
1 0	0.59***	14.31
1 1	0.42***	15.57
2 0	NS	
2 1	NS	
3 0	0	(empty)
3 1	0.04***	7023.55
4 0	0	(empty)
4 1	0.04***	1.00E+10
5 0	0	(empty)
5 1	0.04***	3.80E+18
6 0	0	(empty)
6 1	0.04***	3.70E+29

Interpretation: 1._at : hHHI = .0041757

At a high concentration of 0.004 and the BSEB9 of 0, the predicted probability of negative return is 59%. It implies that banks with an average board experience of more than nine years are more likely to see a negative return when the high concentration of 0.004 and the BSEB9 of 1, the predicted probability of negative return stood at 42%.

6.7.4 Principal Component Analysis (PCA)

The principal component analysis is a data reduction method that was used to aggregate and categorise bank governance data into corporate governance index (CG1), bad corporate governance (BCG), good corporate governance (GCG), and external corporate governance (ECG). The principal component analysis can be explained as the multivariate method for analysing the observations of a data table with many inter-correlated quantitative dependent variables. The principal component model had been applied to Lithuanian commercial banks to evaluate performance (Jaseviciene et al., 2013). The main reason for using PCA in this study is to reorientate and summarise many explanatory variables into a few components capturing the maximum possible variation from the original variables. The PCA was chosen because it compressed data size and simplified the description of the data set. The principal component analysis aggregated many governance variables to create principal governance components that were uniquely uncorrelated with the old variables. We employed the principal component analysis because some of the original independent variables remained correlated to require a factor representation. The principal method is the robust and rigorous method that minimised panel data estimation lapses, i.e., micro-data harmonisation (Badarau-Semenescu and Levieuge, 2010).

6.7.4.1 Panel Data Regression of Return using Governance Index Derived via Principal Component Analysis (PCA) Estimation Technique

Table 36: Panel Data Regression of return using governance index calculated using Principal Component Analytical Approach

	Pooled OLS	**REM**	**FEM**
No. of obs & group =	340 & NA	340 & 104	340 & 104
F(9, 330) =	0.78		F(9,227) = 0.66
Prob > F =	0	0	0
R-squared =	0.02		
Root MSE & corr(u_i, Xb)	0.58 & NA	NA & 0 assumed	NA & -0.77
R-sq.: wtn, btw, overall		0.01, 0.18 & 0.02	0.03, 0.001 & 0.005
Returns	Coef.	Coef.	Coef. Std. Err.
GCG	0.09*	0.09**	0.14*
ECG		-0.11*	
BS	0.08*	0.08*	
NBM			0.03*
sigma_u, sigma_e & rho		0, 0.68 & 0	0.66, 0.47 & 0.66
Significance levels: *** 1%; ** 5%, *10%			
Theta: REM lambda (λ)		0%	

The non-significant Hausman test (FEM vs. REM) indicated that the random effect model (FEM) is a preferential model. The Breusch-Pagan LM test is insignificant (Prob > chibar^2= 1.0000). Hence, the pooled OLS is preferentially chosen.

Interpretation of pooled OLS due to non-significant Hausmann Test and Bruesch Pagan Lagrange Multiplier test – The higher values of good corporate governance index (GCG) and board size (BSIZE) are positively and significantly associated with higher returns at weaker significance levels. Hence, for listed banks in Europe and North America, a 1 unit increase in board structure (BS) and good corporate governance index (GCG) significantly increased returns by 8% and 9%, respectively.

6.7.5 Single equation instrumental variable regression using dividend per share (DPS)

6.7.5.1 High Concentration (hHHI)

Table 37: Instrumental Variable Regression of Trailing Earnings per Share using Instrument - Dividend per Share, at High Concentration.

The endogenous Variable is Price.

ivregress 2sls TEPS hHHI (Price = DPS)

Instrumental variables (2SLS) regression. No. of obs = 2,171

Wald $chi^2(2)$	= 5536.20
Prob > chi^2	= 0.0000
R-squared	= 0.7626
Root MSE	= 1.3563

TEPS	Coef.	z
Price	0.08***	73.64
hHHI	-0.02***	-5.75
_cons	-0.27***	-5.63

Instrumented: Price

Instruments: hHHI DPS

Tests of endogeneity

Ho: variables are exogenous

Durbin (score) $chi^2(1)$ = 248.253 (p = 0.0000)

Wu-Hausman F(1,2167) = 279.789 (p = 0.0000)

First-stage regression summary statistics

Variable	R-sq.	Adjusted R-sq.	**Partial R-sq.**	**F(1,2168)**	Prob > F
Price	0.5809	0.5805	0.5798	2991.73	0

Minimum eigenvalue statistic = 2991.73

Critical Values. # of endogenous regressors: 1

Ho: Instruments are weak. # of excluded instruments: 1

	5%	10%	20%	30%
2SLS relative bias		(not available)		
	10%	15%	20%	25%
2SLS Size of nominal 5% Wald test	16.38	8.96	6.66	5.53
LIML Size of nominal 5% Wald test	16.38	8.96	6.66	5.53

6.7.5.2 Medium Concentration (mHHI)

Table 38: Instrumental Variable Regression of Trailing Earnings per Share using Instrument - Dividend per Share, at Medium Concentration. The endogenous Variable is Price.

ivregress 2sls TEPS mHHI (Price = DPS)					
Instrumental variables (2SLS) regression. No. of obs = 2,171					
		Wald $chi^2(2)$ = 5524.57			
		Prob > chi^2 = 0.0000			
		R-squared = 0.7620			
		Root MSE = 1.3579			
TEPS	Coef.	z			
Price	0.08***	73.6			
mHHI	-1.29***	-5.44			
_cons	-0.27***	-5.65			
Instrumented: Price					
Instruments: mHHI DPS					
Tests of endogeneity					
Ho: variables are exogenous					
Durbin (score) $chi^2(1)$ = 250.037 (p = 0.0000)					
Wu-Hausman F(1,2167) = 282.062 (p = 0.0000)					
First-stage regression summary statistics					
Variable	R-sq.	Adjusted R-sq.	Partial R-sq.	F(1,2168)	Prob > F
Price	0.5809	0.5805	0.5798	2991.03	0
Minimum eigenvalue statistic = 2991.03					
Critical Values	# of endogenous regressors: 1				
Ho: Instruments are weak	# of excluded instruments: 1				
		5%	10%	20%	30%
2SLS relative bias			(not available)		
		10%	15%	20%	25%
2SLS Size of nominal 5% Wald test		16.38	8.96	6.66	5.53
LIML Size of nominal 5% Wald test		16.38	8.96	6.66	5.53

6.7.5.3 Low Concentration (lHHI)

Table 39: Instrumental Variable Regression of Trailing Earnings per Share using Instrument - Dividend per Share, at Low Concentration.

. ivregress 2sls TEPS lHHI (Price = DPS)			
Instrumental variables (2SLS) regression. No. of obs = 2,171			
	Wald $chi^2(2)$ = 5492.73		
	Prob > chi^2 = 0.0000		
	R-squared = 0.7603		
	Root MSE = 1.3628		
TEPS	Coef.	z	
Price	0.080***	73.650	
lHHI	-28.99***	-4.650	
_cons	-0.28***	-5.820	
Instrumented: Price			
Instruments: lHHI DPS			
Tests of endogeneity			
Ho: variables are exogenous			
Durbin (score) $chi^2(1)$ = 256.752 (p = 0.0000)			
Wu-Hausman F(1,2167) = 290.652 (p = 0.0000)			
First-stage regression summary statistics			
Variable	R-sq.	Adjusted R-sq.	Partial R-sq.	F(1,2168)	Prob > F
Price	0.581	0.5806	0.5804	2998.91	0
Minimum eigenvalue statistic = 2998.91					
Critical Values	# of endogenous regressors: 1				
Ho: Instruments are weak.	# of excluded instruments: 1				
		5%	10%	20%	30%
2SLS relative bias			(not available)		
		10%	15%	20%	25%
2SLS Size of nominal 5% Wald test		16.38	8.96	6.66	5.53
LIML Size of nominal 5% Wald test		16.38	8.96	6.66	5.53

Interpretation: F-stat is significantly bigger than the 2SLS and LIML table test results below. Hence, the instrument is very strong regardless of bank concentration.

Table 37: At high bank concentration, the price significantly improved trailing earnings per shares of listed commercial banks in Europe and North American, while high bank concentration findings are contrary. The Durbin and Wu-Hausman test of endogeneity is the

post-estimation analysis with the small p-values, i.e., $p<0.00001$. These post-estimation results showed that price is a valid endogenous variable because the null hypothesis of exogenous variable classification can be rejected. The partial R^2 measuring the correlation between the price and the dividend per share was above average. The F-statistic outcome was significantly higher than the critical values in table 38. Hence, this study rejects the null hypothesis that dividend per share is a weak instrument.

Tables 38 and 39 (at medium and low bank concentration) indicated that the price significantly increased trailing earnings per share, and medium bank concentration significantly minimised performance. The endogeneity test and instrument strength were significant at medium bank concentration. However, the results of instrumental variable regression in tables 37-39 showed that as bank concentration decreased, the negative effects of bank concentration on trailing earnings per share (EPS) increased.

6.7.6 Single Equation Instrumental Variable Regression Using Dividend per Share (DPS) and Non-Executive Total Compensation

6.7.6.1 High Concentration (hHHI)

Table 40: Instrumental Variable Regression of Trailing Earnings per Share using Instruments - Dividend per Share and non-executive total compensation, at High Concentration.

The endogenous variable is the price.

ivregress 2sls TEPS hHHI (Price = NETC DPS)

Instrumental variables (2SLS) regression			Number of obs = 889		
			Wald $chi^2(2)$ = 2634		
			Prob > chi^2 = 0		
			R-squared = 0.77		
			Root MSE = 1.40		
TEPS	Coef.	z			
Price	0.09***	47.86			
hHHI	-0.03	-0.09			
_cons	-0.56***	-6.71			
Instrumented: Price					
Instruments: hHHI NETC DPS					
Tests of endogeneity					
Ho: variables are exogenous					
Durbin (score) $chi^2(1)$ = 227.9 (p = 0.0000)					
Wu-Hausman F(1,885) = 305.085 (p = 0.0000)					
First-stage regression summary statistics					
Variable	R-sq.	Adjusted R-sq.	Partial R-sq.	F(2,885)	Prob > F
Price	0.5629	0.5614	**0.528**	**494.997**	0
Minimum eigenvalue statistic = 494.997					
Critical Values	# of endogenous regressors: 1				
Ho: Instruments are weak	# of excluded instruments: 2				
		5%	10%	20%	30%
2SLS relative bias		(not available)			
		10%	15%	20%	25%
2SLS Size of nominal 5% Wald test		**19.93**	**11.59**	**8.75**	**7.25**
LIML Size of nominal 5% Wald test		**8.68**	**5.33**	**4.42**	**3.92**

6.7.6.2 Medium Concentration (mHHI)

Table 41: Instrumental Variable Regression of Trailing Earnings per Share using Instruments - Dividend per Share and non-executive total compensation, at Average Concentration.

The endogenous variable is the price.

ivregress 2sls TEPS mHHI (Price = NETC DPS)

Instrumental variables (2SLS) regression. No. of obs = 889

Wald $chi^2(2)$ = 2643.73

Prob > chi^2 = 0.0000

R-squared = 0.7720

Root MSE = 1.3902

TEPS	Coef.	z	P>z
Price	0.09***	51.42	0
mHHI	3.62*	1.7	0.089
_cons	-0.57***	-6.83	0

Instrumented: Price

Instruments: mHHI NETC DPS

Tests of endogeneity

Ho: variables are exogenous

Durbin (score) $chi^2(1)$ = 235.174 (p = 0.0000)

Wu-Hausman F(1,885) = 318.324 (p = 0.0000)

First-stage regression summary statistics

Variable	R-sq.	Adjusted R-sq.	Partial R-sq.	F(2,885)	Prob > F
Price	0.56	0.56	**0.56**	**569.32**	0

Minimum eigenvalue statistic = 569.32

Critical Values # of endogenous regressors: 1

Ho: Instruments are weak # of excluded instruments: 2

	5%	10%	20%	30%
2SLS relative bias	(not available)			
	10%	15%	20%	25%
2SLS Size of nominal 5% Wald test	19.93	11.59	8.75	7.25
LIML Size of nominal 5% Wald test	8.68	5.33	4.42	3.92

6.7.6.3 Low Concentration (lHHI)

Table 42: Instrumental Variable Regression of Trailing Earnings per Share using Instruments - Dividend per Share and non-executive total compensation, at Low Concentration.

The endogenous variable is the price.

ivregress 2sls TEPS lHHI (Price = NETC DPS)

Instrumental variables (2SLS) regression Number of obs = 889

Wald $chi^2(2)$ = 2737.59

Prob > chi^2 = 0.0000

R-squared = 0.7782

Root MSE = 1.3711

TEPS	Coef.	z	P>z
Price	0.08***	52.12	0
lHHI	156.15***	3.27	0.001
_cons	-0.56***	-6.89	0

Instrumented: Price

Instruments: lHHI NETC DPS

Tests of endogeneity

Ho: variables are exogenous

Durbin (score) $chi^2(1)$ = 225.764 (p = 0.0000)

Wu-Hausman F(1,885) = 301.253 (p = 0.0000)

First-stage regression summary statistics

Variable	R-sq.	Adjusted R-sq.	Partial R-sq.	F(2,885)	Prob>F
Price	0.5741	0.5727	0.574	596.179	0

Minimum eigenvalue statistic = 596.179

Critical Values # of endogenous regressors: 1

Ho: Instruments are weak # of excluded instruments: 2

	5%	10%	20%	30%
2SLS relative bias (not available)	(not available)			
	10%	15%	20%	25%
2SLS Size of nominal 5% Wald test	19.93	11.59	8.75	7.25
LIML Size of nominal 5% Wald test	8.68	5.33	4.42	3.92

Interpretation: F-stat is bigger than the 2SLS and LIML table test results below, hence the instruments are moderately strong.

The results of two-stage least square (2SLS) regression with two instrumental variables were presented in tables 40-42. The result of high bank concentration showed that only price had significant positive effects on trailing earnings per share while high bank concentration had no

effects. For table 40-42, the two instruments (dividend per share and non-executive total compensation) showed a higher F-stat value than the critical values but a less strong comparison to one instrument instrumental variable regression. Hence, using more than 1 instrument weakened the strength of 2SLS regression instruments. Table 40 showed that the high concentration had no significant influence on trailing EPS. At medium bank concentration findings in table 41, the price significantly increased trailing earnings per share, and medium concentration weakly enhanced trailing EPS. Table 42 findings showed that the low bank concentration and the endogenous price indicator significantly enhanced trailing EPS. Although, using more than one instrument significantly increased the positive effect of competition (low bank concentration) on trailing earnings per share, the F-stat reduction indicated that the strength of instrumentation decreased with more than one instrumental variable analysed using the 2SLS method.

7.0 Discussion

7.1 Antitrust Policy and its Interaction with Bank Concentration

Our study presented non-conclusive findings of the effect of antitrust laws on bank performance and managerial slack in European and North American banks due to methodological approach limitations and country-specific differences. The main purpose of antitrust laws is to reduce bank collusion, improve bank competitiveness, and enhance bank performance. The coefficients of the antitrust laws for European commercial banks, United States commercial banks, and European savings banks were 11.94**, 0.12**, and 0.41***, respectively. The coefficients implied that the antitrust policy significantly increased return on average equity, as indicated in Tables 8, 13, and 10. The findings provided a contrasting view to Giroud and Mueller (2010) that empirically showed that business combination laws significantly minimised return-on-asset by 0.6%. The coefficient of antitrust law for Cypriot commercial banks and Swedish savings banks are -9.11 and -3.50***, respectively. Our significant negative findings for Cypriot commercial banks and Swedish savings banks are consistent with the findings of Giroud and Mueller (2010). The coefficient of the business combination dummy is close to zero and non-significant in Giroud and Mueller (2010). Without the antitrust policy, the likelihood of managerial slack is high. The negative effects of antitrust policy on bank performance can be attributed to Cyprus's less competitive banking industry and the Swedish savings banks.

In table 10, 50, 54, 55, 62, the coefficients of high bank concentration for European savings banks, Cypriot commercial banks, German banks (CCS), Hungarian commercial banks, Spanish cooperative banks are -41.27***, 450.48***, -0.98***, 197.66***, and -11.96***, respectively. The coefficients indicated that the high bank concentration influenced bank performance in mixed ways depending on country-specific differences, banking size market, bank specialisation, and the level of financial development. Our findings are in alignment with Giroud and Mueller's (2010) study for Hungarian, United States, and Cypriot commercial banks by showing that high bank concentration is positively associated with a greater return on average equity. The medium HHI coefficients for European savings banks, German banks (CCS), and Canadian commercial banks significantly reduced performance. In comparison, the medium HHI coefficients for United States commercial banks and Spanish cooperative banks positively affected bank performance. In table 14, the coefficients of low HHI for U.S.

commercial banks had negative effects on performance, and we found opposite outcomes for Canadian-, Hungarian- commercial banks, Swedish savings banks, and German banks (CCS). Our findings for German banks and Spanish cooperative at high HHI is consistent with Diallo and Koch's (2018) study that emphasised that bank concentration negatively influenced development and growth, especially for countries with higher levels of financial development. Our findings on the impact of low HHI for United States commercial banks contrasts with Nickell's (1996) study of the United Kingdom manufacturing industry that found a positive relationship between competition and higher productivity growth. The differences can be attributed to industry-specific factors and country heterogeneity.

Many empiricists indicated that the concentration improved bank performance (Kundid et al., 2011; Fidanoski et al., 2018). Our findings also supported the positive effects of bank concentration on bank performance. For instance, to disentangle the effects of competition on United States, Hungarian, and Cypriot commercial bank profitability, high HHI directly affected bank profits. However, such bank profitability can be attributed to monopolistic competition that can contribute to non-diversifiable systemic risk in the long run. The difference in bank concentration for countries is linked to the volatility of asset sales that over-estimated the real changes in industry concentration (Hou and Robinson, 2006). Our findings supported this assumption. The high bank concentration and the associated negative effects of concentration on bank performance may be linked to high switching costs and sunk costs that stiffened the entry of new banks (Yafeh and Yosha, 2001).

The interaction of high bank concentration (HHI) and antitrust policy for United States commercial banks significantly impacted bank performance. Our United States commercial bank findings are contrary to Giroud and Mueller's (2010) study that indicated that the interaction of business combination laws and bank concentration influenced bank performance adversely. Our study did not consider the reduction to the threat of hostile takeover, which possibly explained the difference in our findings compared to Giroud and Mueller (2010). The interaction of United States commercial bank concentration and antitrust laws had a coefficient of 0.114 (t-statistics of 4.58), significantly increased ROAE than banks in less competitive banking nations. Considering the economic magnitude of the high concentration and antitrust law interaction, a one standard deviation increase in HHI is related to an increase in ROAE of 0.06 x 0.565 (S.D.) = 0.064 or 6.4% point. Finally, the positive coefficient on the interaction term between the antitrust law and high bank concentration implied that the indirect effect is

positive, i.e., the antitrust policy increased the positive effects of high HHI from 3.92e-06 (HHI impact only) to 0.066 (High HHI and antitrust-policy Interactions). Our findings for United States commercial banks implied that antitrust policy indirectly enhanced bank profits matters for bank competitiveness in developed economies. While the coefficients for antitrust laws and high concentration interaction in our thesis range from 0.06 to 6.33 (European Savings Bank - REM). Our study showed that competition laws had significant positive effects post-1995.

Previous studies showed the impact of HHI and business combination law interaction on the United States firm's managerial quiet life (Giroud and Mueller, 2010). The study indicated that overhead costs, input costs, and all real incomes increased due to introducing business laws. In addition, the interaction of concentration and business combination laws influenced quiet life proxies positively in less competitive industries, e.g., ratio of overhead costs to total assets; the cost of goods sold to sales; and the ratio of real wages to the number of employees, deflated by inflation. However, this type of research had not been conducted in Europe, and there are no comparative studies on North American and Europe Banks. In Table 21, our findings are like that of Giroud and Mueller's (2010) study because the interaction of low concentration and the structural changes in antitrust laws significantly reduced the likelihood of negative returns.

Contrary to Giroud and Mueller's findings, there is a significant negative relationship between the antitrust policy and QLTTTA (for European savings banks, United States commercial banks), while previous studies found no link. Our findings also indicated that the overheads and employee wages were reduced due to antitrust laws for a less competitive and competitive banking industry. QLPEE (Ratio of personnel expenses to no of employees, deflated by CPI) – In support of previous kinds of literature (Bertrand and Mullainathan, 2003; Giroud and Muller, 2010), our REM model findings found a positive relationship between United States commercial banks QLPEE and antitrust policy.

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7.2 Bank Experience (Age) and its Interaction with Concentration

Our study is consistent with previous studies by showing a negative relationship between age and bank performance (Giroud and Mueller, 2010), especially for European cooperative banks, German banks (CCS), Lithuanian commercial banks, Swedish savings banks, and European savings banks. However, the coefficient of Cypriot/Hungarian/United Kingdom commercial banks showed that age significantly and positively influenced bank performance. This study is also consistent with Giroud and Mueller's (2010) study showing that size matters for improved

bank performance. Our study showed that the increased sizes (proxied by total assets) of European savings banks, Austrian banks (CCS), Bulgarian/Romanian/Slovakian-commercial banks, Italian cooperative banks significantly improved bank performance. However, we found a negative relationship between bank size and performance in the United States commercial banking.

The interaction of high bank concentration and age had weakly significant positive effects on the European cooperative bank performance. In comparison, the medium concentration interaction with age reduced the negative effects of medium concentration on bank performance. Our study showed that in low bank concentration, the interaction of low concentration and age had significant adverse effects on European cooperative bank performance. The result showed that the smaller banks lacked the economies of scale and capital strength to compete with big banks. For European savings banks and Canadian commercial banks, the interaction of bank concentration and age significantly improved bank performance. The interaction of high HHI and age had significant adverse effects on United States commercial bank performance. Hence, the effect of HHI-age interaction is mixed due to geopolitical differences, management, and operational efficiency. The interaction of high HHI and age can play a significant role in reducing managerial slack (QLTTTA - Canadian commercial banks, European cooperative banks; QLPEE – United States commercial banks). Contrary to these findings, the interactions adversely affected QLTTTA for United States commercial and European savings banks.

7.3 Discussing the effects of corporate governance proxies and their interactions

The effective corporate governance structure played a crucial role in mitigating agency problems (La Porta et al., 2000). Our inquiry's corporate governance committee (CGC) findings remained consistent with the La Porta et al. (2000) findings by showing that CGC significantly minimised the likelihood of negative returns. In contrast to previous empiricists that emphasised the role of board independence in decision-making and risk management, this study showed that strictly independent board members significantly increased the likelihood of negative returns for listed commercial banks at a weaker significance level. In addition, this study empirically showed that the high bank concentration significantly reduced bank performance. The contribution is that the interaction of antitrust policy and high-HHI significantly changed the negative effects of high bank concentration to positive. We observed similar findings considering the effects of dividend and concentration interaction. The strictly independent board members are independent directors not employed by the banks nor related to the shareholders or the bank executives. The interaction of strictly-independent-board-member and high-concentration in Table 27 also significantly enhanced bank performance. However, the interaction board-specific skills and high concentration interaction had significant adverse effects on listed bank performance. Our thesis also indicated that the monitoring and advisory role played by the strictly independent directors minimised the negative effects of high bank concentration and indirectly enhanced bank competitiveness.

In alignment with previous studies (Aebi et al., 2012; Ellul and Yerramilli, 2013), the board members with specific skills improved listed commercial bank returns. The independent nomination committee weakly increased bank performance in the same table. Contrary to Agyemang-Mintah and Schadewitz's (2018) findings, our results showed that the external consultants chosen by the board members significantly reduced listed commercial banks' returns. Hence, the external consultants were ineffective in maximising commercial bank returns. Our thesis aligned with the Fields et al. (2012) study by showing that the less experienced board (BSEB9) marginally predicted the likelihood for negative return at high bank concentration. Our findings also showed that the interaction of high-HHI and over-experienced board members is weakly counter-productive for better bank performance, as indicated in table 35. Our findings implied that the inexperienced board's high concentration increased the likelihood of negative ROE significantly. This study expands on extant studies by formulating an index of good and bad corporate governance to examine its effects on bank returns.

The Kanageretnam et al. (2009) study showed that auditor expertise in the banking industry played a crucial role in minimising asymmetrical informational problems between the managers and the investors. In addition, the board of directors played two important roles of advising and monitoring the CEOs to ensure that the interests of CEOs align with that of the shareholders (De Haan and Razvan, 2016). However, in table 31, our study showed that the corporate governance committee significantly reduced bank return at a 10% (weaker) significance level. In agreement with Berger et al. (2016), which showed that high shareholding by non-executive CEOs led to bank failures, our thesis results also emphasised that the increasing level of non-executive compensation and the presence of strictly independent board members marginally predict the reduced likelihood for negative returns at 1% significance level.

7.4 Discussion of Control Variables and Managerial Slack

The liquid asset to total liabilities ratio (LR) is a cash ratio for measuring bank liquidity and its ability to service short-term debts and liabilities in the form of deposits and investors' funding. The high value of this ratio indicated the high liquidity of the bank. The means of liquidity ratio for European cooperative banks, United States commercial banks, Canadian commercial banks, Danish-, German-banks, Lithuanian-, Luxembourgish-, and United Kingdom commercial banks are 0.15%, 1.55%, 0.26%, 0.19%, 0.16%, 0.28%, 0.63%, and 1.49%, respectively. The liquidity ratio improves the performance (ROAE) of European cooperative banks, Canadian commercial banks, Danish banks, German banks, Luxembourgish-, and UK-commercial banks, while the effects of the liquidity ratio are negative for United States and Lithuanian commercial banks. Our findings showed that the high mean values of liquidity ratio do not indicate its impact on bank performance.

The cost-income ratio is a measure of efficiency in expenses management, and the increasing value of this ratio can be attributed to less efficient expense management (Pasiouras et al., 2006). The cost-income ratio significantly reduced the return on average equity of European commercial banks, European savings banks, and Canadian commercial banks. Our findings were opposite for European cooperative banks and United States commercial banks. Hence, less efficient expense management signalled potential failures for European savings banks, European commercial banks, and Canadian commercial banks. In agreement with previous studies (Niu, 2016; Fidanoski et al., 2018), the cost-income (CI) ratio had adverse effects on

the performance of European commercial banks (Table 8), European savings banks (Table 10), Canadian-, Croatian-, Cypriot-, and Luxembourgish commercial banks, Austrian banks (CCS), Belgian banks (CC), German banks (CCS: Table 52), and United Kingdom commercial banks. The positive effects of cost-income ratio on ROAE were observed for European cooperative banks (Table 11), United States commercial banks (Table 13), Danish banks (Table 52), Italian or Spanish cooperative banks, and Swedish savings banks. The cost-income ratio significantly increased the QLTTTA of European cooperative banks, United States commercial banks and significantly reduced the QLTTTA of E.U. savings banks. Hence, the effects of the cost-income ratio on managerial slack and performance were mixed. The cost-income ratio had significant adverse effects for most of the studied commercial banks except for United States commercial banks.

The equity to the total asset [ETA] measures capital strength and a capital structure parameter. ETA determined the ability of banks to protect themselves based on their equity investment (Kosmidou et al., 2006). The high levels of this ratio signified the greater capital strength. When the likelihood of insolvency risk increases, the capital offers protection to depositors, creditors, and lenders (Pasiouras et al., 2006). All commercial banks' equity to total assets (-0.46***) had significant negative effects on bank performance in Europe and North America, as indicated in Tables 8, 13, and 16. The negative impact of ETA can be attributed to weaker capital strength. In Table 11-14, the equity to total asset significantly reduced managerial slack (ratio of total interest expenses and total-non-interest-expenses-to-total-assets) for European savings and United States commercial banks, but this is not the case for Canadian commercial banks in table 17. The findings implied that a 1 unit increase in capital strength significantly reduced expenses.

In tables 9-10, the coefficients of net loan to a total asset for European cooperative and savings banks exhibited significantly positive effects on ROAE and the negative effects of NLTA for United States commercial banks in table 13. In tables 11 and 14, NLTA is positively associated with higher values of QLTTTA for European cooperative banks, United States commercial banks, but opposite outcomes are observed with the European savings banks. Our performance findings for United States commercial banks remained consistent with the Hoffmann (2011) study that empirically showed that gross loans and leases to total assets had significant negative effects on bank profits.

We observed the following about the tendency for quiet life in European banking. The performance coefficients of European cooperative banks and United States commercial banks are -454.93*** and 5057.40***, respectively. The quiet life (QLTTTA) coefficient for

European cooperative banks is -0.86***. Contrary to the mixed effects of large bank size observed by Berger and Humphrey (1997), the increase in market share is associated with greater bank performance and a lower level of managerial slack. The performance coefficients of total assets for the European savings banks and the United States commercial banks were 0.0000002*** and -2.05e-0***, respectively. In Tables 11 and 12, the total asset coefficients for European cooperative banks and savings remained negative. The effects of a total asset remained mixed. The negative effects may be attributed to other off-balance-sheet-activities and non-earning assets.

The Capital Fund to Liabilities (CFL) can be defined as the level of capital funding by the bank's balance sheet. Capital is the last line of defense against the bank insolvency risk. In tables 8, 13, 16, and 9, in terms of the effects of CFL on bank performance, the coefficients of capital funds to liabilities for European commercial banks, United States and Canada commercial banks, and European cooperative banks are 0.05**, 0.36***, 0.34***, and -0.22***. The effects of explanatory factors on quiet life proxy (QLTTTA) showed the mixed coefficients for European cooperative banks (-0.001***), United States commercial banks (0.0002***), and European savings banks (0.002***). In support of previous studies (Bourke, 1989; Berger, 1995), our analysis for European and United States commercial banks showed that the capital ratio significantly enhanced bank performance. At the same time, the negative impact of capital funding to liabilities on performance can be attributed to a sub-optimal capital ratio (Goddard et al., 2004). The significant negative effects of loan loss provision to total loans on the listed commercial bank performance [Table 18-22] is similar to previous studies referenced (Duca and McLaughlin, 1990; Miller and Noulas, 1997). The negative effects confirmed that commercial banks increased their loan loss provision during increasing credit risk, a high likelihood of bad debts, and loan losses. Consistent with the Fidanoski et al. (2018) empirical findings, the capital expenditure had a significant positive influence on bank profits indicating investment in productive assets and better lender-borrower relationship.

The coefficients of the burden to total assets (BURDENTA) enhanced bank performance of European commercial banks, Cypriot commercial banks, Czech-, and United Kingdom commercial banks. However, the coefficients of BURDENTA significantly minimised ROAE of the United States and Slovakia commercial banks, Italian cooperative banks, and Swedish savings banks. The negative effects of the BURDENTA implied that the excessive risk-taking and off-balance sheet activities by these banks had significant negative implications for performance. The performance coefficients of total earning assets to total assets (TEATA) are

significantly positive for Bulgarian-, Croatia-, Czech-Republic-, Lithuanian commercial banks, Danish banks, Italian-, and Spanish cooperative banks. However, our results showed that TEATA significantly reduced the performance of European cooperative banks, Slovakian commercial banks, Swedish savings banks, and United Kingdom commercial banks. The negative effects of total earning assets can be attributed to the reduced level of these assets in different countries. The QLTTTA coefficients of TEATA for European cooperative banks, European savings banks, and United States commercial banks include 0.03***, 0.02***, and 0.0002***, respectively.

The non-earning asset to total asset had a significant positive relationship with ROAE for E.U. cooperative banks, Bulgarian-, Czech-, Lithuanian commercial banks, Danish banks, French banks, German banks, and the Italian cooperative banks. On the other hand, NEATA had a significant impact on the performance of Swedish savings banks and United Kingdom commercial banks. In support of previous studies (William, 2004; Rossi et al., 2005), our study supported the bad management hypothesis in the form of excessive non-performing loans, bad debts, and decreasing cost efficiency as determinants of poor performance. Our study showed that the non-earning assets affected bank performance negatively (European cooperative banks, United States and United Kingdom commercial banks, and Swedish savings banks. However, the effects of non-earning assets on the total asset (NEATA) significantly improved the performance of European commercial banks, Canada, Bulgarian, Czech-Republic, Lithuanian commercial banks, Danish banks, and German Italian, and Spain cooperative banks. Also, the NEATA had a significant positive effect on the QLTTTA for European cooperative -, European savings banks and United States commercial banks. Our findings showed that the non-earning assets increased managerial slack and are associated with poor bank executive decision making. Alternatively, the NEATA significantly reduced our other types of managerial slack (QLPEE – personnel expenses proxy) in our study for United States commercial banks. The QLPEE findings for United States commercial banks may indicate managerial self-interest-seeking behaviour at the expense of shareholders. Our study supported recent Narusevicius (2018) findings that emphasised that operational expenses and employee compensation are key determinants of bank expenses. Our study improved on previous studies by focusing on expenses from off-balance sheets of banks and the balance-sheet expenses.

The overheads in U.S. commercial banking had a significant negative impact on ROAE, and Hoffmann (2011) supports the findings. Our study also showed that overheads are significantly and negatively associated with the quiet life (QLTTTA) for E.U. savings banks, European cooperative banks but opposite effects for US-/Canada-commercial banks. The positive effects

of overheads on quiet life showed that expenses management could instil market discipline and minimise managerial slack.

The effect of asset utilisation is positively significant for all European banks and North American banks except for Slovakian commercial banks. In support of Fidanoski et al. (2018) findings on loans, our findings showed that NLTA of European cooperative banks improved bank return on average equity. However, the negative effects of net loans to total assets on U.S. commercial banks may be attributed to low asset quality and off-balance sheet activities. Therefore, the effect of net loans to total assets on performance is mixed. Our positive effects of income diversification [BAAM] on bank performance for European commercial banks (Austria, Czech Republic, Denmark, and the United Kingdom), European cooperative, and Danish savings banks are supported by Fidanoski et al. (2018) that indicated that investment portfolio generates extra income streams and assist in the diversification of balance sheet portfolio. On the other hand, income diversification had significant negative effects on the performance of United States commercial banks, German banks [CCS], and Hungarian commercial banks. Hence, the effects of income diversification on bank profit vary.

In agreement with De Guevara et al. (2005), our thesis showed that macro-economic instability, caused by the banking crisis of 2007-2009 (Fin_crisis), had significant negative effects on the performance of European commercial banks. The deterioration of economic activities is linked with the magnitude of the concentration premium (Hou and Robinson, 2006). Our study showed that gross domestic product per capita had a significantly positive effect on European cooperative banks, United States-, Bulgarian-, Lithuanian-commercial banks, and Swedish savings banks. However, GDP per capita also had significant negative effects on European savings banks, Hungarian-, Luxembourgish-commercial banks, and Italian cooperative banks. This thesis also confirmed that the effects of GDP per capita remained significant mixed United States commercial banks, European savings banks, and cooperative banks. The negative effects of GDP on bank performance can be attributed indirectly to the excessive use of credit and short-term debt finance (via shadow banking) to fund private businesses and long-term projects. The significant negative effects of GDP per capita indicate deteriorating economic activities in Europe, confirmed by Hou and Robinson (2006). Also, the negative effects of GDP per capita on bank performance can be attributed indirectly to the excessive use of credit and short-term debt finance (via shadow banking) to fund private businesses and long-term projects.

The coefficient of government debt percent of GDP had significant negative effects on bank performance. Our study of United States commercial banking agency problems showed that a

unit increase in government debt percent of GDP significantly reduced managerial slack [QLTTTA], which implied that the government debt minimised United States commercial bank expenses. However, the coefficient of government debt percent of GDP significantly increased the QLPEE of the United States commercial banks. The Hou and Robinson (2006) study showed that CPI is positively associated with concentration premium. Our findings supported the result of Hou and Robinson (2006) and found that the consumer price index (CPI) improved the performance of European cooperative banks, United States commercial banks, Croatia commercial banks, Italian and Spanish cooperative banks significantly.

The credit risk had significant negative effects on European cooperative banks, European savings banks, United States-, Canada-, Belgian-, Croatia-, Romanian-, Slovakian-, and Slovenia commercial banks. Our findings are consistent with Miller and Noulas (1997). On the other hand, the credit risk had significant positive effects on the performance of the Swedish savings bank. Our study also confirmed that the credit risk significantly increased quiet life (QLTTTA) of United States commercial banks and European cooperative banks. The QLTTTA results confirmed the role of credit risk in encouraging managerial slack. Table 16 (REM results) showed that the structural amendment in the United States antitrust law and the loan loss provision to total loans had significant negative effects on ROE. Alternatively, the interaction of low bank concentration and the structural changes had significant positive effects on ROE.

The negative effects of common share outstanding (CSO) on return-on-equity linked to balance-sheet problems and high leverage in previous literature (Corsetti et al., 1999; Radelet and Sachs, 1998; Kaminsky and Reinhart, 1999). In table 19, CSO significantly increased the likelihood of negative ROE. Our probit and logit regression findings of capital expenditure in Table 19 were consistent with Palia's (2001) study by showing that an increase in investment opportunities reduced the likelihood of negative performance. Our positive findings on the total asset are consistent with Fidanoski et al. (2018) in that scale efficiency in the form of bank consolidation, expansion of branch networks, and via mergers and acquisitions are crucial to the improved bank performance.

The gross domestic product per capita significantly enhanced performance (European cooperative -, United States-, Bulgaria-, Lithuanian commercial banks and Swedish savings bank) and managerial slack (European savings banks' QLTTTA). The findings were consistent with Fidanoski et al.'s (2018) study on the effect of GDP growth. On the other hand, the GDP per capita significantly influenced bank performance in other countries and regions such as European savings banks, Hungarian-, Luxembourgish commercial banks, and Italian

cooperative banks. Hence, the effect of GDP is mixed owing to economic growth and government debt level.

In support of Heaton (2002), our study showed that non-executive compensation provided managerial oversights by showing that the non-executive compensation improved bank returns at weak significance. Our study implied that the practices of compensating non-executive directors optimally enhance market disciplines, enhance bank values, improve bank monitoring of CEOs, and offer effective protection of bank shareholders' interests. However, our study indicated that compensating non-executive directors optimally can enhance the value maximising behavior of CEO non-shareholders. While dividend payments might have reduced agency problems in previous studies, our study showed that dividend per share (DPS) significantly reduced ROE. Since the dividend is a corporate governance tool, it can indirectly influence bank profits, as evident in previous studies that found a positive association between governance and dividend payments.

The non-performing loan to total-loan proxy is the leverage gained by each bank due to the difference between borrowed funds and loans granted (Ferri and Pesic, 2017). The larger banks are significantly associated with higher non-performing loans and total loans (Niu, 2016). Our study expanded on previous studies by examining the effects of NPLTL on commercial bank returns and found significant positive effects of NPLTL.

8.0 Concluding Remarks

The effects of antitrust laws, age and their interactions with bank concentration, and governance measures had mixed significant effects on bank performance and managerial slack. Most empirical studies on corporate governance in banking focused on shareholders' interests only. Our study focused on how antitrust laws (policy) and corporate governance index minimised managerial slack and improved bank performance. We discovered that our econometric analysis confirmed, in whole or part, or refuted the hypothesis, leading to the further development of theory which can be examined in future research.

In the first empirical chapter, our study accepted the hypothesis in chapters 4, 5, and 6 by showing that medium bank concentration is significantly and negatively associated with European commercial banks; and high concentration significantly enhanced managerial slack for European cooperative banks. However, we rejected the null hypothesis for European savings banks because high bank concentration significantly enhanced bank performance; and high concentrations significantly reduced managerial slack. Overall, we can conclude that the mixed effects of bank concentration depending on European bank specialisation meant we can reject the null hypothesis in some cases.

Our thesis rejected the null for the United States commercial bank ROAE and QLTTTA. On the other hand, our analysis accepted the null hypothesis for United States commercial banks QLPEE because of the positive effects of medium concentration. The effect of high HHI is non-significant for European commercial banks; high-HHI is positively associated with the bank performance, and the high-HHI weakly improved bank performance at a 10% significance level. After analysing the impact of high-HHI and antitrust policy on bank performance in chapters 4 and 5, our thesis supported the null hypothesis as the interaction significantly improved the performance of European savings banks and United States commercial banks. These findings implied that antitrust policy could minimize agency problems associated with managerial slack and poor investment decisions. In the last empirical chapter, we found that the interaction of structural changes in antitrust policy and high-HHI significantly enhanced listed commercial bank ROE.

For panel results of listed commercial banks in Europe and North American, in section 6.7.1, we accept the null hypothesis because high bank concentration is significantly and negatively associated with returns, proxied by price. We found a contrasting result in section 6.7.2 with limited control and governance variables. In the last empirical chapter, we reject the null hypothesis because high-HHI reduces the likelihood of negative returns. Hence for listed

commercial banks, the effects of bank concentration are inconclusive compared to the whole banking industry in Europe and the United States.

This study considered the passage of antitrust laws as a source of exogenous variation in European and North American banks. We study if the antitrust laws exact similar effects on banks-based, developed, and emerging European economies on the relationship between bank concentration and performance measures. The barrier to entry and exit for United States commercial banks is low considering the size of commercial banking. The operating expenses and personnel expenses increased significantly after the passage of antitrust laws in the competitive and less-competitive banking industries. According to Giroud and Mueller (2010), business combination laws only increased expenses and personnel expenses. This study enabled bank regulators and decision-makers to stress-test banks regarding profitability, managerial inefficiencies, and governance.

This study showed that the antitrust laws could improve European commercial bank performance. However, the effect of the policy is negative for commercial banks in (bank-based economies, i.e., CEE – Central and Eastern European Banks) overall. On the other hand, the BURDENTA, market share, non-earning asset to asset, total earnings assets to total asset, asset utilisation, income diversification, equity-capital ratio significantly enhance the performance of European Commercial ROAE. Our findings showed that the 2004 antitrust policy caused an equilibrium shift from negative effects of bank concentration to positive effects of HHI antitrust law interaction on bank performance for European savings banks. However, cross-specialisation and cross-country moderating effects of an antitrust law varies. The structural changes in antitrust policy (ATSC) interaction with medium bank concentration for listed commercial banks (Europe and North American) had significant positive effects on bank performance. At the same time, the effects of ATSC and low HHI are significantly negative for bank performance when there is low concentration.

Only a few studies examined the impact of external competitive environments (i.e., business combination laws) on bank performance (Giroud and Mueller, 2010). At the time of this study, no literature directly examined the impact of antitrust laws on managerial slack in Europe and North American. Our studies examined the impact of antitrust policy on bank performance and managerial slack using multi-panel estimation techniques. This thesis analyzed the determinants of bank profitability and managerial slack in North America and European nations. The interaction of antitrust policy and concentration contributed to knowledge on improving bank competitiveness and minimizing cartelisation.

9.0 Policy Implications and Limitations

Our study showed that the antitrust policy has conflicting effects on bank profitability. Our study showed that the interaction of bank concentration and antitrust laws is beneficial in the banking industry of developed economies (less competitive European savings banks vs. more competitive United banks commercial banks). The antitrust laws do improve not only bank performance but also reduce managerial slack. However, the effects of antitrust laws remained non-significant for Central Eastern Europe owing to the small bank size and the level of economic development. The antitrust laws improved the performance of both the United States and the United Kingdom commercial banks. However, the interaction of high concentration and antitrust laws only increased United States commercial bank performance.

The financial crisis and antitrust law dummies are significant sources of serial correlation because they do not change over time. This study will provide regulators and policymakers with insights on how competition laws and corporate governance measures can function synergistically to improve bank competitiveness and reduce managerial slack. The antitrust law is part of the competition and corporate laws that focus on corporate behaviour, structure, and compliance in the market. Compared to Giroud and Mueller's (2010) study, we extended our study beyond the scope of one country study by investigating whether antitrust laws have different effects on banks in non-competitive and less competitive bank specialisation and countries.

Our findings also provided bankers with insights on developing crucial internal governance policies and strategies for avoiding managerial slack, quiet life, and empire-building. The thesis can be extended to emerging economies (i.e., Asia, Africa, and so on) with specific attention to the effects of say-on-pay laws and other deregulatory measures on managerial slack. This study can be researched further by exploring the optimal level and structure of compensation for executive and non-executive board members to resolve agency problems. An improvement in corporate governance measures can be explored by interacting the Lerner index with governance measures and studying its effects on bank performance and managerial slack. Despite the interesting findings of competition laws and governance measures, more research is needed to decide on good governance measures for European and North American banks. The study can be explored further by examining the effects of deregulatory measures and antitrust compliance on quiet life and empire-building in the European banking industry.

The limitation of our study is that our database does not consider the small, in-efficient, and new banks with limited panel information. The validity of our study can benefit more qualitative inquiry. More enquiries are needed to determine which corporate governance measure can improve bank competitiveness without compromising bank stability. Corporate governance is viewed as a driver of bank instability by Anginer et al. (2018). Their findings raised the question about which governance measures can maximise bank profitability. The use of composite governance measures and the optimal level of NETC offered a rethink about the use of corporate governance policy in enhancing bank stability. The appropriate measure for corporate governance is subject to further enquiries as most banks are non-listed private entities. In our study, due to lack of access to data on the state passage of antitrust law in North America and Europe, we assumed every state passed the laws in each country. Access to such data will help conduct a more robust analysis of the effectiveness of antitrust compliance on managerial slack.

10.0 References

Abowd, J.M. (1900) Does performance-based managerial compensation affect corporate performance? Industrial and Labor Relations Review, 43, S52–S73

Abbas, F., Iqbal, S. and Aziz, B. (2019) The impact of bank capital, bank liquidity and credit risk on profitability in post-crisis period: A comparative study of US and Asia, Cogent Economics and Finance, 7, 1, DOI: 10.1080/23322039.2019.1605683

Abatecola, G. and Uli, V. (2016) Entrepreneurial competences, liability of newness and infant survival: Evidence from the service industry, The Journal of management development, 35, (9), 1082-1097

Aguirregabiria, V., Clark, R. and Wang, H. (2016) Diversification of geographic risk in retail bank networks: evidence from bank expansion after the Riegle-Neal Act, The Rand journal of economics, 47, (3),529-572

Acharya, V. (2009) 'A theory of systemic risk and design of prudential bank regulation', Journal of financial stability, 5, 224–255.

Acharya, V. and Naqvi, H. (2010) The Seeds of a Crisis: A Theory of Bank Liquidity and Risk-taking over the Business Cycle. Mimeo

Acharya, V.V., and Richardson, M. (2010a) Restoring Financial Stability: How to Repair a Failed System. New York: John Wiley and Sons.

Acharya, V. and Steffen, S. (2015) 'The 'greatest' carry trade ever? understanding eurozone bank risks', Journal of financial economics, 115, 215–236.

Acharya, V.V. and Yorulmazer, T. (2007) Too many to fail: an analysis of time-inconsistency in bank closure policies, Journal of Financial Intermediation, 16, (1), 1-31

Acharya, V.V., Le, H. and Shin, H.S. (2013) "Bank capital and dividend externalities", Working Paper No. 19707, National Bureau of Economic Research (NBER), Cambridge.

Ackerberg, D.A. and Botticini, M. (2002) Endogenous Matching and the Empirical Determinants of Contract Form, Journal of Political Economy, 110, 3, 564-591

Adams, R.B. (2009) Governance and the financial crisis, ECGI Finance Working Paper No. 248/2009

Adams, R. and Mehran, H. (2012) Bank board structure and performance: Evidence for large bank holding companies, Journal of financial intermediation, 21, 243–267.

Adams, R.B. and Mehran, H. (2003) Is corporate governance different for bank holding companies? Federal Reserve Bank of New York Economic Policy Review, 9, (1), 123–142.

Adams, R.B., Hermalin, B.E. and Weisbach, M.S. (2010) The role of boards of directors in corporate governance: a conceptual framework and survey, Journal of Economic Literature, 48, 58-107

Adams, R.M. (2012) Consolidation and Merger Activity in the United States Banking Industry from 2000 Through 2010 at 22 (Finance and Economics Discussion Series, No. 2012-51, Divisions of Research and Statistics and Monetary Affairs, Federal Reserve Board, 2012). Available at: www.federalreserve.gov/pubs/feds/2012/201251/201251pap.pdf. (Accessed on 5th August 2021)

Adjaoud, F. and Ben-Amar, W. (2010) "Corporate governance and dividend policy: shareholders' protection or expropriation?", Journal of Business Finance and Accounting, 37, 5, 648-667

Aebi, V., Sabato, G. and Schmid, M. (2012) Risk management, corporate governance, and bank performance in the financial crisis, Journal of Banking and Finance, 36, (12), 3213–3226.

Aggarwal, R. and Samwick, A. (1999a) 'Executive compensation, strategic competition, and relative performance evaluation: theory and evidence', Journal of finance 54, 1999–2043.

Aggarwal, R. and Samwick, A. (1999b) The other side of the trade-off: the impact of risk on executive compensation, Journal of political economy, 107, 65–105.

Agoraki, M., Delis, M. and Pasiouras, F. (2011) Regulation, competition, and bank risk-taking in transition countries, Journal of Financial Stability, 7, 38-48

Agrawal, A. and Knoeber, C.R. (1996) Firm performance and mechanisms to control agency problems between managers and shareholders, Journal of Financial and Quantitative Analysis, 31, 377-394

Agrawal, A., and Knoeber, C. (1998) Managerial compensation and the threat of takeover, Journal of Financial Economics, 47, 219–39.

Agyemang-Mintah, P.A. and Schadewitz, H. (2018) Audit committee adoption and firm value: Evidence from UK financial institutions, International journal of accounting and information management, 26, 1, 205-226

Ahmed, A., Takeda, C. and Thomas, S. (1999), 'Bank loan-loss provisions: A re-examination of capital management, earnings management, and signaling effects', Journal of Accounting and Economics, 28, 1–25.

Ahn, S. and Choi, W. (2009) 'The role of bank monitoring in corporate governance: Evidence from borrowers earnings management behavior', Journal of Banking and Finance, 33, 425–434.

Ashcraft, A., Bech, M.L. and Frame, W.S. (2010) The Federal Home Loan Bank System: The Lender of Next-to-Last Resort?, Journal of Money, Credit and Banking, 42, 4, 551-583

Aiyar et al. (2015) A Strategy for Resolving Europe's Problem Loans, Staff Discussion Note. Accessed from: https://www.elibrary.imf.org/view/journals/006/2015/019/article-A002-en.xml. (Accessed on 10th/10/2021)

Akhavein, J., Swamy, P. and Taubman, S. (1997) 'A general method of delivering the efficiencies of banks from a profit function', Journal of Productivity Analysis, 8, 71-93

Akhighe, A. and Whyte, A.M. (2001) The impact of FDICIA on bank returns and risk: Evidence from the capital markets, Journal of Banking and Finance, 25, 2, 393-417

Akhighe, A. and McNulty, J.E. (2003) The profit efficiency of small US commercial banks, Journal of banking and finance, 27, 2, 307-325

Alali, F. and Romero, S. (2012) The use of the Internet for corporate reporting in the Mercosur (Southern common market): The Argentina case, Advances in Accounting, 28, 1, 157-167

Alali, F. and Romero, S. (2013) Characteristics of failed U.S. commercial banks: an exploratory study, Accounting and finance, 53, (4), 1149-1174

Albertazzi, U. and Gambacorta, L. (2009) Bank profitability and the business cycle, Journal of Financial Stability, 5, (4), 393–409

Albertazzi, U. and Gambacorta, L. (2010) 'Bank profitability and taxation', Journal of Banking and Finance, 34, 2801–2810.

Alchian, A. (1965) 'Uncertainty, evolution, and economic theory', Journal of political economy, 58, 3, 211-221

Alchian, A.A. (1950) "Uncertainty, Evolution, and Economic Theory", Journal of Political Economy, 58, (3), 211.

Alderfer, C.P. (1986) The invisible director on corporate boards. Harvard Business Review,

64, 38–52.
Allen, F. and Gale, D. (2000) Financial Contagion, Journal of Political Economy, 108, 1, 1-33
Allen, F. and Gale, D. (2002) A comparative theory of corporate governance. Wharton Financial Institutions Center.

Allen, F. and Gale, D. (2004) 'Financial intermediaries and markets', Econometrica, 72, 1023– 1061.

Allen, F. and Gale, D. (2007a) Understanding Financial Crises. Oxford, United Kingdom: Oxford University Press

Allen, F. and Santomero, A. (2001) 'What do financial intermediaries do?', Journal of banking and finance 25, 271–294.
Allen, F., Elena, C., and Robert, S.M. (2007) Stakeholder Capitalism, Corporate Governance and Firm Value. Working Paper. The Wharton School.
Allen, F., and Carletti, E. (2010) An Overview of the Crisis: Causes, Consequences, and Solutions, International Review of Finance, 10, 1–27.

Alper, D. and Anbar, A. (2011) 'Bank specific and macroeconomic determinants of commercial bank profitability: empirical evidence from turkey', Business and Economics Research Journal, 2, 139–152.

Alper, K., Binici, M., Demiralp, S., Kara, H., and Özlü, P. (2018) Reserve Requirements, Liquidity Risk, and Bank Lending Behavior, Journal of money, credit and banking, 50, (4), 817-827
Altunbas, Y. And Chakravarty, S.P. (1998) 'Efficiency measures and the banking structure in Europe', Economic Letters, 60, 205–208.

Altunbas, Y., de Bondt, G. and Marques, D. (2004) 'Bank capital, bank lending, and monetary policy in the Euro Area', Kredit und Kapital, 37, 443–464.

Altunbas, Y., Gardener, E. and Moore, B. (2001) 'Efficiency in European banking', European economic review, 45, 1931–1955.
Amador, J.A., Gomez-Gonzalez, J.E. and Pabon, A.M. (2013) Loan growth and bank risk: New evidence, Financial Markets and Portfolio Management, 27, 365-379
Amato, G. (1997) Antitrust and the Bounds of Power: The Dilemma of Liberal Democracy in the History of the Market, Oxford: Hart Publishing.

Ammann, M., Oesch, D. and Schmid, M.M. (2013) Product Market Competition, Corporate Governance, and Firm Value: Evidence from the EU Area, European Financial Management, 19, 3, 452-469

Amsler, C., Prokhorov, A. and Schmidt, P. (2016) Endogeneity in stochastic frontier models, Journal of Econometrics, 190, 2, 280-288

Anandarajan, A., Hasan, I. and Lozano-Vivas, A. (2003) The role of loan loss provisions in earnings management, capital management and signaling: the Spanish experience, Advances in International Accounting 16, 45–65

Anandarajan, A., Hasan, I., and McCarthy, C. (2007) Use of loan loss provisions for capital, earnings management and signaling by Australian banks, Account Finance, 47, 357–379

Arasli, H., Katircioglu, S.T. and Mehtap-Smadi, S. (2005) A comparison of service quality in the banking industry: Some evidence from Turkish- and Greek-speaking areas in Cyprus, International Journal of bank marketing, 23, (7), 508-526

Anderson, B.S. and Eshima, Y. (2013) The influence of firm age and intangible resources on the relationship between entrepreneurial orientation and firm growth among Japanese SMEs, Journal of Business Venturing, 28, 3, 413-429

Anderson, R.C. and Fraser, D.R. (2000) Corporate control, bank risk-taking, and the health of the banking industry, Journal of Banking and Finance, 24, 1383-1398

Anderson, R.C., Mansi, S., and Reeb, D.M. (2004) Board characteristics, accounting report integrity and the cost of debt, Journal of Accounting and Economics, 68, 315-342

Anginer, D., Demirguc-Kunt, A., Huizinga, H. and Ma, K. (2018) Corporate governance of banks and financial stability, Journal of Financial Economics, 130, 327–346.

Arbak, E. (2017) Identifying the provisioning of Belgian banks, Working paper research 326, National Bank of Belgium. Available from https://www.nbb.be/doc/ts/publications/wp/wp326en.pdf (Accessed on the 23rd of November 2020).

Affes, Z. and Hentati-Kaffel, R. (2018) Forecast bankruptcy using a blend of clustering and MARS model: case of US banks, Annals of operations research, 281, (1-2),27-64

Arcand, J.L., Berkes, E. and Panizza, U. (2015) Too much finance? Journal of economic growth, 20, 2, 105-148

Arnould, G., Pancaro, C. and Zochowski, D. (2013) Bank funding costs and solvency, ECB Working Paper, No. 2356

Arnould, G., Pancaro, C. and Zochowski, D. (2020) Bank funding costs and solvency, Bank of England Working Paper 853. Available from: Bank of England Staff Working Paper No. 853. (Accessed on the 17th/12/2021).

Asaftei, G. and Kumbhakar, S. (2008) Regulation and efficiency in transition: the case of Romanian banks, Journal of Regulatory Economics, 33, 3, 253-282

Ashbaugh-Skaife, H., Collins, D. and LaFond, R. (2006) The effects of corporate governance on firms' credit ratings, Journal of Accounting and Economics, 42, 203-243

Ashraf, B.N. and Zheng, C. (2015) "Shareholder protection, creditor rights and bank dividend policies", China Finance Review International, 5, 2, 161-186

Allison, P.D. (2009) Fixed effect regression models. SAGE publications: California

Assaf, A., Matousek, R. and Tsionas, E. (2013), 'Turkish bank efficiency: Bayesian estimation with undesirable effects', Journal of banking and finance, 37, 506–517.

Athanasoglou, P. P., Brissimis, S. N. and Delis, M. D. (2008) Bank-specific, industry-specific and macroeconomic determinants of bank profitability, Journal of International Financial Markets, Institutions and Money, 18, (2), 121–136

Athanasoglou, P., Delis, M. and Staikouras, C. (2006) Determinants of bank profitability in the South Eastern European region, Technical report, Bank of Greece, Working Paper No. 47.

Ayadi, R., Arbak, E., Carbó Valverde, S., Rodriguez Fernandez, F. and Schmidt, R.H. (2009) Investigating Diversity in the Banking Sector in Europe: The Performance and Role of Savings Banks, Centre for European Policy Studies, Brussels

Ayuso, J. (2004) Daniel Perez and Jesús Saurina; Are capital buffers pro-cyclical?: Evidence from Spanish panel data, Journal of Financial Intermediation, 13, 2, 249-264

Ayadi, R., Llewellyn, D.T., Schmidt, R., Arbak, E. and De Groen, W. (2010) Investigating Diversity in the Banking Sector in Europe: Key Developments, Performance and Role of Cooperative Banks, Centre for European Policy Studies, Brussels

Bachelder, J. (2005) 'Comment on 'pay without performance'. (symposium on bebchuk and fried's 'pay without performance')', The Journal of Corporation Law, 30, 777–783.

Babis, V.S.G. (2015) Single Rulebook for Prudential Regulation of EU Banks: Mission

Accomplished?, European Business Law Review, 26, 6, 779 – 803

Bae, K.H. and Goyal, V.K. (2009) Creditor rights, enforcement, and bank loans. The Journal of Finance, 64, (2), 823-860.

Bebchuk, J. and Fried, J.M. (2004) Pay Without Performance: The Unfulfilled Promise of Executive Compensation. Harvard University Press

Badarau-Semenescu, C. and Levieuge, G. (2010) Assessing the potential strength of a bank capital channel in Europe: A principal component analysis, The review of finance and banking, 2, (1), 005-016

Baele, L., De Jonghe, O. and Vander Vennet, R. (2007) Does the stock market value bank diversification?, Journal of Banking and Finance, 31, 1999-2023

Bain, J.S. (1959) Industrial Organization. Wiley

Baltagi, B. (2005) Econometric Analysis of Panel Data. 3rd Edition. Chichester: John Wiley and Sons, Ltd.

Bank for International Settlements (2010) Principles for enhancing corporate governance, Basel Committee on Banking Supervision, October 2010. Available from: https://www.bis.org/publ/bcbs168.pdf. Accessed on the 12th November 2020

Banker, R. and Datar, S. (1989) 'Sensitivity, precision and linear aggregation of signals for performance evaluation', Journal of accounting research, 27, 21–39.

Bapat, D. (2018) Profitability drivers for Indian banks: a dynamic panel data analysis, Eurasian business review, 8, (4), 437-451

Baradaran, M. (2014) Banking and the social contract, Notre Dame Law Review, 89, 1283-1299

Battaglia, F., Gallo, A. and Mazzuca, M. (2014) Securitized banking and the Euro financial crisis: Evidence from the Italian banks risk-taking, Journal of Economics and Business, 76, 85-100

Blair, D.W. and Placone, D.L. (1988) Expense-preference behavior, agency costs, and firm organization the savings and loan industry, Journal of economics and business, 40, (1), 1-15

Barr, R., Seiford, L. and Siems, T. (1994) Forecasting bank failure: a non-parametric frontier estimation approach, Recherches Economiques de Louvain, 60, (4), 417-429

Barros, P.P., Berglof, E., Fulghierri, J., Gual, J., Mayer, C. and Vives, X. (2005) Integration of European Banks: The Way Forward, Centre for Economic Policy Research, London

Barth, J., Caprio, G. and Levine, R. (2012) The evolution and impact of bank regulation, Technical report, World Bank.

Baumol, W., Panzar, J. and Willig, R. (1982) Contestable Markets and the Theory of Industrial Structure. New York: Harcourt Brace Jovanovich.

Bearle Jr, A. and Means, G. (1932) The modern corporation and private property, Macmillan, New York.

Beaver, W. and Engel, E. (1996) Discretionary behaviour with respect to allowances for loan losses and the behavior of stock prices, Journal of Accounting and Economics, 22, 177–206

Bebchuk, L.A. and Cohen, A. (2005) The Costs of Entrenched Boards, Journal of Financial Economics, 78, 409-433

Bebchuk, L. A., and Grinstein, Y. (2005) The Growth of Executive Pay, Oxford Review of Economic Policy, 21, 283–303.

Bebchuk, L. and Fried, J. (2003) Executive Compensation as an Agency Problem, Journal of Economic Perspectives, 17, 3, 71-92

Bebchuk, L. and Fried, J. (2004) Pay without performance: The unfulfilled promise of executive compensation, Harvard University Press, Cambridge.

Bebchuk, L. and Fried, J. (2006) Pay without performance: Overview of the issues, Academy of Management Perspectives, 20, 1, 5-24

Bebchuk, L. and Jolls, C. (1999) 'Managerial value diversion and shareholder wealth', Journal of Law, Economics, and Organization, 15, 487–502.

Bebchuk, L. and Weisbach, M. (2010) 'The state of corporate governance research', Review of financial studies, 23, 939–61.

Bebchuk, L., Cohen, A. and Ferrell, A. (2009) 'What matters in corporate governance', Review of financial studies, 22, 783–827.

Bebchuk, L., Cohen, A. and Holger, S. (2010a) 'The wages of failure: executive compensation at bear stearns and lehman 2000-2008', Yale Journal of Regulation 27, 257–282.

Bebchuk, L., Cremers, M. and Peyer, U. (2011) 'The CEO pay slice', Journal of Financial Economics 102, 199–221.

Bebchuk, L., Fried, J. and Walker, D. (2002) 'Managerial power and rent extraction in the design of executive compensation', The University of Chicago law review, 69, 751–845.
Bebchuk, L.A. and Spamann, H. (2010) Regulating bankers' pay, Georgetown Law Journal, 98, (2), 247–287

Beccalli, E., Anolli, M. and Borello, G. (2015) 'Are European banks too big? evidence on economies of scale', Journal of banking and finance, 58, 232–246.
Becchetti, L., Ciciretti, R., and Paolantonio, A. (2016) The cooperative bank difference before and after the global financial crisis, Journal of international money and finance, 69, 12, 224-246
Beck, T. (2001) Financial Development and International Trade. Is There a Link?, Journal of International Economics, 57, (1),107-131
Beck, P.J. and Narayanamoorthy, G.S. (2013) Did the SEC impact banks' loan loss reserve policies and their informativeness, journal of accounting and economics, 56, (2-3), 42-65

Beck, T., De Jonghe, O. and Schepens, G. (2013) 'Bank competition and stability: Cross-country heterogeneity', Journal of financial intermediation, 22, 218–244.
Beck, T., Demirguc-Kunt, A. and Levine, R. (2006) Bank concentration, competition, and crises: First results, Journal of Banking and Finance, 30, 5, 1581-1603

Beck, T., Haan, J. and De Young, R. (2014) 'A conference on postcrisis banking', Journal of Money, Credit and Banking, 46, 1–11.

Beck, T., Laeven, L., Levine, R. and Pennacchi, G. (2008) 'Special issue: Banking and bank regulation: Challenges for the future', Journal of Financial Intermediation, 17, 509–510.

Beck, T., Lundberg, M. and Majnoni, G. (2006) 'Financial intermediary development and growth volatility: Do intermediaries dampen or magnify shocks?', Journal of international money and finance, 25, 1146–1167.
Belas, J. (2013) The impact of the financial crisis on business ethics in the banking sector: A case study from Slovakia, Review of economic perspectives, 13, 3, 111-131

Beltratti, A. and Stulz, R. (2012) 'The credit crisis around the globe: Why did some bank performs better', Journal of financial economics, 105, 1–17.

Berger, A. (1995) ‘The profit-structure relationship in banking tests of market-power and efficient-structure hypotheses’, Journal of Money, Credit, and Banking, 27, 404–431.

Berger, A. N. and Udell, G. F. (1995) Relationship lending and lines of credit in small form Finance, The Journal of business, 68, 3, 351-381

Berger, A.N. and Udell, G.F. (1998) The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle, Journal of Banking and Finance, 22, 613-74.

Berger, A.N., De Young, R. and Udell, G. (2001) Efficiency barriers to the consolidation of the European financial services industry, European Financial Management, 7, 117-130

Berger, A. (2007) ‘Obstacles to a global banking system: Old Europe versus new Europe’, Journal of Banking and Finance, 31, 7, 1955-1973

Berger, A. (2009b) ‘Bank competition and financial stability’, Journal of financial services research, 35, 99–118.

Berger, A. and Bonaccorsi di Patti, E. (2006) Capital structure and firm performance: A new approach to testing agency theory and an application to the banking industry, Journal of banking and finance, 30, 4, 1065-1102

Berger, A. and Bouwman, C. (2013) ‘How does capital market affect bank performance during the financial crisis?’, Journal of financial economics, 109, 146–176.

Berger, A.N. and Hannan, T.H. (1998) The efficiency cost of market power in the banking industry: A test of the ‘quiet life’ and related hypotheses, Review of Economic Statistics, 80, (3), 454-465

Berger, A. and DeYoung, R. (1997) ‘Problem loans and cost efficiency in commercial banks’, Journal of Banking and Finance, 21, 849-870

Berger, A. and Humphrey, D. (1997) ‘Efficiency of financial institutions: International surveys and directions for future research’, Journal of banking and finance, 98, 175–212.

Berger, A. N. and Mester, L. J. (1997) Inside the black box: What determines differences in the efficiency of financial institutions, Journal of Banking and Finance, 21, 895-947

Berger, A. N., and Mester, L. J. (2003) Explaining the dramatic changes in the performance of US banks: Technological change, deregulation, and dynamic changes in competition, Journal of Financial Intermediation, 12, (1), 57–95

Berger, A., Bonime, S., Covitz, D. and Hancock, D. (2000) 'Why are bank profits so persistent? the roles of product market competition, information opacity and regional macroeconomic shocks', Journal of banking and finance, 24, 1203–1235.

Berger, R., Dutta, S., Raffel, T. and Samuels, G. (2016) Innovating at the Top: How Global CEOs Drive Innovation for Growth and Profit. Palgrave Macmillan

Berger, A., Hasan, I. and Zhou, M. (2009) 'Bank ownership and efficiency in China: What will happen in the world largest nation?', Journal of banking and finance, 33, 113–130.

Berger, A.N. Klapper, L.F. and Turk-Ariss, R. (2009) Bank competition and financial stability, Journal of Financial Services Research, 35, 99-118

Berger, A., Herring, R. and Szego, G. (1995b) 'The role of capital in financial institutions, Journal of banking and finance, 19, 393–34

Berger, A.N., Bouwman C.H.S., Kick, T., Schaeck, K. (2012a) Bank risk-taking and liquidity creation following regulatory interventions and capital support. Unpublished working paper. University of South Carolina, Case Western Reserve University, Deutsche Bundesbank, Bangor University, Columbia, SC, Cleveland, OH, Frankfurt, Germany, and Bangor, Wales.

Berger, A.N., Klapper, L.F. and Turk-Ariss, R. (2008) Bank Competition and Financial Stability, Journal of financial services research,35, (2), 99-118

Berger, A.N., Imbierowicz, B. and Rauch, C. (2016) The Roles of Corporate Governance in Bank Failures during the Recent Financial Crisis, Journal of money, credit, and banking, 48, (4), 729-770

Berle, A. and Means, G. (1932) The modern corporation and private property, MacMillan, New York.

Betz, F., Oprica, S., Peltonen, T.A. and Sarlin, O. (2014) Predicting distress in European banks, Journal of Banking and Finance, 45, 225-241

Berndt, A., and Gupta, A. (2008) "Moral Hazard and Adverse Selection in the Originate-to-Distribute Model of Bank Credit." Working Paper Series of the Social Sciences Research Network, October 24, 2008

Bertrand, M. and Mullainathan, S. (2003) Enjoying the quiet life? Corporate governance and managerial preferences, Journal of political economy, 111, 1043-1075

Bertrand, M., and Mullainathan, S. (2000) "Agents with and with-out Principals", American Economic Review, 90, (2), 203–208.

Bertrand, M., and Mullainathan, S. (2001) "Are CEOs Rewarded for Luck? the Ones without Principals Are", Quarterly Journal of Economics, 116, (3), 901–932

Bertrand, A. and Schoar, M. (2003) Managing With Style: The Effect of Managers on Firm Policies, Quarterly Journal of Economics, 118, (4), 1169-1208

Bhagat, S. and Black, B.S. (2002) The Non-Correlation between Board Independence and Long-Term Firm Performance, Journal of Corporation Law, 27, 231-273.

Bhide, A. (1993) 'The hidden cost of stock market liquidity', Journal of Financial Economics, Journal of Financial Economics, 34, 31-51

Bhojraj, S. and Sengupta, P. (2003) Effects of corporate governance on bond ratings and yields: the role of institutional investors and outside directors, Journal of Business, 76, 455-475

Bikker, A. and Groeneveld, J.M. (2000) Competition and concentration in the EU banking industry, Kredit und Kapital, 33, 62-98

Bikker, J.A. and Haaf, K. (2002) Competition, concentration and their relationship: An empirical analysis of the banking industry, Journal of Banking and Finance, 26, 2191-2214

Bikker, J. and van Leuvensteijn, M. (2008) 'Competition and efficiency in the Dutch life insurance industry', Applied economics, 40, 2063–84.

Bizjak, J. M., Whitby, R. and Lemmon, M. (2009) Option Backdating and Board Interlocks, Review of Financial Studies, 22, 4821–47.

Black, B. and Kim, W. (2012) The effect of board structure on firm value: A multiple identification strategies approach using Korean data, Journal of financial economics, 104, (1), 203-226

Bliss, R. T. and Rosen, R.J. (2001) CEO compensation and bank mergers, Journal of Financial Economics, 61, 107–38

Bhojraj, S. and Sengupta, P. (2003) Effect of Corporate Governance on Bond Ratings and Yields: The Role of Institutional Investors and Outside Directors, The Journal of Business, 76, 3, 455-475

Bodnaruk, A., Massa, M. and Simonov, A. (2013) Alliances and corporate governance, Journal of Financial Economics, 107, 3, 671-693

Brownlees, C., Hans, C. and Nualart, E. (2021) Bank credit risk networks: Evidence from the Eurozone, Journal of monetary economics, 117, 585-599

Bolt, W. and Humphrey, D. (2015) Assessing bank competition for customer loans, Journal of banking and finance, 61, 127-141

Bolton, P., Mehran, H. and Shapiro, J. (2011) Executive compensation and risk taking, Federal Reserve Bank of New York, Staff Report 456 (revised)

Bonin, J.P. (2004) Banking in the Balkans: the structure of banking sectors in Southeast Europe, Economic Systems, 28, 2, 141-153

Boone, J. (2001) 'Intensity of competition and the incentive to innovate', International journal of industrial organization, 19, 705–26.

Boone, J. (2008) 'A new way to measure competition', Economic journal, 118, 1245–61.

Borokhovich, K. A., Brunarski, K. R. and Parrino. R. (1997) CEO Contracting and Anti–Takeover Amendments, Journal of Finance, 52, 1495–517.

Borokhovich, K.A., Parrino, R. and Trapani, T. (1996) Outside directors and CEO selection, Journal of Financial and Quantitative Analysis, 31, 337-355

Bourke, P. (1989) 'Concentration and other determinants of bank profitability in Europe, North America and Australia', Journal of Banking and finance, 13, 65– 79.

Bouvatier, V., Lepetit, L. and Strobel, F. (2014) Bank Income Smoothing, Ownership Concentration and the Regulatory Environment, Journal of Banking and Finance, 41, 253–270

Bouzgarrou, H., Jouida, S. and Louhichi, W. (2018) Bank profitability during and before the financial crisis: Domestic versus foreign banks, Research in international business and finance, 44, 26-39

Boyd, J. and De Nicolo, G. (2005) 'The theory of bank risk taking revisited: New theory and evidence', Journal of finance, 60, 1329–1343.

Boyd, J., Graham, S. and Hewitt, R. (1993) 'Bank holding company mergers with non-bank financial firms: Effects on the risk of failure', Journal of banking and finance, 17, 43–63.

Bozkaya, A. and De La Potterie, P. (2008) Who Funds Technology-Based Small Firms? Evidence from Belgium, Economics of Innovation and New Technology, 17, 1-2, 97-122

Brachert, M., Hyll, W. and Titze, M. (2017) On the simultaneity bias in the relationship between risk attitudes, entry into entrepreneurship and entrepreneurial survival, Applied economics letters, 24, (7), 477-480

Brav, A., Jiang, W., Thomas, R.S. and Partnoy, F. (2008) Hedge Fund Activism, Corporate Governance, and Firm Performance, Journal of Finance, 63, 1729–75.

Brei, M. and Gambacorta, L. (2016) Are bank capital ratios pro-cyclical? New evidence and perspectives, Economic Policy, 31, 357-403

Bremus, F. and Buch, C. (2017) 'Granularity in banking and growth: Does financial openness matter?', Journal of banking and finance, 77, 300–316.

Taylor, S.E. and J.D. Brown (1988) Illusion and well-Being: A social psychological perspective on mental health. Psychological Bulletin 103, (2), 193–210.

Bruno, V. and Shin, H.S. (2015) Cross-Border Banking and Global Liquidity, Review of Economic Studies, 82, (2), 535-564

Bulbul, D., Schmidt, R.H. and Schuwer, U. (2013) Savings Banks and Cooperative Banks in Europe. Available from: Prof (safe-frankfurt.de). (Accessed on the 15th.6.2021)

Bushman, R.M. and Williams, C.D. (2012) Accounting discretion, loan loss provisioning, and discipline of Banks' risk-taking, Journal of Accounting and Economics, 54, (1), 1-18

Bouvatier, V. and Lepetit, L. (2008) Banks' procyclical behaviour: Does provisioning matter?, Journal of International Financial Markets Institutions and Money, 18, 513-526

Beatty, A. and Liao, S. (2011) Do delays in expected loss recognition affect banks' willingness to lend?, Journal of Accounting and Economics, 52, 1-20

Bruno, V. and Shin, H.S. (2015b) Capital Flows and the Risk-Taking Channel of Monetary Policy, Journal of Monetary Economics, 71, 119-132

Brezigar-Masten, A., Masten, I. and Volk, M. (2015) Discretionary Credit Rating and Bank Stability in a Financial Crisis, Eastern European economics, 53, (5), 377-402

Brickley, J.A., Coles, J.L. and Terry, R.L. (1994) Outside directors and the adoption of poison pills, Journal of Financial Economics, 35, 3, 371-390

Brissimis, S.N., Delis, M.D. and Papanikolaou, N.I. (2008) "Exploring the Nexus Between Banking Sector Reform and Performance: Evidence from Newly Acceded EU Countries." Working Paper no. 73, Bank of Greece, Athens

Brüderl, J. and Schüssler, R. (1990) Organizational Mortality - The Liabilities of Newness and Adolescence, Administrative Science Quarterly, 35, 530-547.

Brunner, A., Decressin, J., Hardy, D. and Kudela, B. (2004) Germany's Three-Pillar Banking System–Cross-country Perspectives in Europe, IMF Occasional Paper 233, International Monetary Fund, Washington. D.C

Bruton, G.D., Filatotchev, I. S. and Chahine, W.M. (2010) Governance, ownership structure, and performance of IPO firms: the impact of different types of private equity investors and institutional environments, Strategic Management Journal, 31, 491-509

Bryman, A. and Bell, E. (2007) Business research methods. Oxford University Press: New York

Berlault, Y. and Borgers, O. (2004) Overview of Canadian antitrust law. Available from: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fmarcomm.mccarthy.ca%2Fpubs%2Fantitrus_overview.pdf (Accessed 26th/11/2021)

Buch, C.M. and Heinrich, R.P. (2002) Financial Integration in Europe and Banking Sector Performance, The Incomplete European Market for Financial Service, Kiel Institute of World Economics, ZEW Economic Studies book series, 19, 31-64

Bushee, B. J. (1998) The influence of institutional investors on myopic R&D investment behavior, The Accounting Review, 73, 305–333.

Burger A. And Moormann J. (2008) Productivity in banks: myths and truths of the cost income ratio', Banks and Bank System, 3, 4, 92– 101.

Burkart, M., Gromb, D. and Panunzi, F. (1997) Large Shareholders, monitoring, and fiduciary duty, Quarterly Journal of Economics, 112, 693-728

Burke, J. (1998) Divestitures as an antitrust remedy in bank mergers. Finance and Economics Discussion Series 1998-14, Board of Governors of the Federal Reserve System, Washington, DC

Burrough, B. and Helyar, J. (1990) Barbarians at the Gate: The Fall of RJR Nabisco, Harper, and Row, New York

Busch, R. and Kick, T. (2009) "Income diversification in the German banking industry", working paper, Deutsche Bundesbank, Frankfurt.

Byrd, J. and Hickman, K. (1992) Do outside directors monitor managers? Evidence from tender offer bids, Journal of Financial Economics, 32, 195-222

Calmes, C. and Theoret, R. (2010) 'The impact of off-balance-sheet activities on banks returns: An application of the arch-m to Canada data', Journal of banking and finance, 34, 1719–1728.

Calmès, C. and Théoret, R. (2012) "The rise of market-oriented banking and the hidden benefits of diversification", Aestimatio: The IEB International Journal of Finance , 5, 88-125.

Calmès, C. and Théoret, R. (2013a) "Is the Canadian banking system really 'stronger' than the US one?", Review of Economics and Finance , 4, 1, 1-18.

Calmès, C. and Théoret, R. (2013b) "Market-oriented banking, financial stability and macro-prudential indicators of leverage", Journal of International Financial Markets, Institutions and Money , 27, 1, 13-34..

Calmes, C. and Theoret, R. (2015) Product-mix and bank performance: new U.S. and Canadian evidence, Managerial finance, 41, 8, 773-805

Calomiris, C. W. (2008) The Subprime Turmoil: What's Old, What's New, What's Next? In Macro-financial Linkages, IMF Ninth Jacques Polak Annual Research Conference, Washington, DC.

Campbell, T.C. and Thompson, M.E. (2015) Why are CEOs paid for good lucks? An empirical comparison of explanations for pay-for-luck asymmetry, Journal of corporate finance, 35, 247-264

Caminal, R. and Matutes. C. (2002) Market power and banking failures, International Journal of Industrial Organization, 20, 1341-1361

Caprio, G., Laeven, L. and Levine, R. (2007), 'Governance and bank valuation', Journal of Financial intermediation, 16, 584–617.

Carbo, S., Gardener, E.P.M. and Williams, J. (2003) A note on technical change in banking: the case of European savings banks, Applied economics, 35, (6), 705-719

Carbo, S. and Fernandez, F. (2005) The determinants of bank margins: The effects of diversification, FUNCAS working paper

Carbo, S. and Williams, J. (2000) Stakeholder Value in European Savings Banks. Schuster, L. (Ed.), Shareholder Value Management in Banks, MacMillan Press, Basingstoke, United Kingdom.

Chen, X., Cheng, Q., Lo, A. K. and Wang, X. (2015) CEO contractual protection and managerial short-termism, The Accounting Review, 90, (5), 1871–1906

Carbo, S. and Fernandez, F. (2007) 'The determinants of bank margins in European banking', Journal of Banking and Finance, 31, 2043-2063

Chu, K.H. (2015) Bank consolidation and stability: The Canadian experience, 1867–1935, Journal of financial stability, 21, 46-60

Calice, P., Leonida, L. and Muzzupappa, E. (2021) Concentration-stability vs concentration-fragility. New cross-country evidence, Journal of international financial markets, institutions, and money, 74, 101411

Carbó Valverde, S., D. Humphrey, J. Maudos, and P. Molyneu (2009) Cross-Country Comparisons of Competition and Pricing Power in European Banking, Journal of International Money and Finance, 28, (1), 115–134.

Carletti, E. and Hartmann, P. (2003) Competition and stability: what's special about

banking?, ECB Working Paper, No. 146. Available from: https://www.econstor.eu/bitstream/10419/152580/1/ecbwp0146.pdf. Accessed on 10th July

2018.

Carow, K. and Heron, R.A. (1998) The interstate banking and branching efficiency act of 1994: A wealth event for acquisition targets, Journal of Banking and Finance, 22, 2, 175-196

Casu, B. and Girardone, C. (2009) Testing the relationship between competition and efficiency in banking: A panel data analysis, Economics Letters, 105, (1), 134-137

Casu, B. and Girardone, C. (2010). Integration and efficiency convergence in EU banking markets. Omega, 38, (5), 260-267

Casu, B., Clare, A., Sarkisyan, A. and Thomas, S. (2013) Securitization and bank performance, Journal of money, credit, and banking, 45, (8), 1617-1658

Cebula, R.J., Gillis, W., McCrary, S.C. and Capener, D. (2016) New evidence on the impact of economic conditions and banking legislation on the bank failure rate in the US, 1970 to 2014, Journal of financial economic policy, 8, (3), 64-376

Cesari, V. and Daltung, S. (2000) 'The optimal size of a bank: Costs and benefits of diversification', European Economic Review, 44, 1701–1726.

Cetorelli, N. (2004) Real effects of bank competition, Working Paper Series WP-04-03, Federal Reserve Bank of Chicago.

Cetorelli, N. and Strahan, P.E. (2006) Finance as a Barrier to Entry: Bank Competition and Industry Structure in Local U.S. Markets, The Journal of Finance, 61, 1, 437-461

Chahine, S. and Georgen, M. (2014) 'Top management ties with board members: How they affect pay-performance sensitivity and IPO performance', Journal of Corporate Finance,27, 99–115.

Chatzimanoli, D. (2011) A Crisis of Governance? — From Lamfalussy to de Larosière or Bridging the Gap between Law and New Governance in the EU Financial Services Sector, European journal of risk regulation, 2, (3), 22-339

Champagne, J., Poulin-Bellisle, G and Sekkel, R. (2020) Introducing the Bank of Canada staff economic projections database, Journal of applied econometrics, 35, (1), 114-129

Chan, Y., Greenbaum, S.I. and Thakor, A.V. (1992) Is fairly priced deposit insurance possible? The journal of finance, 47,1, 227-245

Chang, M. (2018) The creeping competence of the European Central Bank during the Euro Crisis. Credit and capital markets – Kredit und Kapital, 51, (1), 41–53

Chava, S. and Jarrow, R.A. (2004) Bankruptcy Prediction with Industry Effects, Review of finance, 8, 4, 537-569

Chava, S. and Purnanandam, A. (2011) The effect of banking crisis on bank-dependent borrowers, Journal of Financial Economics, 99, 1, 116-135

Chava, S., Livdan, D. and Purnanandam, A. (2009) Do shareholder rights affect the cost of bank loans?, Review of financial studies, 22, 2973-3004

Cheng, D.C., Gup, B.E. and Wall, L.D. (1989) Financial determinants of bank takeovers: note, Journal of Money, Credit and Banking, 21, (4), 524–536

Cheng, I.H., Hong, R.H. and Scheinkman, J.A. (2012) Yesterday's heroes: Compensation and creative risk-taking, mimeo

Chiaramonte, L. Poli, F. and Oriani, M.E. (2013) Are cooperative banks a lever for promoting bank stability? Evidence from the recent financial crisis in OECD Countries, European Financial Management, 21, 491-523

Chiorazzo, V., Milani, C. and Salvini, F. (2008) Income Diversification and Bank Performance: Evidence from Italian Banks, Journal of Financial Service Research, 33, 181–203.

Chi, J.D. and Lee, D.S. (2010) The conditional nature of the value of corporate governance, Journal of banking and finance, 34, (2), 350-361

Chintrakarn, P., Jiraporn, P., Sakr, S. and Lee, S.M. (2016) Do co-opted directors mitigate managerial myopia? Evidence from R&D investments, Finance Research Letters, 17, 285-289

Chortareas, G., Garza-Garcia, J.G. and Girardone, C. (2011) Banking sector performance in Latin America: market power versus efficiency, Review of Development Economics, 15, 307–25.

Christensen, J.H.E., Hansen, E. and Lando, D. (2004) Confidence sets for continuous-time rating transition probabilities, Journal of Banking and Finance, 28, (11), 2575-2602

Cihak, M. (2007) Introduction to Applied Stress Testing. Available from https://www.imf.org/external/pubs/ft/wp/2007/wp0759.pdf. Accessed on the 7th June 2020.

Catao, L. and Kaat, D. (2021) Capital account liberalization and the composition of bank liabilities, Journal of international money and finance, 116, 102434

Choi, B.M.J., Gutierrez, E. and Martínez Pería, M.S. (2016) Dissecting foreign bank lending behavior during the 2008–2009 crisis, Journal of Financial Markets, Institutions, and Instruments, 25, 361-398

Cipollini, A. and Fiordelisi, F. (2012) 'Economic value, competition and financial distress in the European banking system', Journal of finance 36, 3101–3109.

Claessens, S. and Laeven. C. (2003) Financial development, property rights, and growth, The Journal of Finance, 58, 2401–36.

Claessens, S. and Laeven, L. (2004) 'What drives bank competition? some international evidence', Journal of Money, Credit and Banking, 36, 3, 563-583

Claessens, S., Demirguc-Kunt, A. and Huizinga, H. (1998) How does foreign entry affect domestic banking sector?, Technical report, World Bank working paper no 1918, Washington, DC.

Claessens, S., Demirgüç-Kunt, A. and Huizinga, H. (2001) How Does Foreign Presence Affect Domestic Banking Markets?, Journal of Banking and Finance, 25, 891-911

Clair, R.T. (1992) Loan growth and loan quality: Some preliminary evidence from Texas banks, Federal Reserve Bank, Dallas

Clark, E. and Radic, N. (2018) Cooperative banks: What do we know about competition and risk preferences?, Journal of International Financial Markets, Institutions and Money, 52, 90-101

Clark, J. A. (1988) Economies of scale and scope at depository financial institutions: A review of the literature, Economic Review,73, (8), 17–33.

Clark, J.A. (1986) Market structure, risk, and profitability: The quiet-life hypothesis revisited Quarterly Review of Economics and Business, 26, 45-56

Clarke, G., Cull, R., Martinez Peria, M. and Sanchez, S. (2003) 'Foreign bank entry: Experience, implications for developing economies, and agenda for further research', World Bank research observer, 18, 25–59.

CNB (1998) Banking Supervision in the Czech Republic, Czech National Bank, Prague

Coccorese, P. (1998) Assessing the competitive conditions in the Italian banking system: Some empirical evidence, BNL Quarterly Review, 205, 171-191

Coccorese, P. (2005) Competition in markets with dominant firms: A note on the evidence from the Italian banking industry, Journal of Banking and Finance, 29, (5),1083-1093

Coffinet, J. and Lin, S. (2010) Stress testing banks' profitability: the case of French banks. Banque de France, Working paper, 306

Cole, R. and Gunther, J.W. (1995) Separating the likelihood and timing of bank failure, Journal of Banking and Finance, 19, 6, 1073-1089

Cole, R. and Gunther, J.W. (1998) Predicting bank failures: A comparison of on- and 0ff-site monitoring systems, Journal of Financial Services Research, 13, 2, 103-117

Cole, R. and White, L. (2012) 'Deja vu all over again: The causes of U.S. commercial bank failures this time around', Journal of financial service research, 42, 5–29.

Coles, J.L, Lemmon, M.L. and Meschke, J.F. (2012) Structural models and endogeneity in corporate finance: The link between managerial ownership and corporate performance, Journal of Financial Economics, 103, 1, 149-168

Coles, J.L., Daniel, N.D., Naveen, L. (2008) Boards: Does one size fit all? Journal of Financial Economics, 87, (2), 329–356.

Coles, J.L., Daniel, N.D. and Naveen, L. (2014) Co-opted boards, The Review of Financial Studies, 27, 6, 1751-1796

Collins, J., Shackelford, D. and Wahlen, J. (1995) Bank differences in the coordination of regulatory capital, earnings and taxes, Journal of Accounting Research, 33, 263–292

Collis, J. and Hussey, R. (2013) Business Research: A practical guide for undergraduates and postgraduate students. MacMillan: London, UK.

Competition Bureau (2011) Competition Bureau Canada. Available from: https://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/home (Accessed on 20th March 2020)

Correa, R., Lee, K., Sapriza, H. and Suarez, G.A. (2014) Sovereign Credit Risk, Banks' Government Support, and Bank Stock Returns around the World, Journal of Money, Credit and Banking, 46, (s1), 93-121

Couto, R. (2002) Framework for the Assessment of Bank Earnings. In: Financial Stability Institute, Bank for International Settlements, Basel

Cooper, M., Jackson, W. and Patterson, G. (2003) Evidence of predictability in the cross sectiona of bank stock returns, Journal of banking and finance, 27, 817-50

Cope, E., Piche, M. and Walter, J. (2012) 'Macroenvironmental determinants of operational loss severity', Journal of banking and finance, 36, 1362–1380.

Copelovitch, M. and Singer, D. (2008) 'Financial regulation, monetary policy, and inflation in the industrialized world', The journal of politics, 70, 663–680.

Core, J.E. and Larcker, D.F (2002) Performance consequences of mandatory increases in executive stock ownership, Journal of Financial Economics, 64, 3, 317-340

Corbae, D. and D'Erasmo, P. (2013) A Simple Quantitative General Equilibrium Model of Banking Industry Dynamics, mimeo

Corbae, D. and D'Erasmo, P. (2020) Rising bank concentration, Journal of Economic Dynamics and Control, 15, 1038-77

Core, J., Holthausen, R. and Larcker, D. (1999) 'Corporate governance, chief executive officer compensation, and firm performance', Journal of Financial Economics 51, 371–406.

Cork (2013) Banks: European banks' asset quality still deteriorating. Sunday Business Post. ISSN 07912617. Available from: https://www.proquest.com/docview/1404823642?pq-origsite=primo&accountid=12441. Accessed on the 11th November 2021.

Covi, G., Montagna, M. and Torni, G. (2019) Economic shocks and contagion in the euro area banking sector: a new micro-structural approach, Financial stability review, 1

Crotty, J. (2009) Structural causes of the global financial crisis: a critical assessment of the "new financial architecture.", Cambridge Journal of Economics, 33, (4), 563 – 580.

Cornel, B. (2019) Dependent development at a crossroads? Romanian capitalism and its contradictions. West European politics, 42, (5), 1041–1068

Cornelli, F., Kominek, Z. and Ljungqvist, A. (2013) 'Monitoring managers: does it matter?', Journal of Finance, 68, 2, 431-481.

Cornett, M., Marcus, A. and Tehrenian, H. (2008) 'Corporate governance and pay-for-performance: the impact of earnings management', Journal of financial economics, 28, 357– 373.

Cornett, M., McNutt, J. and Tehranian, H. (2009) 'Corporate governance and earnings

management at large U.S. bank holding companies', Journal of corporate finance, 15, 412–430.

Cornett, M.M. and Tehranian, H. (2016) Greed or good deeds: An examination of the relation between corporate social responsibility and the financial performance of U.S. commercial banks around the financial crisis, Journal of Banking and Finance, 70, 137-159

Correa and, R. and Lel, U. (2016) Say on pay laws, executive compensation, pay slice, and firm valuation around the world, Journal of financial economics, 122, 500-520

Correa, E., and Seccareccia, M. (2009) "The United States Financial Crisis and Its NAFTA Linkages." International Journal of Political Economy, 38 (2), 70–99

Corsetti, G., Pesenti, P. and Roubini, N. (1999) What caused the Asian currency and financial crisis?, Japan World Economics, 3, 305–73

Cosset, J., Some, H.Y. and Valery, P. (2016) Does Competition Matter for Corporate Governance? The Role of Country Characteristics, Journal of Financial and Quantitative Analysis, 51, 4, 1231-1267

Coughlan, A. T. and Schmidt, R. (1985) 'Executive compensation, managerial turnover, and firm performance: An empirical investigation', Journal of Accounting and Economics, 7, 43-66.

Crawford, A., Graham, C. and Bordeleau, E. (2009) "Regulatory Constraints on Leverage: The Canadian Experience", Bank of Canada, June 2009 (available at http://www.bankofcanada.ca/wp-content/uploads/2012/01/fsr-0609-crawford.pdf)

Cremers, K.J.M. and Ferrell, A. (2012) Thirty Years of Shareholder Rights and Stock Returns, AFA 2013 San Diego Meetings Paper

Cremers, K.J.M. and Nair, V.B. (2005) Governance Mechanisms and Equity Prices, The Journal of Finance, 60, 6, 2859-2894

Cremers, K.J.M., Nair, V.B. and Peyer, U. (2008) Takeover Defenses and Competition: The Role of Stakeholders, Journal of empirical legal studies, 5, 4, 791-818

Cremers, M., John, K. and Nair, V. (2009) Takeovers and cross-section of returns, Review of Financial Studies, 22 , 1409-1445

Crocker, K.J. and Slemrod, J. (2007) The economics of earnings manipulation and managerial compensation, The Rand journal of economics, 38, (3), 698-713

Cohen, D. A., Dey, A. and Lys, T. Z. (2008) Real and Accrual-Based Earnings Management in the Pre- and Post-Sarbanes-Oxley Periods, The Accounting Review, 83, 757–87

Crystal, G.S. (1991) In Search of Excess: The Overcompensation of American Executives.

W.W. Norton: New York.

Cukierman, A. (1991) Why does the fed smooth interest rate, in 'Monetary Policy on the 75th Anniversary of the', Kluwer Academic Publishers, Boston, 111–147.

Cunat, V. and Guadalupe, M. (2009) 'Executive compensation and competition in the banking and financial sectors', Journal of banking and finance, 33, 495–504.

Cyert, R. M., Kang, S.–H. and Kumar, P. (2002) Corporate Governance, Takeovers, and Top-Management Compensation: Theory and Evidence, Management Science, 48, 435–69.

Czyrnik, K. and Klein, L.S. (2004) Who Benefits from Deregulating the Separation of Banking Activities? Differential Effects on Commercial Bank, Investment Bank, and Thrift Stock Returns, Financial Review, 39, 2, 317-341

Dahya, J. and McConnell, J. (2007) 'Board composition, corporate performance, and the Carbury committee recommendation', Journal of financial and quantitative analysis, 42, 535–564

Damar, H.E., Gropp, R. and Mordel, A. (2020) Banks' funding stress, lending supply, and consumption expenditure, Journal of Money Credit and Banking, 52, 4, 685-720

Daniels, K. N. and Tirtiroglu, D. (1998) Total factor productivity growth in US commercial banking for 1935–1991: A latent variable approach using the Kalman filter, Journal of Financial Services Research,13, 119–135.

Dasgupta, S. and Zaldokas, A. (2019) Anti-Collusion Enforcements: Justice for Consumers and Equity for Firms, Review of Financial Studies, 32, 7, 2587-2624

Datta, S., Iskandar-Datta, M. and Raman, K. (2002) Executive Compensation and Corporate Acquisition Decisions, The Journal of Finance, 56, 6, 2299-2336

Davis, K., Schoen, C., Guterman, S., Shih, T., Schoenbaum, S. C. and Weinbaum, I. (2007) Slowing the growth of US health care expenditures: what are the options, The Commonwealth Fund, 47, 1–34

Davis, E.P., Liadze, I. and Piggott, R. (2019) Assessing the macroeconomic impact of alternative macroprudential policies, Economic Modelling, 80, 407-428

De Andres, P. and Vallelado, E. (2008) 'Corporate governance in banking: The role of the board of directors', Journal of banking and finance, 32, 2570–2580.

De Guevara, F., Maudos, J. and Pérez, F. (2005) Market Power in European Banking Sectors, Journal of Financial Services Research, 27, 2, 109-137.

De Bandt, O. and Davis, E.P. (2000) Competition, contestability and market structure in European banking sectors on the eve of EMU, Journal of Banking and Finance, 24, 1045-1066

De Haan, J. and Poghosyan, T. (2012) Bank size, market concentration, and bank earnings volatility in the U.S., Journal of international financial markets, institutions, and money, 22. (1),35-54

De Haan, J. and Razvan, V. (2016) Corporate governance of banks: A survey, Journal of economic surveys, 30, (2), 228-277

De Jonghe, O. (2010) Back to the basics in banking? A micro-analysis of banking system stability, Journal of Financial Intermediation, 19, 3, 387-417

Deltuvaite V., Vaskelaitis, V. and Pranckeviciute, A. (2007) The impact of concentration on competition and efficiency in the Lithuanian banking sector, Economics of Engineering Decision, 54, 7–19

De Nicolo, G. (2000) Size, charter value and risk in banking: an international perspective, No 689, International Finance Discussion Papers from Board of Governors of the Federal Reserve System (U.S.)

De Nicolo, G., Bartholomew, P., Zaman, J. and Zephirin, M. (2004) Bank Consolidation, Internationalization, and Conglomeration: Trends and Implications for Financial Risk, Financial Markets, Institutions and Instruments, 13, 4, 173-217

DeYoung, R. and Torna, G. (2013) 'Non-traditional banking activities and bank failures during the financial crisis', Journal of financial intermediation, 22, 397–421.

De Angelo, H., DeAngelo, L. and Stulz, R.M. (2006) "Dividend policy and the earned/contributed capital mix: a test of the life-cycle theory", Journal of Financial Economics, 81, 2, 227-254.

De Angelo, H. and Masulis, R.W. (1980) Optimal Capital Structure Under Corporate and Personal Taxation, Journal of Financial Economics, 8, 1, 3-27

Demetriades, P. and Fielding, D. (2011) Information, Institutions, and Banking Sector Development in West Africa, Economic inquiry, 2012-07, 50, (3), p.739-753

De Bandt, O. and Davis, E.P. (2000) 'Competition, contestability, and market structure in European banking sectors on the eve of EMU', Journal of Banking and Finance, 24, 1045–66.

Dechow, P.M. and Sloan, R.G. (1991) Executive incentives and the horizon problem. Journal of Accounting and Economics 14, 51–89.

Del Guercio, D., and Hawkins, J. (1999) The Motivation and Impact of Pension Fund Activism, Journal of Financial Economics, 52, 293–340.

Dell'Ariccia, G. and Marquez, R. (2006) Lending Booms and Lending Standards, Journal of Finance, 61, 5, 2511-2546

Dalton, D.R., Daily, C.M., Ellstrand, A.E. and Johnson, J.L. (1998) Meta-analytic reviews of board composition, leadership structure, and financial performance, Strategic Management Journal, 19, (3), 269–290.

Dalton, D.R., Hitt, M.A., Certo, S.T. and Dalton, C.M. (2007) The Fundamental Agency Problem and Its Mitigation, The Academy of Management Annals, 1, 1-64.

Dell'Ariccia, G., Detragiache, E. and Rajan, R. (2008) The real effects of banking crises, Journal of Financial Intermediation, 17, 89-112

Demirguc-Kunt, A. and Huizinga, H. (1998a) 'Determinants of commercial bank interest margins and profitability: some international evidence', World Bank Economic Review, 13, 379–408.

Demirguc-Kunt, A. and Huizinga, H. (2010) Bank activity and funding strategies: The impact on risk and returns, Journal of Financial Economics, 98, 3, 626-650

Demirguc-Kunt, A. and Huizinga, H. (2013) 'Are banks too big to fail or too big to save? international evidence from equity prices and CDS spreads', Journal of banking and finance, 37, 875–894.

Demirguc-Kunt, A., Detragiache, E. and Merrouche, O. (2013a) Bank capital: lessons from the financial crisis, Journal of Money, Credit, and Banking, 45, (6), 1147-1164

Demirguc-Kunt, A. and Maksimovic, V. (2002) 'Funding growth in bank-based and market-based financial systems: Evidence from firm-level data', Journal of financial

economics, 65, 337–363.

Demirguc-Kunt, A. and Sobaci, T. (2001) Deposit Insurance around the World, The World Bank Economic Review, 15, 2, 481-490

Demsetz, H. (1973) 'Industry structure, market rivalry, and public policy', Journal of Law and Economics, 16, 1-9.

Demsetz, H. and Lehn, K. (1985) The structure of corporate ownership: Causes and consequences, Journal of Political Economy, 93, (6), 1155–1177.

Demsetz, R.S., Marc, R.S. and Philip, E.S. (1996) "Banks with Something to Lose: The Disciplinary Role of Franchise Value," Federal Reserve Bank of New York Economic Policy Review, 2, 2, 1-14.

Demsetz, R.S., Saidenberg, M.R. and Strahan, P.E. (1997) Agency Problems and Risk Taking at Banks (September 1997). FRB of New York Staff Report No. 29. Available at SSRN: https://ssrn.com/abstract=943507

Dewatripont, M. and Tirole, J. (1994) The Prudential Regulation of Banks. The MIT Press: Cambridge

DeYoung, R. and Roland, K. (2001) 'Product mix and earnings volatility at commercial banks: Evidence from a degree of total leverage model', Journal of Financial Intermediation, 10, 54– 84.

Demirgüç-Kunt A, Levine R (2000) "Bank Concentration: Cross-Country Evidence", World Bank, Mimeo. Available from: https://www.researchgate.net/publication/228591944_Bank_Concentration_Cross-Country_Evidence (Accesed on 18th October 2021).

De Young, R., Evanoff, D. and Molyneux, P. (2009) 'Mergers and acquisitions of financial institutions: a review of the post-2000 literature', Journal of Financial Service Research, 36, 87-110.

DeYoung, R., Peng, E. and Yan, M. (2013) Executive compensation and business policy choices at U.S. commercial banks, Journal of Financial and Quantitative Analysis, 48, (1), 165–196

Doyran, M.A. and Santamaria,Z.R. (2019) A comparative analysis of banking institutions: examining quiet life, Managerial finance, 45, 6, 726-743

Diallo, B. and Koch, W. (2018) Bank Concentration and Schumpeterian Growth: Theory and International Evidence, The review of economics and statistics, 100, (3), 489-501
De Haas, R. and Van Lelyveld, I. (2014) Multinational banks and the global financial crisis. Weathering the perfect storm?, Journal of Money, Credit, and Banking, 46, (1), 333-364

Diamond, D. (1984) 'Financial intermediation and delegated monitoring', The Review of Economic Studies, 51, 393–414.

Dichev, I. and Tang, W. (2009) 'Earnings volatility and earnings predictability', Journal of Accounting and Economics, 47, 160-181.

Dick, A. A. (2006) Nationwide Branching and Its Impact on Market Structure, Quality, and Bank Performance, The Journal of Business, 79, (2), 567–592

Dick, A.A. and Hannan, T.H. (2010) 'Competition and antitrust in banking', in Berger, A.N., Molyneux, P. and Wilson, J.O.S., eds, Oxford Handbook of Banking (Oxford: Oxford University Press), 405–29
Dietrich, A. and Wanzenried, G. (2011) Determinants of bank profitability before and during the crisis: Evidence from Switzerland. Journal of International Financial Markets, Institutions and Money, 21, (3), 307-327.
Dimand, R.W., and Koehn, R.H. (2009) "Canada in the Two World Financial Crises: Why No Canadian Banks Failed or Were Bailed out in the 1930s or 2000s." Paper presented at the Fourth Biannual CEMF-IEPI Conference, The Financial and Monetary Crisis: Re-thinking Economic Policies and Redefining the Architecture and Governance of Inter-national Finance, University of Bourgogne, Dijon, France, December 10–12, 2009

Dimick, M. and Rao, N. (2016) Wage setting institutions and corporate governance, Journal of comparative economics, 44, 854-883

Dittmar, A. and Mahrt-Smith, J. (2007) Corporate governance and the value of cash holdings**,** Journal of Financial Economics, 83, 599-634
Docking, D.S., Hirschey, M. and Jones, E. (1997) Information and contagion effects of bank loan-loss reserve announcements, Journal of financial economics, 43, (2), 219-239
Dong, B. and Guo, G. (2011) The relationship banking paradox: No pain no gain versus raison d'être, Economic Modelling, 28, 2263-2270

Drago, D., Tommaso, C. and Thornton, J. (2017) What determines bank CDS spreads? Evidence from European and US banks, Finance research letters, 22, 140-145

Drobetz, W., Ghoul, S., Guedhami, O. and Jansen, M. (2018) Policy uncertainty, investment, and the cost of capital, Journal of Financial Stability, 39, 28-45

Duca, J. and McLaughlin, M. (1990) Developments affecting the profitability of commercial banks, Federal Reserve Bulletin, Board of Governors of the Federal Reserve System, Washington, DC, 477-99

Dunning, A. (2010) 'The changing landscape of executive compensation after DODD-frank', Review of Banking and Financial Law, 30, 64–72.

Drago, D., Tommaso, C. and Thornton, J. (2017) What determines bank CDS spreads? Evidence from European and US banks, Finance research letters, 22, 140-145

Duffie, D. and Singleton, K.J. (1999) Modeling term structures of defaultable bond yields, Review of Financial Studies, 12, (4), 687-720

Duygun, M. and Shaban, M. (2016) Trademarking activities and total factor productivity: Some evidence for British commercial banks using a meta frontier approach, Journal of Banking and Finance, 72, S70-S80

Dye, R. and Sridhar, S. (2016) 'Hedging executive compensation risk through investment banks', The Accounting Review, 91, 4, 1109-1138.

EACB (2012) European Association of Co-operative Banks, Annual Report for 2011. Available from: http://www.eurocoopbanks.coop. Accessed on 12th November 2020

EBA (2012) EU Capital exercise. Accessed from: https://www.eba.europa.eu/risk-analysis-and-data/eu-capital-exercise (Accessed on the 10th/11/2021).

Easterbrook, F.H. (1984) "Two agency-cost explanations of dividends", The American Economic Review, 74, 4, 650-659.

ECB (2007) EU banking sector stability. Available from: https://www.ecb.europa.eu/pub/pdf/other/eubankingsectorstability2007en.pdf . Accessed on 13th June 2020.

ECB (2013) ECB report details structural changes in the euro area banking sector. Available from: https://www.ecb.europa.eu/press/pr/date/2013/html/pr131104.en.html. Accessed on 3rd June 2020.

ECB (European Central Bank) (2008) Annual Report (Frankfurt: ECB). Bülbül, D., Schmidt, R. H. and Schüwer, U. (2013) Savings Banks and Cooperative Banks in Europe, Journal of Financial Stability, 26, 175–189

Eckbo, B.N. (1992) Mergers and the Value of Antitrust Deterrence, The Journal of finance, 47, (3),1005-1029

Edgerton, J. (2012) Agency problems in public firms: Evidence from corporate jets in Leveraged buyouts, The Journal of Finance, 67, 6, 2187-2213

Edman, A. and Liu, Q. (2011) 'Inside debt', Review of finance, 15, 75–102.

Edmans, A. and Gabaix, X. (2011) 'The effect of risk on the CEO market', Review of Financial Studies, 24, 282-263.

Edmans, A., Gabaix, X. and Landier, A. (2009) 'A multiplicative model of optimal CEO incentives in market equilibrium', Review of Financial Studies, 22, 4, 881-917.

Efing, M., Hau, H., Kampkotter, P. and Steinbrecher, J. (2015) 'Incentive pay and bank risk- taking: Evidence from Austrian, German, and Swiss banks', Journal of International Economics, 96, S125–S140.

Egarius, D. and Weill, L. (2016) Switching costs and market power in the banking industry: The case of cooperative banks, Journal of International Financial Markets, Institutions and Money, 42, 155-165.

Eichengreen, B. (1999) Toward a new international financial architecture: A practical post-Asia agenda, Technical report, Institute for international economics, Washington.
Eisenberg, T., Sundgren, S. and Wells, M.T. (1998) Larger board size and decreasing firm value in small firms, Journal of Financial Economics, 48, 35-54

Eisenhardt, K. (1989) 'Agency theory: An assessment and review', Academy of Management Review, 14, 57-74.

Ellul, A. and Yerramilli, V. (2013) 'Stronger risk controls, lower risk: Evidence from U.S. bank holding companies', The journal of finance, 68, 1757–1803.
Epstein, G. (2005) Financialisation and the World Economy, Cheltenham, UK: Edward Elgar.

Erkens, D., Hung, M. and Matos, P. (2012) 'Corporate governance in the 2007-2008 financial crisis: Evidence from financial institutions worldwide', Journal of corporate finance, 18, 389– 411.

Ergen, T. and Kohl, S. (2019) Varieties of economization in competition policy: institutional change in German and American antitrust, 1960–2000, Review of International Political Economy, 26, 2, 256-286

European Commission (2021) Antitrust. Available at: https://ec.europa.eu/competition-policy/antitrust_en (Accessed on the 1st July 2021)

Espahbodi, P. (1991) Identification of problem banks and binary choice models, Journal of Banking and Finance, 15, 1, 53-71
Everett, J. and Tremblay, M.S. (2014) Ethics and internal audit: Moral will and moral skill in a heteronomous field, Critical Perspectives on Accounting, 25, (3), 181–196.

Fahlenbrach, R. (2009) 'Shareholders rights, boards, and CEO compensation', European and financial review, 13, 81–113.
Fahlenbrach, R., and Stulz¸ R. M. (2011) Bank CEO Incentives and the Credit Crisis, Journal of Financial Economics, 99, 1, 11-26
Beltratti, A. and Stulz, R.M. (2012) The credit crisis around the globe: Why did some banks perform?, Journal of Financial Economics, 105, 1–17.
Fahrul et al. (2018) Effect of Equity to Assets Ratio (EAR), Size, and Loan to Assets Ratio (LAR) on Bank Performance, Journal of Economics and Finance, 9, 4, 1-6

Fairfield, P. and Yohn, T. (2001) 'Using asset turnover and profit margin to forecast changes in profitability', Review of Accounting Studies, 6, 371385.

Faleye, O. and Krishnan, K. (2017) Risky Lending: Does Bank Corporate Governance Matter?, Journal of Banking & Finance, 83, 57-69

Fama, E. (1980) 'Agency problems and the theory of firms', Journal of Political economy, Journal of Political Economy, 88, 288-307

Fama, E. (1985) ‘What’s different about banks?’, Journal of Monetary Economic 15, 29–39.

Fama, E. and Jensen, M. (1983), ‘Separation of ownership and control’, Journal of law and economics, 26, 301–325.

Fama, F. and French, K. (2000) ‘Forecasting profitability and earnings’, The Journal of Business, 2000, 73, 2, 161-75

Fan, Y., Jiang, Y., Zhang, X. and Zhou, Y. (2019) Women on boards and bank earnings management: From zero to hero, Journal of banking and finance, 107, 105607

Feltham, G. and Xie, J. (1994) ‘Performance measure congruity and diversity in multi-task principal/agent relations’, Accounting review, 69, 429–453.

Feng, G. and Serletis, A. (2010) Efficiency, technical change, and returns to scale in large US banks: Panel data evidence from an output distance function satisfying theoretical regularity, Journal of Banking and Finance, 34, (1), 127-138.

Feng, G. and Zhang, X. (2012). Productivity and efficiency at large and community banks in the US: A Bayesian true random effects stochastic distance frontier analysis, Journal of Banking and Finance,36, (6), 1883–1895.

Ferreira, C. and Soukiazis, E. (2013) Bank market concentration and bank efficiency in the European Union: a panel Granger causality approach, International economics and economic policy, 10, (3), 365-391

Fernandes, N., Ferreira, M.A., Matos, P. and Murphy, K.J. (2013) Are U.S. CEOs Paid More? New International Evidence, The Review of Financial Studies, 26, 2, 323–367

Ferri, G., Kalmi, P. and Kerola, E. (2013) Governance and performance: Reassessing the pre-crisis situation of European Banks. In Goglio, S., Alexopoulos, Y. (Eds.). Financial cooperatives and local development. Abingdon, UK: Routledge, 37-54.

Ferri, G., Kalmi, P. and Kerola, E. (2014) Does bank ownership affect lending behavior? Evidence from the Euro area, Journal of Banking and Finance, 48, 194-209

Ferri, G. and Pesic, V. (2017) Bank regulatory arbitrage via risk weighted assets dispersion, Journal of Financial Stability, 33, 331-345

Fields, L.P., Fraser, D.R. and Subrahmanyam, A. (2012) Board quality and the cost of debt capital: The case of bank loans, Journal of Banking and Finance, 36, 5, 1536-1547

Fidanoski, F., Choudhry, M., Davidović, M. and Sergi, B.S. (2018) What does affect profitability of banks in Croatia?, Competitiveness Review: An International Business Journal, 28, (4), 338-367

Fohlin, C. and Jaremski, M. (2020) U.S. banking concentration, 1820–2019, Economics letters,190, 109104

Finkelstein, S. and Hambrick, D. (1990) 'Top management team tenure and organizational outcomes: the moderating role of managerial discretion', Administrative science quarterly, 35, 484–503.

Fiordelisi, F. and Mare, D.S. (2013) Probability of default and efficiency in cooperative banking, Journal of International Financial Market, Institution and Money, 26, 30-45

Fiordelisi, F. and Mare, D.S. (2014) Competition and financial stability in European co-operative banks, Journal of international money and finance, 45, 1-16

Fiordelisi, F. and Molyneux, P. (2010) 'The determinants of shareholder value in European banking', Journal of banking and finance, 34, 1189–1200.

Fiordelisi, F. and Marques-Ibanez, F. (2013) Is bank default risk systematic?, Journal of Banking and Finance, 2013, 37, 6, 2000-2010

Flannery, M.J. (1998) Using market information in prudential bank supervision: a review of the U.S. empirical evidence, Journal of Money, Credit, and Banking, 30, (3), 273

Flannery, M.J. (2001) The faces of "market discipline, Journal of Financial Service Research, 20, (2), 107-119

Fries, S. and Taci, A. (2005) Cost efficiency of banks in transition: Evidence from 289 banks in 15 post-communist countries, Journal of Banking and Finance, 29, 1, 55-81

Fonteyne, W. (2007) Cooperative Banks in Europe: Policy Issues, IMF Working Paper 159. Available from: https://www.imf.org/external/pubs/ft/wp/2007/wp07159.pdf (Accessed on 23rd March 2020)

Foos, D., Norden, L. and Weber, M. (2010) Loan growth and riskiness of banks, Journal of Banking and Finance, 34, 2929-2940

Forsell, A. (1992) Moderna tider i sparbanken, Nerenius and Santérus Förlag. Stockholm, Sweden

Fosu, S., Danso, A., Agyei-Boapeah, H., Ntim, C.G. and Adegbite, E. (2019) Credit information sharing and loan default in developing countries: the moderating effect of banking market concentration and national governance quality, Review of quantitative finance and accounting, 55, (1), 55-103

Franco, D. and Zollino, F. (2013) 'Macroeconomic imbalances in Europe: institutional progress and the challenges that remain', Applied economics, 46, 589–602.

Freixas, X. and Rochet, J. (1997) Microeconomics of banking, MIT Press, Cambridge.

Fu, X. and Heffernan, S. (2007) 'Cost x-efficiency', China Economic Review, 18, 35–53.

Fuhrer, L.M., Muller, B. and Steiner, L. (2017) The liquidity coverage ratio and security prices, 75, 292-311

Fulmer, I. and Shaw, J. (2018) 'Person-based differences in pay reactions: A compensation- activation theory and integrative conceptual review', Journal of applied psychology, 103, 939– 958.

Fungocova, Z., Weill, L. and Zhou, M. (2017) Bank Capital, Liquidity Creation and Deposit Insurance, Journal of Financial Services Research, 51, 97–123

Gao, H. and Li, K. (2015) A comparison of CEO pay–performance sensitivity in privately-held and public firms, Journal of Corporate Finance, 35, 370-388.

Gale, D. and Özgür, O. (2005) Are Bank Capital Ratios Too High or Too Low? Incomplete Markets and Optimal Capital Structure, Journal of the European Economic Association, 3, (2/3), 690-700

Gallo, J.G. , Apilado, V.P. and Kolari, J.W. (1996) "Commercial bank mutual fund activities: implications for bank risk and profitability", Journal of Banking and Finance , 20, 10, 1775-1791.

Government Accountability Office (2015) Dodd–Frank regulations: Impacts on community banks, credit unions and systemically important institutions. Washington DC: Government Accountability Office

Gamra, S.B. and Plihon, D. (2011) Revenue diversification in emerging market banks: implications for financial performance, CEPN Working Papers hal-00598136

Galloway, T.M., Winson, B.L. and Dianne, M.R. (1997) "Banks' Changing Incentives and Opportunities for Risk Taking," Journal of Banking and Finance, 21, 509-527.

Gambacorta, L. and Mistrulli, P. (2004) 'Does bank capital affect lending behaviour', Journal of financial intermediation, 13, 436–457.

Garen, J. (1994) 'Executive compensation and principal-agent theory', Journal of political economy 102, 1175–1199.

Garicano, L. and Rossi-Hansberg, E. (2006) 'Organization and inequality in a knowledge economy', Quarterly Journal of Economics, 21, 1383435.

Gayle, G. and Miller, R. (2009) Has Moral Hazard Become a More Important Factor in Managerial Compensation?, American Economic Review, 99, 5, 1740-69

Ge, W., Kim, J. and Song, B.Y.S. (2012) Internal governance, legal institutions and bank loan contracting around the world, Journal of Corporate Finance, 18, 3, 413-432

Geishecker, I. (2012) Simultaneity bias in the analysis of perceived job insecurity and subjective well-being, Economics letters, 116, (3), 319-321

Ghosal, V. (2011) Regime Shift in Antitrust Laws, Economics and Enforcement, Journal of Competition Law and Economics 7, 733 – 774.

Ghosh, C. and Petrova, M. (2013) Does deregulation induce competition in the market for corporate control? The special case of banking, Journal of banking and finance, 37, 12, 5220-5235

Gifford, D. and Kudrle, R. (2015) The Atlantic Divide in Antitrust: An Examination of US and EU Competition Policy. University of Chicago Press. Retrieved 16 July 2022, from https://www.universitypressscholarship.com/view/10.7208/chicago/9780226176246.001.0001/upso-9780226176109.

Gilson, S.C. and Vetsuypens, M.R. (1993) CEO Compensation in Financially Distressed Firms: An Empirical Analysis, The Journal of Finance, 48, 2, 425-458

Gillan, S.L. (2006) Recent Developments in Corporate Governance: An Overview, Journal of Corporate Finance, 12, 3, 381-402

Gillan, S.L. and Starks, L.T. (1998) A survey of shareholder activism: motivation and empirical evidence, Contemporary Finance Digest, 2, (3), 10-34

Gillan, S. and Starks, L. (2007) 'The evolution of shareholder activism in the united states', Journal of Applied Corporate Finance, 19, 1, 55-73

Gillan, S. L., and Starks, L.T. (2000) Corporate Governance Proposals and Shareholder Activism: The Role of Institutional Investors, Journal of Financial Economics, 57, 275–305.

Giordana, G. and Schumacher, I. (2013) What are the bank-specific and macroeconomic drivers of banks' leverage? Evidence from Luxembourg, Empirical Economics, 45, 905-928

Girardone, C., Nankervis, J.C. and Velentza, E-F. (2009) Efficiency, ownership and financial structure in European Banking, Managerial Finance, 35, 227-245.

Goetz, M.R. (2018) Competition and bank stability, Journal of Financial Intermediation, 35, 57-69

Giroud, X. and Mueller, H. (2010) 'Does corporate governance matter in competitive industries?', Journal of Financial Economics, 95, 3, 312-331

Giroud, X. and Mueller, H. (2011) Corporate Governance, Product Market Competition, and Equity Prices, The Journal of Finance, 66, 2, 563-600

Goddard, J. and Wilson, J. (1999) 'Persistence of profit: A new empirical interpretation', International journal of industrial Organization, 17, 663–687.

Goddard, J. and Wilson, J. (2009) 'Competition in banking: A disequilibrium approach', Journal of banking and finance, 33, 2282–2292.

Goddard, J., Liu, H. and Molyneux, P. (2013) Do bank profit converge? European Financial Management, 19, 2, 345-365

Goddard, J., Liu, H., Molyneux, P. and Wilson, J. (2010) 'Do bank profits converge?', European financial management, 19, 345–365.

Goddard, J., Liu, H., Molyneux, P. and Wilson, J. (2011) 'The persistence of bank profit', Journal of banking and finance, 35, 2881–2890.

Goddard, J., McKillop, D. and Wilson, J. (2008b) 'The diversification and financial performance of us credit unions', Journal of Banking and Finance, 32, 1836–1849.
Goddard, J., McKillop, D. and Wilson, J.O. (2008a) What drives the performance of cooperative financial institutions? Evidence for US credit unions, Applied Financial Economics, 18, (11), 879-893

Goddard, J., Molyneaux, P. and Wilson, J. (2004) 'Dynamics of growth and profitability in banking', Journal of money, credit and banking, 36, 1069–1090.

Goddard, J., Molyneux, P. and Wilson, J. (2004b) 'Dynamics of growth and profitability in banking', Journal of money, credit and banking, 36, 1069–1090.
Goddard, J., Molyneux, P. and Wilson, J.O.S. (2001) European Banking: Efficiency, Technology, and Growth. Chichester: John Wiley & Sons.

Goddard, J., Molyneux, p., Liu, H. and Wilson, J. (2013) 'Do bank profits converge?', European Financial Management, 19, 345-365.
Goddard, J., Molyneux, P., Wilson, J.O.S. and Tavakoli, M. (2007) European banking: an overview, Journal of Banking and Finance, 31, 1911–1936

Goergen, M., and Renneboog, L. (2011) "Managerial Compensation", Journal of Corporate Finance, 17, (4), 1068–1077.

Goldberg, L.G. and Rai, A. (1996) The structure-performance relationship for European banking, Journal of Banking and Finance, 20, 4, 745-771
Gomez, F. and Ponce, J. (2012) Bank competition and loan quality, Journal of financial service research, 46, 215-233

Gompers, P., Ishii, J. and Metrick, A. (2003) 'Corporate governance and equity prices', Quarterly journal of economics, 118, 107–155.
Goodhart, C. (2001) What weight should be given to asset prices in the measurement of inflation?, Economic Journal, 111, (472), 335–356
Goodhart, C.A.E. (2004) Some New Directions for Financial Stability. The Per Jacobsson Lecture, Bank for International Settlements, Basel

Goodman, O.R. (1971) Antitrust and competitive issues in United States banking structure, The Journal of Finance, 26, 2, 243-266

Gorton, G. and Richard, R. (1995) "Corporate Control, Portfolio Choice, and the Decline of Banking", Journal of Finance, 50, 5, 1377-1420.
Gorton, G. and Schmid, F. (1999) Corporate governance, ownership dispersion and efficiency: Empirical evidence from Austrian cooperative banking, Journal of Corporate Finance, 5, (2), 119-140.

Graziani, A. (1990) “The Theory of the Monetary Circuit.” Éonomies et Sociétés, 24, (6), 7–36
Greenawalt, M.B. and Sinkey, J.F. (1988) Bank loan loss provisions and the income smoothing hypothesis: an empirical analysis, 1976–1984, Journal of Financial Service Research, 1, 301–318

Greenwood, J. and Jovanovic, B. (1990) ‘Financial development, growth, and the distribution of income’, Journal of Political Economy, 98, 10761107.

Greenwood, R., Landier, A. and Thesmar, D. (2015) Vulnerable banks, Journal of financial economics,115, (3), 471-485
Greenwood, R., and Schor, M. (2009) Investor Activism and Takeovers. Journal of Financial Economics, 92, 362–75.
Groeneveld, J.M. and de Vries, Y.B. (2009) European cooperative banks: first lessons from the subprime crisis, International Journal of Cooperative Management, 4, (2), 8-21
Gropp, R. and Kashyap, A. (2009) A New Metric for Banking Integration in Europe, NBER Working Papers, No 14735

Grossman, S. and Hart, O. (1980) ‘Takeover bids, the free-rider problem, and the theory of the corporation’, Bell Journal of Economics, 11, 42–64.

Grossman, S. and Hart, O. (1983) ‘An analysis of the principal-agent problem’, Econometrica, 51, 1, 7-46

Guba, E. G. and Lincoln, Y. S. (1989) Fourth generation evaluation, Newbury Park, CA: Sage.

Guidi, M. and Karagiannis, Y. (2015) Social democratic parties and antitrust policy: evidence from Western Europe (2002–13), European Political Science Review, 8, (4), 495-515

Gunny, K.A. (2010) The Relation Between Earnings Management Using Real Activities Manipulation and Future Performance: Evidence from Meeting Earnings Benchmarks, Contemporary accounting research, 27, (3), 855-888

Guidi, F. (2021) Concentration, competition and financial stability in the South-East Europe banking context, International Review of Economics and Finance, 76, 639-670

Gunsel, N. (2010) Determinants of the timing of bank failure in North Cyprus, Journal of risk finance, 11, (1), 1526-5943

Hagendorff, J., Collins, M. and Keasey, K. (2010) Board Monitoring, Regulation, and Performance in the Banking Industry: Evidence from the Market for Corporate Control, Corporate Governance An International Review, 18, (5), 381 - 395

Hahm, J., Shin, H.S. and Shin, K. (2013) Noncore Bank Liabilities and Financial Vulnerability, Journal of Money, Credit and Banking, 45, s1, 3-36

Hainaut, D., Shen, Y. and Zeng, Y. (2018) How do capital structure and economic regime affect fair prices of bank's equity and liabilities?, Annals of operations research, 2018-03, 262, (2), 519-545

Hall, B.J. and Liebman, J.B. (1998) Are CEOs really paid like bureaucrats?, Quarterly Journal of Economics, 113, 653–691.

Hallock, K. F. (1997) Reciprocally Interlocking Boards of Directors and Executive Compensation. Journal of Financial and Quantitative Analysis, 32, 331–44.

Hamori, M. and Kakarika, M. (2009) External labor market strategy and career success: CEO careers in Europe and the United States, Human Resources Management, 48, (3), 355-378

Hammond, B. (1967) "Banking in Canada Before Confederation, 1792–1867." In W.T. Easterbrook and M.H. Watkins (eds.), Approaches to Canadian Economic History. Toronto/Montreal: McClelland and Stewart

Handorf, W.C. and Zhu, L. (2006) US Bank Loan-Loss Provisions, Economic Conditions, and Regulatory Guidance, Journal of applied finance, 16, (1), 97

Hannan, T. (1979) Limit Pricing and the Banking Industry, Journal of Money, Credit and Banking, 51, 4, 438-46.

Hansen, P. H. (1997) Bankredninger i Danmark: En stabil tradition. In Andersen, T. and Ronit, K. (Eds.), Den Danske Banksektor: Mellem tradition og forandring (39–43). Århus: Systime

Hodder, L.D. and Hopkins, P.E. (2014) Agency problems, accounting slack, and banks' response to proposed reporting of loan fair values, Accounting, organizations and society, 39, 2, 117-133

Hardie, I. and Howart, D. (2009) Die Krise but not La Crise? The Financial Crisis and the Transformation of German and French Banking Systems, Journal of Common Market Studies. 47, 5, 1017-1039.

Holsten, R.J. (2012) The Evolution of Canada's Pre-Merger Notification Regime - 1986-2012, CCLR, 25,456.

Harris, M. and Raviv, A. (1979) 'Optimal incentive contracts with imperfect information', Journal of Economic Theory, 20, 231–259.

Harris, M. and Raviv, A. (1991) The Theory of Capital Structure, Journal of Finance, 46, 1, 297-355

Harris, M. and Raviv, A. (2008) A theory of board control and size, Review of Financial Studies, 21, (4), 1797–1832

Hart, O. (1983) The market mechanism as an incentive scheme, Bell Journal of Economics, 13, 366–382

Hart, O. (1995) "Corporate Governance: Some Theory and Implications", The Economic Journal, 105, 430, 678-689.

Hart, O., and Holmström, B. (1987) "The Theory of Contracts", In Advances in Economics and Econometrics, edited by Bewley, T., 71–155, Cambridge, UK: Cambridge University Press

Harford, J. (1999) Corporate cash reserves and acquisitions, Journal of Finance 54, 1969–1997

Harford, J., Mansi, S.A. and Maxwell, F. (2008) Corporate governance and firm cash holdings in the US, Journal of Financial Economics, 87, 3, 535-555

Hartzell, J. C., and Starks, L. T. (2003) Institutional Investors and Executive Compensation, Journal of Finance, 58, 2351–74.

Hasan, I. and Marton, K. (2003) Development and efficiency of the banking sector in a transitional economy: Hungarian experience, Journal of Banking & Finance, 27, 12, 2249-2271

Hau, H. and Thum, M. (2009) 'Subprime crisis and board (in-)competence: private vs public banks in Germany', Economic Policy 24, 701–751.

Haugen, R. (2001) Modern investment theory, 5th edn, Prentice Hall, New Jersey.

Havrylchyk, O. (2006) Efficiency of the Polish Banking Industry: Foreign Versus

Domestic Banks, Journal of Banking and Finance, 30, 7, 1975–1996

Hayek, F. (1945) 'The use of knowledge in society.', American Economic Review, 35, 519–530.

Hill, T.D., Davis, A.P., Roos, J.M. and French, M.T. (2020) Limitations of Fixed-Effects Models for Panel Data, Sociological Perspectives, 63, (3), 357-369.

Hayward, M. and Hambrick, D. (1997) 'Explaining the premiums paid for large acquisitions: Evidence of CEO hubris', Administrative science quarterly, 42, 103–127.

He, Z. (2011) A model of dynamic compensation and capital structure, Journal of financial economics, 100, 351-366

Heagreaves, D. (2009) The Walker report: We need to know where the real money's being made. The Guardian. Available from: The Walker report: We need to know where the real money's being made | Banking | The Guardian. (Accessed 11th.11.2021).

Healy, P. and Wahlen, J. (1999) 'A review of the earnings management literature and its implications for standard setting', Accounting Horizon, 13, 365–383.

Heaton, J. (2002) Managerial optimism and corporate finance, financial management, 31, 33-45

Heffernan, S and Fu, X. (2010) "Determinants of Financial Performance in Chinese Banking", Applied Financial Economics, 20, (20), 1585–1600

Hellmann, T.F., Murdock, K.C. and Stiglitz, J.E. (2000) Liberalization, Moral Hazard in Banking, and Prudential Regulation: Are Capital Requirements Enough?, American Economic Review, 90, 1, 147-165

Huang, Y., Wen, S. and Yu, J. (2012) Financial Determinants of Bank Performance in Taiwan, Journal of Economics and Behavioral Studies, 4, 12, 691-702

Hermalin, B. (1992) 'The effects of competition on executive behaviour', The RAND Journal of economics, 23, 350–360.

Hermalin, B.E. and Weisbach, M.S. (1998) Endogenously Chosen Boards of Directors and Their Monitoring of the CEO, The American Economic Review, 88, 1, 96-118

Hermalin, B. and Weisbach, M. (1991) 'The effects of board composition and direct incentives on firm performance', Financial management, 20, 101–112.

Hermalin B.E. (2005) Trends in corporate governance, Journal of Finance, 60, (5),

2351–2384.

Hermalin, B. and Weisbach, M. (2003) 'Boards of directors as an endogenously determined institution: A survey of the economic literature', FRBNY Economic Policy Review, 9, 7–26.

Herrera-Restrepo, O., Triantis, K., Seaver, W.L., Paradi, J.C. and Zhu, H. (2016) Bank branch operational performance: A robust multivariate and clustering approach, Expert Systems with Applications, 50, 107-119

Hellström, P., Maier-Rigaud, F. and Bulst, F.B. (2009) Remedies In European Antitrust Law, Antitrust law journal, 76, (1), 43-63

Henderson, A.D. (1999) Firm Strategy and Age Dependence: A Contingent View of the Liabilities of Newness, Adolescence, and Obsolescence, Administrative science quarterly, 44 (2), 281-314

Herrero, A.G., Gavilà, S. and Santabarbara, D. (2009) What explains the low profitability of Chinese banks, Journal of Banking and Finance, 33, 2080-2092

Hess, K., Grimes, A. and Holmes, M. (2009) Credit losses in Australasian banking, Economic Record, 85, 331-343

Hesse, H. and Cihák, M. (2007) Cooperative Banks and Financial Stability, IMF Working Papers 2, International Monetary Fund, Washington. D.C.

Hicks, J. (1935) 'Annual survey of economic theory: The theory of monopoly', Econometrica, 3, 1–20.

Hiller, N. and Hambrick, D. (2005) 'Conceptualizing executive hubris: The role of (hyper-)core self-evaluations in strategic decision making', Strategic management journal, 26, 297–319.

Himmelberg, C.P., Hubbard, R.G. and Palia, D. (1999) Understanding the determinants of managerial ownership and the link between ownership and performance, Journal of Financial Economics, 53, 353-384

Hoffmann, P.S. (2011) Determinants of the profitability of the US banking industry, International Journal of Business and Social Science, 2, 22, 255-270

Holm-Hadulla, F., Kishore, K., Ana, L., Javier, J. and Schuknecht, L. (2010) Public wages in the euro area towards securing stability and competitiveness, Technical report,

European Central Bank - Occasional Paper, 112.
Holmstrom, B. (1982; 1999) "Managerial Incentive Problems—A Dynamic Perspective", The Review of Economic Studies, 66, 169-182

Holmstrom, B. and Milgrom, P. (1991) 'Multitask principal agent analyses: incentive contracts, asset ownership, and job design.', Journal of Law, Economics and Organisation, 7, 24–52.
Holstrom, B. (1979) 'Moral hazard and observability', Bell Journal of Economic, 10, 74–91.
Homma, T., Tsutsu, Y. and Uchida, H. (2014) Firm growth and efficiency in the banking industry: A new test of efficient structure hypothesis, Journal of Banking and Finance, 40, 143-153
Hong, Y., Huseynov, F., Sardarli, S. and Zhang, W. (2019) Bank earnings management and analyst coverage: evidence from loan loss provisions, Review of quantitative finance and accounting, 2019-08-08, Vol.55 (1), p.29-54

Hou, K. and Robinson, D. (2006) 'Industry concentration and average stock return', The journal of finance, 61, 1927–1956.

Hogan, T.L. and Burns, S. (2019) Has Dodd–Frank affected bank expenses?, Journal of regulatory economics, 55, (2), 214-236

Haq, M. and Heaney, R. (2012) Factors determining European bank risk, Journal of International Financial Markets, Institutions and Money, 22, (4), 696-718

Houston, J. and James, C. (1995) 'CEO compensation and bank risk - is compensation in banking structured to promote risk taking', Journal of monetary economics, 36, 405–431.

Houston, J. F., Lin, C., Lin, P. and Ma, Y. (2011) Creditor rights, information sharing, and bank risk taking, Journal of Financial Economics, 96, 3, 485-512

Howe, K. R. (1988) Against the quantitative-qualitative incompatibility thesis, or, Dogmas die hard, Educational Researcher, 17, 10-16.

Howe, K. R. (1992) Getting over the quantitative-qualitative debate, American Journal of Education, 100, 236-256.
Humphrey, D. (1992) Flow versus stock indicators of banking output: Effects on productivity and scale economy measurement. Journal of Financial Services Research, 6, (2), 115–135.

Humphrey, D. B. (1991) Productivity in banking and effects from deregulation, Economic Review, 1, 16–28.
Humphrey, D. B. (1993) Cost and technical change: Effects from bank deregulation, Journal of Productivity Analysis, 4, (1/2), 9–34.
Hunold, M., Huschelrath, K., Laitenberger, U. and Muthers, J. (2020) Competition, Collusion, and Spatial Sales Patterns: Theory and Evidence, The Journal of Industrial Economics, 68, 4, 737-779.
Huysentruyt, M., Lefereye, E. and Menon, C. (2013) Dynamics of retail-bank branching in Antwerp (Belgium) 1991-2006: Evidence from micro-geographic data, Journal of banking and finance, 37,2, 291-304
Hwang, B. and Kim, S. (2009) It pays to have friends, Journal of Financial Economics, 93, 1, 138-158

Iannotta, G., Nocera, G. and Sironi, A. (2007) Ownership Structure, Risk and Performance in the European Banking Industry, Journal of banking and finance, 31, 7, 2127-2149

IMF (2004) 'France: Financial System Stability Assessment. IMF Country Report No. 04/344, November (Washington: IMF).

Ivan H. (2015) Testing out the "Quiet-Life" Hypothesis on Croatian Banking Sector, Economic and Social Development: Book of Proceedings, 45

Iyer, S.R., Feng, H. and Rao, R.P. (2017) Payout flexibility and capital expenditure, Review of Quantitative Finance and Accounting, 49, 633–659
Jagannathan, R. and Srinivasan, S.B. (1999) "Does Product Market Competition Reduce Agency Costs?", The North American Journal of Economics and Finance, 10, 2, 387-399
James, C. M. and Wier, P. (1987) Returns to acquirers and competition in the acquisition market: The case of banking, Journal of Political Economy, 95, 355– 370.
Jansson, M. (2004) Unbiasedness of the OLS estimator with random regressors – Solution, Econometric theory, 20, (6), 1263-1264

Jaseviciene, F., Povilaitis, B. and Vidzbelyte, S. (2013) Commercial banks performance 2008-2012, Business, Management and Education, 11, (2), 189-208

Jawadi, F., Jawadi, N., Cheffou, A.I., Ameur, H.B. and Louhichi, W. (2017) Modelling the effect of the geographical environment on Islamic banking performance: A panel

quantile regression analysis, Economic Modelling, 67, 300-306

Jayaratne, J. and Strahan, P. (1998) 'Entry restrictions, industry evolution, and dynamic efficiency: Evidence from commercial banking', The journal of Law and economics, 41, 239–273.

Jemric, I. and Vujcic, B. (2002) Efficiency of banks in Croatia: A DEA approach, Comparative economic studies, 44, 169–193.

Jensen, M. (1986) 'Agency cost of free cash flow, corporate finance, and takeovers', American economic review, 76, 323–329.

Jensen, M. (1989) 'Eclipse of the public corporation.', Harvard Business Review, 67, 61–75.

Jensen, M. (1993) 'The modern industrial revolution, exit, and the failure of internal control systems', Journal of Finance 48, 831–880.

Jensen, M. and Meckling, W. (1976) 'Theory of the firm: Managerial behaviour, agency costs, and ownership structure', Journal of Financial economics, 3, 305–360.

Jensen, M. and Murphy, K. (1990a) 'Performance pay and top-management incentives', Journal of political economy, 98, 225–264.

Jensen, M. C., Murphy, K. J. and Wruck, E. (2004) Remuneration: Where We've Been, How We Got to Here, What Are the Problems, and How to Fix Them. ECGI Working Paper Series in Finance 44.

Jia, N. (2013) Competition, governance, and relationship-specific investments: Theory and implications for strategy, Strategic Management Journal, 34, 13, 1551-1567

Jin, J., Kanagaretnam, K., Lobo, G. and Mathieu, R. (2013) Impact of FDICIA internal controls on bank risk taking, Journal of Banking and Finance, 37, (2), 614-624

Jin, J., Kanagaretnam, K. and Lobo, G. (2011) Ability of accounting and audit quality variables to predict bank failure during the financial crisis, Journal of Banking and Finance, 35, (11), 2811-2819

Jill, C. and Hussey, R. (2013) Business Research: A Practical Guide for Undergraduate and Postgraduate Students, 3rd edition. Macmillan International: United Kingdom

Jimenez, G. and Saurina, J. (2004) Collateral, type of lender and relationship banking as determinants of credit risk, Journal of Banking and Finance, 28, 9, 2191-2212

Jimenez, G. and Saurina, J. (2006) Credit cycles, credit risk, and prudential regulation, International Journal of Central Banking, 2, (2), 65-98

Jiraporn, P. and Ning, Y. (2006), "Dividend policy, shareholder rights, and corporate governance", Journal of Applied Finance, 16, 2, 24-36

Jo, H. and Pan, C. (2009) "Why are firms with entrenched managers more likely to pay dividends?", Review of Accounting and Finance, 8, 1, 87-116.

John, K. and Senbet, L.W. (1998) Corporate governance and board effectiveness, Journal of Banking and Finance, 22, 371-403.

John, K., Mehran, H. and Qian, Y. (2010) 'Outside monitoring and CEO compensation in the banking industry', Journal of corporate industry, 16, 383–399.

Johnson, R.B. and Onwuegbuzie, A.J. (2004) Mixed Methods Research: A Research Paradigm Whose Time Has Come, American Educational Research Association, 33, (7), 14-26

John, K. and Qian, Y. (2003) Incentive Features in CEO compensation in the Banking Industry, Economic Policy Review, 9, 109-121.

Jokipii, T. and Milne, A. (2008) The Cyclical Behaviour of European Bank Capital Buffers, Journal of Banking and Finance, 32, 1440-1451.

Justice (2015) Antitrust division:1968 Merger Guidelines. Available from: https://www.justice.gov/archives/atr/1968-merger-guidelines (Accessed: 18th September 2021)

Johan, S.A. and Wu, Z. (2014) Does the quality of lender–borrower relationships affect small business access to debt? Evidence from Canada and implications in China, International review of financial analysis, 36, 206-211

Kahn, C. and Winston, A. (1998) 'Ownership structure, speculation, and shareholder intervention.', Journal of finance, 53, 99–129.

Kaminsky, G. and Reinhart, C. (1999) The twin crises: the causes of banking and balance-of-payments problems, American Economic Review, 89, 473–500

Kanagaretnam, K., Krishnan, G.V. and Lobo, G.J. (2009) Is the market valuation of banks' loan loss provision conditional on auditor reputation?, Journal of Banking & Finance, 33, 6, 1039-1047

Kane, E. (1988) The Savings and Loan Mess: How Did it Happen? Washington, D.C.: Urban Institute Press.

Kaplan, S. (1994) 'Top executive rewards and firm performance: A comparison of japan and the United States.', Journal of Political Economy, 102, 510–546.

Kaplan, S. (2008) Are U.S. CEOs Overpaid?, Academy of Management Perspectives, 22, 5–20.

Kaplan, S. and Rauh, J. (2010) "Wall Street and Main Street: What Contributes to the Rise in the Highest Incomes?" Review of Financial Studies, 23, 1004-1050.

Karpoff, J. M. (2001) The Impact of Shareholder Activism on Target Companies: A Survey of Empirical Findings. Working Paper, University of Washington.

Karuna, C. (2007) Industry product market competition and managerial incentives, Journal of Accounting and Economics, 43, 275-297

Karuna, C. (2008) Industry Product Market Competition and Corporate Governance. Available from: file:///C:/Users/ttwhy/Downloads/SSRN-id1215201%20(1).pdf. Accessed on 15th January 2019.

Kashyap, A.K. (2010) Lessons from the financial crisis for risk management. Paper prepared for the Financial Crisis Inquiry Commission, February

Ke, B., Kathy, P. and Assem, S. (1999) 'Ownership concentration and sensitivity of executive pay to accounting performance measures: evidence from publicly and privately-held insurance companies', Journal of accounting and economics, 28, 185–209.

Keeley, M.C. (1990) "Deposit Insurance, Risk, and Market Power in Banking", American Economic Review, 80, 5, 1183-1200

Keeton, W.R. (1999) Does faster loan growth lead to higher loan losses?, Federal Reserve Bank of Kansas City Economic Review (Second Quarter), 57-75

Kenworthy, L. (2014) Social Democratic America, Oxford/New York, NY: Oxford University Press.

Kerr, J. L. and Bettis, R. (1987) 'Boards of directors, top management compensation, and share- holder returns.', Academy of Management Journal, 30, 645-664.

Kershaw, D. (2003) Corporate Governance Regimes: Convergence and Diversity, McCahery, J.A., Moerland, P., Raaijmakers, T. and Renneboog, L. (Ed.), The journal of corporate law studies, 3, (1), 201-206

Khan, H.H., Kutan, A.M., Naz, I. and Qureshi, F. (2017) Efficiency, growth and market power in the banking industry: New approach to efficient structure hypothesis, The North American journal of economics and finance, 42, 531-545

King, R. and Levine, R. (1993) Finance and growth: Schumpeter might be right, Quarterly Journal of Economics, 108, (8), 717-737

King, R. and Levine, R. (1993b) 'Finance, entrepreneurship, and growth', Journal of Monetary Economics, 32, 513-542.

Kirkpatrick, G. (2009) 'The corporate governance lessons from the financial crisis', OECD Journal: Financial Market Trends, 1, 61–87.

Klein, A. (2002) 'Audit committee, board of director characteristics, and earnings management', Journal of accounting and economics, 33, 375–400.

Klock, M.S., Mansi, S.A. and Maxwell, W.R. (2005) Does corporate governance matter to bondholders?, Journal of Financial and Quantitative Analysis, 40, 693-719

Koetter, M., Kolari, J.W. and Spierdijk, L. (2012) Enjoying the quiet life under deregulation? Evidence from adjusted for U.S. banks, Review of economics and statistics, 94, (2), 462-519

Kohler, M. (2015) Which banks are more risky? The impact of business models on bank stability, Journal of Financial Stability, 16, 195-212

Koch, M., Rosner, D. and Zelikovitz, J. (2021) The Foreign Investment Regulation Review: Canada. Available from: https://thelawreviews.co.uk/title/the-foreign-investment-regulation-review/canada#footnote-003 (Accessed on the 30th/11/2021).

Konishi, M. and Yasuda, Y. (2004) Factors affecting bank risk taking: evidence from Japan, Journal of Banking and Finance, 28, 1, 215-232

Kontolaimou, K.T. (2010) Are cooperatives the weakest link in European banking? A non-parametric meta-frontier approach, Journal of Banking Finance, 34, (8), 1946-1957

Körner, T. (2017) Board Accountability and Risk Taking in Banking: Evidence from a Quasi-Experiment, Journal of financial services research, 52, (3), 155-190

Kosmidou, K., Pasiouras, F. and Tsaklanganos, A. (2007) Domestic and multinational determinants of foreign bank profits: The case of Greek banks operating abroad, Journal of multinational financial management, 17, 1-15

Kothari, C.R. (2004) Research Methodology: Methods and Techniques. New Age International: New Delhi

Kraft, E. and Tırtıroglu, D. (1998) “Bank efficiency in Croatia: a stochastic-frontier analysis”, Journal of Comparative Economics, 26, 2, 282-300

Krippner, G. (2005) “The Financialisation of the American Economy.” Socio-Economic Review, 3, (2), 173–208.

Kroll, M., Walters, B.A. and Wright, P. (2008) Board vigilance, director experience, and corporate outcomes, Strategic Management Journal, 29, (4), 363–382.

Kundid, A., Škrabić, B. and Ercegovac, R. (2011). Determinants of bank profitability in Croatia, Croatian Operational Research Review (CRORR), 2, 168-182.

Kwast, M.L. (1996) United States Banking Consolidation: Current Trends and Issues. Paper Prepared for Presentation at the OECD, November 1996, DAFFE/CMF, (96), 40.

Kwast, M.L. (1999) Bank mergers: What should policymakers do?, Journal of banking and finance, 23, 629-636

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R.W. (2000), “Agency problems and dividend policies around the world”, The Journal of Finance, 55, 1, 1-33

Laeven, L. (2013) Corporate governance: what's special about banks?, Annual Review of Finance and Economics, 5, 63-92

Laeven, L. and Levine, R. (2007) Is there a diversification discount in financial conglomerates? Journal of financial economics, 85, 331-367

Laeven, L. and Valencia, F. (2008). Systemic Banking Crises: A New Database, IMF Working Paper 08/224.

Leszczensky, L. and Wolbring, T. (2019) How to Deal With Reverse Causality Using Panel Data? Recommendations for Researchers Based on a Simulation Study. Sociological Methods and Research.

Laeven, L. and Valencia, F. (2010) Resolution of Banking Crises: The Good, the Bad, and the Ugly. IMF Working Paper 10/146

Laeven, L. and Valencia, F. (2011) The Real Effects of Financial Sector Interventions during Crises. IMF Working Paper 11/45.

Leventis, S., Dimitropoulos, P.E. and Anandarajan, A. (2011) Capital Management under IFRS: The Case of EU Commercial Banks, Journal of financial services research, 40, (1-2), 103-122

Laeven, L. and Levine, R. (2009) 'Bank governance, regulation and risk taking', Journal of financial economics, 93, 259–275.

Louhichi, A., Louati, S. and Boujelbene, Y. (2019) Market-power, stability and risk-taking: an analysis surrounding the riba-free banking, Review of accounting and finance, 18, (1), 2-24

Lamo, A., Perez, J. and Schukneckt, L. (2008) Public and private sector wages: Co-movement and causality, Technical report, European Central Bank - Working Paper 963.

Lawson, R. and Murphy, R. (2016) Does antitrust policy promote competition?, Applied economics letters, 23, (14), 1034-1036

Lee, C. and Hsih, M. (2012) Beyond Bank Competition and Profitability: Can Moral Hazard Tell Us More?, Journal of financial services research, 44, (1), 87-109

Lee, C.C. and Hsieh, M.F. (2014) Bank reforms, foreign ownership, and financial stability, Journal of International Money and Finance, 40, 204-224

Legros, P. and Newman, A. (2013) 'A price theory of vertical and lateral integration', Quarterly Journal of Economics 128, 725-70.

Li, Y., Chen, Y., Chien, F.S., Lee, W.C. and Hsu, Y.C. (2016) Study of optimal capital adequacy ratios, Journal of productivity analysis, 45, (3), 261-274

Lensink, R. and Hermes, N. (2004) The short-term effects of foreign bank entry on domestic bank behaviour: does economic development matter?, Journal of Banking and Finance, 28, (3), 553-568

Leonard, J.S. (1990) Executive pay and firm performance. Special issue, Industrial and Labor Relations Review, 43, 13–29.

Lepetit, E., Nys, E., Tarazi, A. and Rous, P. (2008) 'Bank income structure and risk: An empirical analysis of European banks', Journal of Banking and Finance, 32, 1452–1467.
Lepetit, L., Nys, E., Rous, P. And Tarazi, A. (2008a) "The Expansion of Services in European Banking: Implications for Loan Pricing and Interest Margins", Journal of Banking and Finance, 32, (11), 2325–2335.

Leung, W.S., Taylor, N. and Evans, K.P. (2015) The determinants of bank risks: Evidence from the recent financial crisis, Journal of international financial markets, institutions and money, 34, 277-293

Leventis, S., Dimitropoulos, P.E. and Anandarajan, A. (2011) Loan loss provisions, earnings management and capital management under IFRS: The case of EU commercial banks, Journal of financial service research, 40, 103-122

Leventis, S. and Dimitropoulos, P. (2012) The role of corporate governance in earnings management: Experience from US banks, Journal of Applied Accounting Research, 13, (2), 161-177

Levine, R. (2002) Bank-Based or Market-Based Financial Systems: Which Is Better?, Journal of Financial Intermediation, 11, 4, 398-428

Levine, R., Beck, T. and Loayza, N. (2000) 'Finance and the source of growth', Journal of financial economics, 58, 261–300.

Levine, R. (2003) Denying foreign bank entry implications for bank interest margins, Technical report, Central Bank of Chile working papers no 222, Santiago.

Li, J. and Tang, Y. (2010) 'CEO hubris and firm risk-taking in China: The moderating role of managerial discretion', Academy of management journal, 53, 45–68.

Li, K., Griffin, D., Yue, H. and Zhao, L. (2013) 'How does culture influence corporate risk-taking', Journal of Corporate Finance, 23, 1-22.

Li, N., Richardson, S. and Tuna, I. (2014) 'Macro to micro: Country exposures, firm fundamentals and stock returns', Journal of accounting and economics, 58, 1–20.

Li, L. and Song, F.M. (2013) Do bank regulation affect board independence? A cross-country analysis, Journal of Banking and Finance, 37, (8), 2714–2732

Liang, N. and Rhoades, S.A. (1988) Geographic diversification and risk in banking, Journal of Economics and Business, 40, (4), 271-284

Liang, Q., Xu, P. and Jiraporn, P. (2013) 'Board characteristics and Chinese bank performance', Journal of banking and finance, 37, 2953–2968.

Liebeg, D. And Schwaiger, M. (2006) "Determinants of the Interest Rate Margins of Austrian Banks", OENB Financial Stability Report, 12, 104–116

Linck, J., Netter, J. and Yang, T. (2009) 'The effects and unintended consequences of the

Sarbanes- Oxley act on the supply and demand for directors', Review of Financial Studies, 22, 3287–3328.

Lindblom, T. (2001) To analyze bank profitability by financial ratios, Landström, H., Mattsson, J. and Helmersson, H. (Eds.), Ur en Forskarhandledares örtagård, Lund Business Press, Lund, 101-120

Lindquist, K. (2004) Banks' buffer capital: how important is risk?, Journal of International Money and Finance, 23, 493-513

Liu, C. and Ryan, S. (1995) The effect of bank loan portfolio composition on the market reaction to and anticipation of loan loss provisions, Journal of Accounting Research, 33, 77–94

Liu, C., Ryan, S. and Wahlen, J. (1997) Differential valuation implications of loan loss provisions across bank and fiscal agents, Accounting Review, 72, 133–146

Liu, H., Molyneux, P. and Wilson, J.O.S (2013) Competition and stability in European banking: A regional analysis, The Manchester School, 81, (2), 176-201

Liu, H., Molyneux, P. and Wilson, J.O.S. (2010) Competition and stability in European banking: A regional analysis, The Manchester School, 81, 2, 176-201

Liu, C. and Ryan, S.G. (2006) Income smoothing over the business cycle: Changes in banks' coordinated management of provisions for loan losses and loan charge-offs from the pre-1990 bust to the 1990s boom, The Accounting Review, 81, 421-441

Liu, Q., Pan, X. and Tian, G. (2018) 'To what extent did the economic stimulus package influence bank lending and corporate investment decisions? evidence from china', Journal of banking and finance, 86, 177–193.

Livne, G., Markarian, G. and Milne, A. (2011) 'Bankers' compensation and fair value accounting', Journal of corporate finance, 17, 1096–1115.

Llewellyn, D. (1999) The economic ratio for financial regulation, Technical report, Financial Service Authority, London.

López, F. (2005) 'Debt ownership structure and legal system: An international analysis', Applied Economics, 37, 355-65.

Llyods-Williams, D.M., Molyneux, P. and Thornton, J. (1994) Market structure and performance in Spanish banking, Journal of Banking and Finance, 18, 3, 433-443

Ma, C.K. (1988) Loan loss reserve and income smoothing: the experience in the US banking industry, Journal of Business, Finance and Accounting, 15, 487–497

Mace, M.L. (1971) Directors: Myth and reality. Boston: Harvard University.

Macey, J.R. and Holdcroft, J.P. Jr. (2011) Failure is an option: An ersatz-antitrust approach too financial regulation, Yale Law Jornal, 120, (6), 13-68

Machlup, F. (1967) 'Theories of the firm: Marginalist, behavourial managerial', American economic review, 57, 1–33.

Maddaloni, A. and Peydro, J. (2011) Bank Risk-taking, Securitization, Supervision, and Low Interest Rates: Evidence from the Euro-area and the United States Lending Standards, Review of Financial Studies, 24, 6, 2121-2165.

Makinen, M. and Jones, D.C. (2015) Comparative Efficiency Between Cooperative, Savings and Commercial Banks in Europe using the Frontier Approach, Annals of public and cooperative economics, 86, (3), 401-420

Maksimovic, V. and Titman, V. (1991) "Financial Policy and Reputation for Product, The review of financial studies, 4, 1, 175-200

Malikov, E., Restrepo-Tobón, D. and Kumbhakar, S.C. (2014) Estimation of banking technology under credit uncertainty, Empirical Economics Forthcoming, 1–27

Malmendier, U. and Tate, G. (2008) 'Who makes acquisitions? CEO overconfidence and the market's', Journal of financial economics, 89, 20–43.

Mamatzakis, E., Staikouras, C. and Koutsomanoli-Filipaki, N. (2005) Competition and concentration in the banking sector of the South-Eastern European region, Emerging Markets Review, 192-209

Manetti, G. and Bagnoli, L. (2013) Mutual and Social Efficiency of Italian Co-Operative Banks: An Empirical Analysis, Annals of Public and Cooperative Economics, 84, 3, 289-308

Mankiw, N. and Reis, R. (2003) What measure of inflation should a central bank target?, Journal of the European Economic Association, 1, (5), 1058–1086

Marcus, A. (1983) 'The bank capital decision: A time series cross section analysis', Journal of finance, 38, 1217–1232.

Marcus, A.J. (1984) Deregulation and bank financial policy, Journal of Banking and Finance, 8, (4), 557-565

Mare, D.S. (2015) Contribution of macro-economic factors to the prediction of small bank failures, Journal of international financial markets, institutions, and money, 39, 25-39

Markarian, G. and Juan, S. (2014) Product Market Competition, Information and Earnings Management, Journal of Business Finance and Accounting, 41, 5-6, 572-599

Martin, D. (1977) 'Early warning of bank failure: A logit regression approach', Journal of banking and finance, 1, 249–276.

Martinez-Miera, D. and Repullo, R. (2010) 'Does competition reduce the risk of bank failure?', Review of financial studies, 23, 3638–3664.

Masulis, R., Wang, C. and Xie, F. (2007) Corporate governance and acquirer returns, Journal of finance, 62, 4, 1851-1890

Masson, R.T. (1971) Executive motivations, earnings, and consequent equity performance, Journal of Political Economy, 79, 1278–92.

Matousek, R. and Taci, A. (2004) Efficiency in banking: Empirical evidence from the Czech Republic, Economics of Planning, 37, 225–244.

Matousek, R., Rughoo, A., Saranti, N. and Assaf, A. (2015) 'Bank performance and convergence during the financial crisis: Evidence from the old European union and eurozone', Journal of banking and finance, 52, 208–216.

Matousek, R. and Tzeremes, N.G. (2016) CEO compensation and bank efficiency: an application of conditional nonparametric frontiers, European Journal of Operational Research, 251, 116, 264–273.

Maudo, J. and Fernandez de Guevara, J. (2004) 'Factors affecting the interest margin in the banking sectors of the European union', Journal of banking and finance, 28, 2259–2281.

Maudos, J. and Fernandez de Guevara, J. (2007) 'The cost of market power in banking: Social welfare versus cost inefficiency', Journal of banking and finance, 31, 2103–2126

Maudos, J., Pastor, J.M., Perez, F. and Quesada, J. (2002) Cost and profit efficiency in European banks, Journal of International Financial Markets, Institutions and Money, 12,

1, 33-58

Maug, E. (1998) ‘Ownership structure, speculation, and shareholder intervention’, Journal of finance, 53, 99–129.

Maxwell, S. E., and Delaney, H. D. (2004) Designing experiments and analyzing data. Mahwah, New Jersey: Lawrence Erlbaum.

McConnell, J. and Servaes, H. (1990) ‘Additional evidence on equity ownership and corporate values’, Journal of Financial Economics, 27, 595–612.

McKillop, D. and Wilson, J.O.S. (2011) Credit unions: a theoretical and empirical Overview, Financial Markets, Institutions and Instruments, 20, (3), 79-123

McMillan, D. and McMillan, F. (2016) ‘US bank market structure: Evolving nature and implications’, Journal of financial service research, 50, 187–210.

McNichols, M.F. and Stubben, S.R. (2008) Does Earnings Management Affect Firms' Investment Decisions?, The Accounting Review, 83, 6, 1571-1603

McNulty, L. (2012) European bank reform: the Liikanen Report revealed, International financial law review, 27

Mehran, H., Morrison, A. and Shapiro, J. (2011) Corporate governance and banks: what have we learned from the financial crisis? Federal Reserve Bank of New York Staff Report, 502

Mengistae, T. and Xu, L.C. (2004) Agency Theory and Executive Compensation: The Case of Chinese State-Owned Enterprises, Journal of Labor Economics, 22, 615-637.

Mention, A. and Bontis, N. (2013) Intellectual capital and performance within the banking sector of Luxembourg and Belgium, Journal of Intellectual Capital, 14, 2, 1469-1930

Mercieca, S., Schaeck, K. and Wolfe, S. (2007) ‘Small European banks: Benefits from diversification?’, Journal of Banking and Finance, 31, 1975–1998.

Muralidharan S. and Deshpande, C. (2016) Scope for Intersection between Hartford Laws and Corporate Governance Principles vis-a-vis Cartels Deterrence in India, NUJS Law Review, 9, 93.

Mester, L.J. (1989) Owners versus managers: who controls the bank? Federal Reserve Bank of Philadelphia Business Review, May/June, 13–23

Michaely, R. and Roberts, M. (2006) “Dividend smoothing, agency costs, and information asymmetry: lessons from the dividend policies of private firms”, working paper, Cornell University, New York, NY.

Miller, S. and Noulas, A. (1997) 'Portfolio mix and large-bank profitability in the USA', Applied Economics, 29, 505- 12.

Miller, M., Mohanty, I. and Zhang, L. (2009) The Illusion of Stability-Low Inflation in a Bubble Economy, The Manchester school, 77, s1, 126-149

Minviel, J.J. and Bouheni, F. (2021) Technical and managerial efficiency assessment of European banks using a conditional nonparametric approach, International transactions in operational research, 28, (2), 560-597

Minton, B., Taillard, J. and Williamson, R. (2010) Do independence and financial expertise of the board matter for risk taking and performance? Working Paper, Ohio State University.

Mirrlees, J. (1999) ‘The theory of moral hazard and unobservable behaviour: Part 1’, Review of economic studies, 66, 3–21.

Mishkin, F.S. (1999) “Financial Consolidation: Dangers and Opportunities.” Journal of Banking and Finance, 23, 675-691.

Mitton, T. (2004) “Corporate governance and dividend policy in emerging markets”, Emerging Markets Review, 5, 4, 409-426

Modigliani, F. and Miller, M.H. (1958) The Cost of Capital, Corporation Finance and the Theory of Investment, The American Economic Review, 48, 3, 261-297

Morrison, A.D. and White, L. (2011) Deposit insurance and subsidized recapitalizations, Journal of Banking and Finance, 35, 12, 3400-3416

Moch, N. (2013) Competition in fragmented markets: New evidence from the German banking industry in the light of the subprime crisis, Journal of Banking and Finance, 37, 8, 2908-2919

Montes, C.P., Artigas, C.T., Cristófoli, M.E. and Segundo, N.L.S. (2018) The impact of the IRB approach on the risk weights of European banks, Journal of Financial Stability, 39, 147-166

Molyneux, P. and Thornton, P. (1992) ‘Determinants of European bank profitability: A note’, Journal of Banking and Finance, 16, 1173–I 178.

Molyneux, P., Lloyd-Williams, M. and Thornton, J. (1994) 'Competitive conditions in European banking', Journal of Banking and Finance, 18, 445–59.

Mongiardino, A. and Plath, C. (2010) Risk governance at large banks: have any lessons been learned?, Journal of Risk Management in Financial Institutions, 3, 116-123

Markham, J. (2013) The Failure of Corporate Governance Standards and Antitrust Compliance, South Dakota Law Review, 58, (3), 499-542

Monti, M. (2001) 'Market definition as a cornerstone of EU Competition Policy'. Speech given at the Workshop on Market Definition – Helsinki Fair Centre, Helsinki (Finland), 5 October. Retrieved from http://europa.eu/rapid/press-release_SPEECH-01-439_en.htm?locale=en

Morch, W. (1993) Behavioral Experimentation in Field Settings: Threats to Validity and Interpretation Problems, International Review of Research in Mental Retardation, 19, 1993, 193-217

Moore, D. and Healy, P. (2008) 'The trouble with overconfidence', psychological review, 115, 502– 517.

Morck, R., Schleifer, A. and Vishny, R. (1988) 'Management ownership and market valuation - An empirical analysis', Journal of financial economics, 20, 293–315.

Morgan, J., Robinson, O. and Thompson, T. (2015), 'Happiness and age in European adults: The moderating role of gross domestic product per capita', American psychological association, 30, 544–551.

Männasoo, K. and Mayes, D. (2009) Explaining bank distress in Eastern European transition economies, Journal of Banking and Finance, 33, 244-253

Morse, A., Vikram, N., and Amit, S. (2011) Are incentive contracts rigged by powerful CEOs?, Journal of Finance, 66, 1779– 1821.

Mukherjee, K., Ray, S. C. and Miller, S. M. (2001) Productivity growth in large US commercial banks: The initial post-deregulation experience, Journal of Banking and Finance, 25, (5), 913–939

Mueller, C.E. (1967) The new antitrust : a structural approach, Antitrust law and economics review. Available from: https://digitalcommons.law.villanova.edu/vlr (Accessed: 18th July 2021)

Mülbert, P.O. (2009) "Corporate governance of banks", European Business Organization Law Review, 10, 3, 411-436

Murphy, K. J. (1985) 'Corporate performance and managerial remuneration: An empirical analysis', Journal of Accounting and Economics, 7, 11-42.

Myers, S. (1977) Determinants of corporate borrowing, Journal of Financial Economics, 5, 147-17

Naceur, S. and Goaied, M. (2008) 'The determinants of commercial bank interest margin and profitability', Frontiers in finance and economics, 5, 106–130.

Nalebuff, B. and Stiglitz, J. (1983) Information, Competition, and Markets, American Economic Review, 73, 2, 278-83

Narusevicius, L. (2018) Bank profitability and macroeconomy: Evidence from Lithuania, Technological and economic development of economy, 24, 2, 383-405

Nathan, A. and Neave, E.H. (1989) Competition and contestability in Canada's financial system: Empirical results, Canadian Journal of Economics, 22, 576-594

Nesbitt, S.L. (1994) Long-term rewards from shareholder activism: a study of the 'CalPERS effect', Journal of Applied Corporate Finance, 6, 75–80.

Neu, D., Everett, J. and Rahaman, A. S. (2013) Internal auditing and corruption within government: The case of the Canadian sponsorship program, Contemporary Accounting Research, 30, (3), 1223–1250

Natarajan, P. and Simon, N.S. (2015) Technology-Enabled Performance of Nationalized Banks in India: An Analysis, IUP Journal of Bank Management, 14, 1, 75-88.

Ng, T.Y. and Roychowdhury, S. (2014) Do loan loss reserves behave like capital? Evidence from recent bank failures, Review of Accounting Studies, 19, 3, 1234-1279

Nguyen, D.D., Hagendorff, J. and Eshraghi, A. (2016) Can bank boards prevent misconduct?, Review of finance, 20, (1), 1-36

Nguyen, J. (2012) "The Relationship Between Net Interest Margin and Non-interest Income Using a System Estimation Approach", Journal of Banking and Finance, 36, (9), 2429–2437.

Nickell, S. (1996) Competition and corporate performance, The Journal of Political Economy, 104, 724–746.

Nielsen, A.E.B. (2006) “Corporate governance, leverage, and dividend policy”, working paper, Princeton University, NJ.

Nikiel, E. M. and Opiela, T. P. (2002) Customer type and bank efficiency in Poland: Implications for emerging banking market, Contemporary Economic Policy, 20, 255–271.

Niu, J. (2016) Loan growth and bank valuations, The Quarterly Review of Economics and Finance, 61, 185-191

OECD (2002) Competition law and policy in the United Stated. Available from: https://www.oecd.org/unitedstates/34837249.PDF (Accessed from 14th March 2020).

OECD (2009) Corporate governance and the financial crisis: key findings and main messages. Available from: https://www.oecd.org/corporate/ca/corporategovernanceprinciples/43056196.pdf (Accessed on the 12th November 2020).

Ommeren, V. (2011) Banks’ Profitability: An Examination of the Determinants of Banks’ Profitability in the European Banking Sector. Master’s Thesis Department of Accounting & Finance, Erasmus University, Rotterdam

Orhangazi, Ö. (2008) Financialisation and the US Economy. Cheltenham, UK: Edward Elgar Publishing.

Otto. C.A. (2014) CEO optimism and incentive compensation, Journal of financial economics, 114, 366-404

Ötker, I. and Podpiera, J. (2010) The Fundamental Determinants of Credit Default Risk for European Large Complex Financial Institutions. IMF Working Paper 10/153.

Ozili, P.K. (2019) Non-performing loans in European systemic and non-systemic banks, Journal of Financial Economic Policy, 12, 3, 409-424

Palia, D. (2001) The endogeneity of managerial compensation in firm valuation: A solution, The review of financial studies, 14, 3, 736-764

Panzar, J.C. and Rosse, J.N. (1987) Testing For "Monopoly" Equilibrium, The Journal of Industrial Economics, 35, 4, The Empirical Renaissance in Industrial Economics, 443-456

Papadakis, V.M. (2006) Do CEOs shape the process of making strategic decisions? Evidence from Greece, Management Science, 44, (3), 367-394

Paradi, J.C. and Schaffnit, C. (2004) “Commercial Branch Performance Evaluation and Results Communication in a Canadian Bank – a DEA Application”, EJOR, 156, (3), 719-735.

Paulet, E., Parnaudeau, M. and Abdessemed, T. (2014) The SME struggle for financing: a clampdown in European banks post-crisis, The Journal of business strategy, 2014-04-14, 35, (2), 36-45

Poghosyan, T. and Cihák, M. (2011) Distress in European banks: an analysis based on a new dataset, Journal of Financial Services Research, 40, 163-184

Paquet, G., and Wallot, J.P. (2007) Un Québec Moderne 1760–1840: Essai d’Histoire Économique et Sociale. Montréal: Éditions Hurtubise HMH Ltée.

Parguez, A. and Seccareccia, M. (2000) “The Credit Theory of Money: The Monetary Circuit Approach.” In J. Smithin (ed.), What Is Money? London: Routledg

Park, Y. and Shin, H. (2004) Board composition and earnings management in Canada, Journal of Corporate Finance, 10, 3, 431-457

Pasiouras, F. and Kosmidou, K. (2007) Factors influencing the profitability of domestic and foreign commercial banks in the European Union, Research in International Business and Finance, 21, 2, 222-237

Pathan, S. (2009) Strong boards, CEO power and bank risk-taking, Journal of Banking and Finance, 33, (7), 1340–1350

Pathan, S. and Faff, R. (2013) ‘Does board structure in banks really affect their performance’, Journal of banking and finance, 37, 1573–1589.

Pathan, S. and Skully, M. (2010) ‘Endogenously structured boards of directors in banks’, Journal of banking and finance, 34, 1590–1606.

Pejić B.M., Posedel, P. and Stojanović, A. (2009) “Determinante profitabilnosti banaka u Hrvatskoj”, Zbornik Ekonomskog Fakulteta u Zagrebu, 7, 1, 81-92.

Peltzman, S. (2014) Industrial concentration under the rule of reason, The Journal of Law and Economics, 57, S3, S101–S120

Penas, M.F. and Unal, H. (2004) Too-Big-To-Fail Gains in Bank Mergers: Evidence from the Bond Markets. Available from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.196.9344&rep=rep1&type=pdf . Accessed on 15th.6.2019

Tumer Alkan, G. and Penas, M. F. (2010) Bank disclosure and market assessment of financial fragility: Evidence from Turkish banks' equity prices. Journal of Financial Services Research, 37, (2), 159-178.

Peng, L. and Roell, A. (2008) Executive pay and shareholder litigation, Review of Finance, 12, 141–181.

Petersson, T. (2009) Philanthropy by name, banking by business: The saving banks in Sweden, 1820–2008. Unpublished paper, Uppsala Centre for Business History, Uppsala University.

Penman, S. (1991) An Evaluation of the Accounting Rate of Return, Journal of Accounting, Auditing and Finance, 233-256

Penman, S. and Zhang, X. (2002) 'Accounting conservatism, the quality of earnings, and stock returns', The Accounting Review, 77, 237–264.

Pérez, D., Salas-Fumás, V. and Saurina, J. (2008) Earnings and capital management in alternative loan loss provision regulatory regimes, European Accounting Review, 17, 423–445

Perilleux, A. and Nyssens, M. (2017) Understanding cooperative finance as a new common, Annals of Public and Cooperative Economics, 88, 2, 155-177

Perry, T. and Zenner, M. (2001) 'Pay for performance? government regulation and the structure of compensation contract', Journal of financial economics, 62, 453–488.

Pervan, M., Pelivan, I. and Arneric, J. (2015) "Profit persistence and determinants of bank profitability in Croatia", Economic Research-Ekonomska Istraživanja, 28, (1), 284-298

Petersen, M.A. and Rajan, R. (1995) The Effect of Credit Market Competition on Lending Relationships, The Quarterly Journal of Economics, 110, 2, 407-443

Pettway, R.H. and Sinkey, J.F. (1980) Establishing On-Site Bank Examination Priorities: An Early-Warning System Using Accounting and Market Information, Journal of Finance, 35, 1, 137-50

Philippon, T. (2015) Has the US Finance Industry Become Less Efficient? On the Theory and Measurement of Financial Intermediation, American Economic Review,105, 4, 1408-1438

Piroska, D. and Podvrsic, A. (2019) New European Banking Governance and Crisis of Democracy: Bank Restructuring and Privatization in Slovenia, Journal of New Political Economy, 25, 6, 1-15

Podpiera, A. and Podpiera, J. (2005) Deteriorating cost efficiency in commercial banks signals an increasing risk of failure, Working Paper No. 6, Czech National Bank

Podpiera, J. and Weill, L. (2008) Bad luck or bad management? Emerging banking market experience, Journal of financial stability, 4, (2), 135-148

Porter, M. (1990) The Competitive Advantage of Nations. Macmillan Press, London.

Pratt, W. and Zeckhauser, R. J. (1985) Principals and agents: The structure of business, Technical report, Harvard Business School Press, Boston.

Puri, M., Rocholi, J. and Steffen, S. (2011) Global retail lending in the aftermath of the US financial crisis: Distinguishing between supply and demand effects, Journal of Financial Economics, 100, 3, 556-578

Puri, M., Harvey, C.R. and Graham, J.R. (2013) Managerial attitudes and corporate actions, Journal of Financial Economics, 109, 1, 103-121

Quinn, J.B. (1985) Managing innovation: controlled chaos, Harvard Business Review, 63, (3), 73-84

Rao-Nicholson, R. and Salaber, J. (2016) Impact of the Financial Crisis on Cross-Border Mergers and Acquisitions and Concentration in the Global Banking Industry, Thunderbird international business review, 2016-03, 58, (2), 161-173

Qian, J. and Strahan, P.E. (2007) How Laws and Institutions Shape Financial Contracts: The Case of Bank Loans, The Journal of Finance, 62, 6, 2803-2834

Radelet, S. and Sachs, J. (1998) The East Asian financial crisis: diagnosis, remedies, prospects. Brookings Paper on Economic Activity, 1, 1–78

Raith, M. (2003) 'Competition, risk and managerial incentives', American economic review, 93, 1425–1436.

Ramlall, I. (2009) 'Bank-specific, industry-specific and macroeconomic determinants of profitability in Taiwanese banking system: Under panel data estimation', International Research Journal of Finance and Economic, 34, 160–167.

Ratti, R.A., Lee, S. and Seol, Y. (2008) Bank concentration and financial constraints on firm-level investment in Europe, Journal of Banking and Finance, 32, 12, 2684-2694

Reinhart, C. and Rogoff, K. (2010a) 'Growth in a time of debt', American Economic Review, 100, 573-78.

Reinhart, C. and Rogoff, K. (2010b) Debt and growth revisited, Technical report, Vox, EU.

Reinhart, C. and Rogolf, K. (2009) This Time is Different: Eight Centuries of Financial folly, Princeton University Press.

Reinhart, C. and Rogolf, K. (2011) 'From financial crash to debt crisis', American economic review, 101, 1676–1706.

Reinhart, C., Reinhart, V. and Rogoff, K. (2012) 'Public debt overhangs: Advanced economy episodes since 1800', Journal of economic perspectives, 26, 69–86.

Renneboog, L. and Szilagyi, P. (2006) "How relevant is dividend policy under low shareholder protection?", working paper, Tilburg University, Tilburg

Restrepo-Tobon, D., Kumbhakar, S.C. and Sun, K. (2015) Obelix vs Asterix: Size of US commercial banks and its regulatory challenge, Journal of regulatory economics, 48, 125-168

Rhoades, S. and Roger, D. (1982) 'Market power and firm risk: A test of the 'quiet life' hypothesis', Journal of monetary economics, 9, 73–85.

Rhoades, S.A. (1996) Bank mergers and industry-wide structure,1980±1994. Federal Reserve State Study, No.169, January 1996, Board of Governors of the Federal Reserve System, Washington, D.C.

Rock, E.B. and Rubinfeld, D.L. (2017) Defusing the Antitrust Threat to Institutional Investor Involvement in Corporate Governance, NYU Law and Economics Research Paper, 17-05

Richardson, S., Sloan, R., Soliman, M., and Tuna, I. (2005) Accrual reliability, earnings persistence, and stock prices, Journal of Accounting and Economics, 39, (3), 437–485

Richardson, S., Sloan, R., Soliman, M. and Tuna, I. (2006a) The implications of accounting distortions and growth for accruals and profitability, The Accounting Review, 81, (3), 713–743.

Rogers, K. and Sinkey, J. F. (1999) "An Analysis of Non-traditional Activities at US Commercial Banks", Review of Financial Economics, 8, (1), 25–39

Rosen, R.J. (2007) Banking market conditions and deposit interest rates, Journal of Banking and Finance, 31, 12, 3862-3884

Rosenstein, S. and Wyatt, J.G. (1990) Outside Directors, Board Independence and Shareholders Wealth, Journal of Financial Economics, 26, 175-191

Ross, S.A., Westerfield, R.W. and Jaffe, J. (2005) Corporate Finance (7th edition). McGraw Hill Irwin; New York.

Rossi, S., Schwaiger, M. and Winkler, G. (2005) Managerial behaviour and cost/profit efficiency in the Banking Sectors of Central and Eastern European Countries, Working Paper no. 96, Austrian National Bank

Rousseau, P.L. and Wachtel, P. (1998) Financial intermediation and economic performance: historical evidence from five industrialized economies, Journal of Money, Credit, and Banking, 30, (1), 657-678

Rossi, S., Schwaiger, M. and Winkler, G. (2009) 'How loan portfolio diversification affects risk, efficiency and capitalization: A managerial behavior model for Austrian Banks', Journal of Banking and Finance, 33, 2218–2226.

Rumler, F. and Waschiczek, W. (2010) 'The impact of economic factors on bank profit', Monetary policy and the economy, Q4, 49–69.

Salas, V. and Saurina, J. (2002) Credit risk in two institutional regimes: Spanish commercial and savings banks, Journal of Financial Services Research, 22, 203-224

Salim, R., Arjomandi, A. and Seufert, J. (2016) 'Does corporate governance affect Australian banks performance?', Journal of International Financial Markets, Institutions and Money?, 43, 113–125.

Singleton, J. and Verhoef, G. (2010) Regulation, deregulation, and internationalisation in South African and New Zealand banking. Business History, 52, 536 – 563.

Soussa, F. (2004) A note on banking FDI in emerging markets: Literature review and evidence from M&A data. London, England: International Finance Division, Bank of England.

Sassoon, D. (ed.) (1997), Looking Left: European Socialism After the Cold War, London (UK): I.B. Taurus.

Sathye, M. (2005) Market Structure and Performance in Australian Banking, Review of accounting & finance, 2005-02-01, Vol.4 (2), 107-124

Sandelowski, M. (1986) The problem of rigor in qualitative research, Advances in Nursing Science, 8, (3), 27-37.

Saunders, A., Strock, E. and Travlos, N.G. (1990) Ownership Structure, Deregulation, and Bank Risk Taking, Journal of finance, 45, 2, 643-654

Saunders, M., Lewis, P. and Thornhill, A. (2007) Research Methods for business students. 7th edition. Pearson Education: Harlow, England

Saunders, M., Lewis, P. and Thornhill, A. (2015) Research Methods for business students. 7th edition. Pearson: Harlow, England

Schaeck, K., Cihak, M. and Wolfe, S. (2009) Are Competitive Banking Systems More Stable?, Journal of Money, Credit and Banking, 41, 4, 711-734

Scharfstein, D. (1988) 'Product-market competition and managerial slack', The RAND journal of economics, 19, 147–155.

Schiereck, D., Kiesel, F. and Kolaric, S. (2016) Brexit: (Not) another Lehman

Moment for Banks?, Finance Research Letters, 19, 291-297.

Stojanovic, D. Vaughan, M.D. and Yeager, T.J. (2008) Do Federal Home Loan Bank membership and advances increase bank risk-taking?, Journal of Banking and Finance, 32, 5, 680-698

Stucke, M.E. (2008) Better Competition Advocacy, St. John's Law Review, 82, 3, 951-1036

Shen, C. H. and Chang, Y. (2007) Do Financial Holding Company Banks Outperform Independent Banks-Correcting Selection Bias by Matching Methods. The 15th Conference on the Theories and Practices of Securities and Financial Markets.

Shelanski, H. (2018) Antitrust and Deregulation, The Yale law journal, 127, (7), 1922-1960

Schleifer, A. and Vishny, R. (1986) 'Large shareholders and corporate control', The journal of political economy, 94, 461–488.

Schmid, M. and Walter, I. (2009) 'Do financial conglomerates create or destroy economic value?', Journal of Financial Intermediation, 18, 193–216.

Schmidt, K. (1997) 'Managerial incentives and product market competition', Review of economic studies, 64, 191–213.

Scholes, M., Wilson, G. and Wolfson, M. (1990) 'Tax planning, regulatory capital

planning, and financial reporting strategy for commercial banks', Review of financial studies, 3, 625–650.

Schrag, F. (1992) In defense of positivist research paradigms, Educational Researcher, 21, (5), 5-8.

Schularick, M. and Taylor, A.M. (2012) Credit booms gone bust: monetary policy, leverage cycles, and financial crises, 1870–2008, American Economic Review, 102, (2), 1029-1061

Schwandt, T. A. (2000) Three epistemological stances for qualitative inquiry: Interpretivism, hermeneutics, and social constructionism. In Denzin, N. K. and Lincoln, Y. S., Handbook of qualitative research, 189-213. Thousand Oaks, CA: Sage.

Seccareccia, M. (2013) Financialization and the transformation of commercial banking: understanding the recent Canadian experience before and during the international financial crisis, Journal of Post Keynesian Economics, 35, 2, 277-300

Seccareccia, M., and Lavoie, M. (1989) "Les Idées Révolutionnaires de Keynes en Politique Économique et le Déclin du Capitalisme Rentier." Économie appliquée, 42 (1), 47–70.

Sechrest, L. and Sidana, S. (1995) Quantitative and qualitative methods: Is there an alternative? Evaluation and Program Planning, 18, 77-87.

Semenick, I. M. (2001) A nonparametric approach for assessing productivity dynamics of large US banks, Journal of Money, Credit and Banking, 33, (1), 121–139

Shaffer, S. and Spierdijk, L. (2015) The Panzar-Rosse revenue test and market power in banking, Journal of Banking and Finance, 61, 340-347

Shaffer, S. (1982) A non-structural test for competition in financial markets, Proceedings of a Conference on Bank Structure and Competition, Federal Reserve Bank of Chicago, 225-243

Shaffer, S. (1983) 'Non-structural measures of competition: Toward a synthesis of alternatives', Economics Letters, 12, 349–353.

Shah, I.H., and Ahmad, H. (2017) How important is the financial sector to price indices in an inflation targeting regime? An empirical analysis of the UK and the US, Review of quantitative finance and accounting, 48, (4), 1063-1082

Sheikh, S. (2018) CEO power, product market competition and firm value, Research in International Business and Finance, 46, 373-386

Shen, C. and Chang, Y. (2008) Do Regulation Affect Banking Performance? Government governance may matter, Contemporary economic policy, 24, (1), 92-105

Shleifer, A. and Robert, W.V. (1989) Managerial Entrenchment: The Case of Manager-Specific Investments, Journal of Financial Economics, 25, (1), 123-139.
Shleifer, A., and Vishny, R.W. (1997) A survey of corporate governance, Journal of Finance, 52, 737–783

Short, B. (1979) 'The relationship between commercial bank profit rates and banking concentration in Canada, Western Europe and Japan', Journal of Banking and Finance, 3, 209–19.

Shumway, T. (2001) Forecasting bankruptcy more accurately: A simple hazard model, the journal of business, 74, 1, 101-124
Sigmund, M., Gunter, U. and Krenn, G. (2017) How do macroeconomic and bank-specific variables influence profitability in the Austrian banking sector? Evidence from a panel vector autoregression analysis, Economic notes, 46, 3, 555-585
Sinha, V.K. and Arena, M. (2020) Manifold conceptions of the internal auditing of risk culture in the financial sector, Journal of business ethics, 162, (1), 81-102
Sjogren, H. and Jes Iversen, M. (2018) The state as the investor of last resort: a comparative study of banking crises in Denmark and Sweden, Scandinavian Economic History Review, 67, 2, 171-189
Sinha, P. and Sakshi, S. (2016) Determinants of bank profits and its persistence in Indian Banks: A study in a dynamic panel data framework. International Journal of System Assurance Engineering and Management, 7, 35–46
Skała, D. (2021) Loan loss provisions and income smoothing–Do shareholders matter?. International Review of Financial Analysis, 78, 101909.

Sloan, R. (1996) 'Do stock prices fully reflect in accruals and cashflows about future earnings?', The Accounting Review, 71, 289–315.
Slovin, M.B. and Polonchek, J.A. (1999) An analysis of contagion and competitive effects at commercial banks, Journal of financial economics, 54, 2, 197-225
Smirlock, M. (1985) 'Evidence of the (non) relationship between concentration and profitability in banking', Journal of Money, Credit, and Banking, 17, 69-83.
Smith, M. (1996) Shareholder activism by institutional investors: evidence from CalPERS. Journal of Finance, 51, 227–252.

Soliman, M. (2008) 'The use of dupont analysis by market participants', The Accounting Review, 83, 823-853.

Spierdijka, L. and Zaourasa, M. (2018) 'Measuring banks' market power in the presence of economies of scale: A scale-corrected Lerner Index', Journal of Banking and Finance, 87, 40–48.

Staikouras, C.E. and Koutsomanoli-Filippaki, A. (2006) Competition and concentration in the new European banking landscape, European Financial Management, 12, (3), 443-482

Staikouras, C. (2008) Cost efficiency of the banking industry in the South Eastern European region, Journal of International Financial Markets, Institutions and Money, 18, 5, 483-497

Stelzner, M. (2014) Political contest, policy control, and inequality in the United States, Review of Keynesian Economics, 2, 3, 365–83

Stephanou, C. (2011) The Banking System in Cyprus: Time to Rethink the Business Model?, Cyprus Economic Policy Review, 5, 2, 123-130

Stelzner, M. and Chaturvedi, M. (2020) Deregulating antitrust policy, Cambridge Journal of Economics, 44, 4, 871–890

Shields, D. A. (2010) Consolidation and Concentration in the US dairy Industry, Congressional Research Service Report 41224

Stigler, G. (1958) The economics of scale, Journal of Law Economics, 1, 54-71

Stiglitz, J. (2017) America has a monopoly problem—and it's huge, The Nation. Available from: https://www.thenation.com/article/america-has-a-monopoly-problem-and-its-huge/ (Accessed 19th.7.2021)

Stiroh, K. (2004) 'Diversification in banking: Is non-interest income the answer?', Journalof Money, Credit and Banking, 36, 853–882.

Stiroh, K. and Rumble, A. (2005) 'The dark side of diversification: The case of us financial holding companies', Journal of Banking and Finance, 30, 2131–2161.

Stiroh, K.J. (2006) A portfolio view of banking with interest and noninterest activities, Journal of Money, Credit, and Banking, 38, 1351-1362

Stiroh, K. J. (2000) How did bank holding companies prosper in the 1990s? Journal of Banking and Finance, 24, (11), 1703–1745

Straska, M., and Waller, G. (2010) Do Antitakeover Provisions Harm Shareholders?

Journal of Corporate Finance, 16, 487–497.

Sufian, F and Habibullah, M.S. (2009) Determinants of bank profitability in a developing economy: Empirical evidence from Bangladesh, Journal of Business

Economics and Management, 10, 3, 207-217

Sutton, J. (1991) Sunk costs and market structure, MIT Press, Cambridge.

Taft, J.G. (2015) A force for good: How enlightened finance can restore faith in capitalism, New York, Palgrave Macmillan

Taylor, J.B. (2008) The Financial Crisis and the Policy Responses: An Empirical Analysis of What Went Wrong. In A Festschrift in Honor of David Dodge's Contributions to Canadian Public Policy, Proceedings of Bank of Canada Conference. Reprinted in 2009. Critical Review, 21, 341–64

Taylor, A. (2012) 'Global financial stability and the lessons of history: A review of Carmen, M., Reinhart, M. and Rogoff's, K.S. this time is different: Eight years of financial folly', Journal of economic literature, 50, 1092–1105.

Tervio, M. (2008) 'The difference that CEOs make: an assignment model approach', American Economic Review, 98, 642-68.

Tsiakos, G. (2020) Competition Enforcement and Litigation in Canada, Canadian Law Library Review, 45, 17.

Thimann, C. (2015) 'The microeconomic dimensions of the Eurozone crisis and why European politics cannot solve them', Journal of economic perspectives, 29, 141–164.

Thomas, W. (2000) 'A test of the market's mispricing of domestic and foreign earnings', Journal of Accounting and Economics, 28, 243-267.

Thornton, J. and Di Tommaso, C. (2021) The effect of non-performing loans on credit expansion: Do capital and profitability matter? Evidence from European banks, International journal of finance and economics, 26, (3), 4822-4839

Tirole, J. (1988) The Theory of Industrial Organization. Massachusetts Institute of Technology Press: United States of America

Tirtiroglu, D., Daniels, K. N. and Tirtirogu, E. (2005) Deregulation, intensity of competition, industry evolution, and the productivity growth of US commercial banks, Journal of Money, Credit and Banking, 37, (2), 339–360

Tuggle, C.S., Sirmon, D.G., Reutzel, C.R. and Bierman, L. (2010) Commanding board of director attention: investigating how organizational performance and CEO duality affect board members' attention to monitoring, Strategic management journal, 31, (9), 946-968

Tochkov, K. and Nenovsky, N. (2009) Efficiency of commercial banks in Bulgaria in the wake of EU accession, ICER Working Paper No. 21.

Traclet, V. (2005) Structure of the Canadian Housing Market and Finance System, Bank for International Settlements Working Paper (available at http://www.bis.org/publ/wgpapers/cgfs26traclet.pdf)

Uddin, M. and Baoteng, A. (2011) 'Explaining the trends in the UK cross-border mergers and acquisitions: An analysis of macro-economic factors', International business review, 20, 547– 556.

Uhde, A. and Heimeshoff, U. (2009) Consolidation in banking and financial stability in Europe: Empirical evidence, Journal of banking and finance, 33, 7, 1299-1311

Valdez, S. (2007) An introduction to global financial markets, New York: Palgrave Macmillan.

Vallascas, F. and Keasey, K. (2012) Bank resilience to systemic shocks and the stability of banking systems: Small is beautiful, Journal of International Money and Finance, 31, 6, 1745-1776

van den Huevel, S. (2002) Does bank capital matter for monetary transmission?, in 'Economic policy review', 8, Federal Reserve Bank of New York, New York, 258–265.

van den Huevel, S. (2009) The bank capital channel of monetary policy, Federal Reserve Board.

van Leuvensteijn, M., Bikker, J., van Rixtel, A. and Kok Sorensen, C. (2011) 'A new approach to measuring competition in the loan markets of the euro area', Applied economics,43, 3155–67.

van Leuvensteijn, M., Sorensen, C., Bikker, J. and van Rixtel, A. (2013), 'Impact of bank competition on the interest rate pass-through in the Euro-area', Applied economics, 45, 1359–1380.

Vander Vennet, R. , De Jonghe, O. and Baele, L. (2004) "Bank risks and the business cycle", working paper, Universiteit Gent, Ghent.

Verdun, A. and Zeitlin, J. (2018) Introduction: the European Semester as a new architecture of EU socioeconomic governance in theory and practice Journal of European public policy, 25, (2), 137–48

Veronesi, P. and Zingales, L. (2010) 'Paulson's gift', Journal of Financial Economics, 97, 339–368.

Vives, X. (2001) Competition in the Changing World of Banking, Oxford Review of Economic Policy, 17, 4, 535-547

Vives, V. (2010) Competition and stability in banking, Technical report, CEPR Policy insight.

Vives, X. (2011) Strategic supply function competition with private information, Econometrica, 79, 6, 1919-1966

Vodova, P. (2011) Liquidity of Czech Commercial Banks and its Determinants, International Journal of Mathematical Models and Methods in Applied Sciences, 5, (6), 1060-1068

Vogt, W.B., Town, R. and Williams, C.H. (2006) How has hospital consolidation affected the price and quality of hospital care?, Synthesis project. Research synthesis report, (9),15231, PMID: 22051574.

Watts, R. L. and Zimmerman, J. L. (1978) 'Towards a positive theory of the determination of accounting standards.', The Accounting Review, 53, 112–134.

Weill, L. (2003) Banking efficiency in transition economies - The role of foreign ownership, Economics of Transition and Institutional Change, 11, 3, 569-592

Weill, L. (2013) Bank competition in the EU: How has it evolved?, Journal of International Financial Markets, Institutions and Money, 26, 100-112.

Waller, S.W. (2011) Corporate Governance and Competition Policy, Loyola University Chicago, School of Law. Available from: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Flawecommons.luc.edu%2Fcgi%2Fviewcontent.cgi%3Freferer%3D%26httpsredir%3D1%26article%3D1167%26context%3Dfacpubs&clen=3594394 (Accessed on the 3rd/11/2021)

Weisbach, M. (1988) 'Outside directors and CEO turnover', Journal of financial economics, 20, 431–460.

Westman, H. (2011) The impact of management and board ownership on profitability in banks with different strategies, Journal of Banking and Finance, 35, (12), 3300-3318.

Wheelock, D.C. and Wilson, P.W. (1999) Technical Progress, Inefficiency, and Productivity Change in U.S. Banking, 1984-1993, Journal of Money, Credit and Banking, 31, 2, 212-234

Wheelock, D. C. and Wilson, P. W. (2011) Are credit unions too small? Review of Economics and Statistics,93, (4), 1343–1359.

White, L.L. (1991) The S and L Debacle: Public Policy Lessons for Bank and Thrift Regulation. New York: Oxford University Press.

White, L.J. (2015) Antitrust and Financial Regulation in the Wake of Philadelphia National Bank: Complements, Not Substitutes, Antitrust Law Journal, 80, 2, 413-430

Williams, J. (2004) Determining management behaviour in European banking, Journal of Banking and Finance, 28, 2427-2460

Williams, B. (2003) Domestic and international determinants of bank profits: foreign banks in Australia, Journal of Banking and Finance, 27, (6), 1185-1210

Williamson, O. E. (1968). Economies as an antitrust defense: The welfare trade-offs, American Economic Review, 58, (1), 18–36.

Williamson, O. E. (1977) Economies as an Antitrust Defense Revisited, Penn Law Review, 125, 4, 1976-1977. Available at: https://scholarship.law.upenn.edu/penn_law_review/vol125/iss4/1 (Accessed: 1st March 2020)

Wilson, J., Casu, B., Girardone, C. and Molyneux, P. (2010) 'Emerging themes in banking: recent literature and directions for future research', The British Accounting Review, 42, 153–169.

Wintoki, M. B., Linck, J. S., & Netter, J. M. (2009). Endogeneity and the dynamic of corporate governance. European Summer Symposium in Financial Markets, Centre for Economic Policy Research, 13–24 July, 1–52

Wooldridge, J.M. (2013) Introductory Econometrics: A Modern Approach (Fifth international ed.). Australia: South-Western.

Wu, Y. (2016) 'Incentive contracts and the allocation of talent', The economic journal, 127, 2744–2783.

Xie, H. (2001) 'The mispricing of abnormal accruals', The Accounting Review, 76, 357-373.

Yafeh, Y. and Yosha, O. (2001) The industrial organisation of financial systems and the strategic use of relationship banking, European Financial Review, 5, (1-2), 63-78

Yao, H., Haris, M. and Tariq, G. (2018) Profitability Determinants of Financial Institutions: Evidence from Banks in Pakistan, International Journal of Financial Studies, 6, 53,

Yermack, D. (1996) 'Higher market valuation for firms with a small board of directors', Journal of financial economics, 40, 185–211.

Yermack, D. (1997) 'Good timing: CEO stock option awards and company news announcements', Journal of Finance, 52, 449–476.

Yeyati, E. and Micco, A. (2007) 'Concentration and foreign penetration in Latin American banking sectors: Impact on competition and risk', Journal of banking and finance, 31, 1633–1647.

Yang, H. Liu, C. and Yeutien, R. (2020) Bank diversification and systemic risk, The Quarterly review of economics and finance, 77, 311-326

Yildirim, H.S. and Philippatos, G. (2007) Efficiency of Banks: Recent Evidence from the Transition Economies of Europe, 1993-2000, The European Journal of Finance, 13, 2, 123-143

Zhang, J., He, L. and An, Y. (2020) Measuring banks' liquidity risk: An option-pricing approach, Journal of banking and finance, 111, 1-18

Zhao, Y. and Chen, K.H. (2008) The Influence of Takeover Protection on Earnings Management, Journal of Business Finance and Accounting, 35, 3-4, 347-375

Zhao, T., Matthews, K. and Murinde, V. (2013) Cross-selling, switching costs and imperfect competition in British banks, Journal of Banking and Finance, 37, 5452-5462

Zimková, E. (2014) Technical efficiency and super-efficiency of the banking sector in Slovakia, Procedia Economics and Finance, 12, 780 – 787

Zigraiova, D. and Havranek, T. (2016) Bank Competition and Financial Stability: Much Ado About Nothing?, Journal of economic surveys, 30, (5), 944-981

Zou, L. (1997) 'Incentive roles of fringe benefits in compensation contracts', Journal of economics, 65, 181–199.

Zhang, J., Jiang, C., Qu, B. and Wang, P. (2013) Market concentration, risk-taking, and bank performance: Evidence from emerging economies, International Review of Financial Analysis, 30, 149-157

Appendix 1 – Robustness Test and Descriptive Statistics

Robustness Tests for EU Commercial Bank

Robustness Check

****Hausman test for FEM vs REM**

hausman fixed random

Note: the rank of the differenced variance matrix (15) does not equal the number of coefficients being tested (29); be sure this is what you expect, or there may be problems computing the test. Examine the output of your estimators for anything unexpected and possibly consider scaling your variables so that the coefficients are on a similar scale.

Coefficients ----	**ROAE**			
	(b)	(B)	(b-B)	sqrt(diag(V_b V_B))
	fixed	random	Difference	S.E.
Age	0.021	-0.001	0.022	0.031
hHHI	-7.379	-2.003	-5.376	5.682
mHHI	-592.135	-278.883	-313.253	454.025
lHHI	-1128.405	-536.350	-592.055	880.012
hHHIxAge	0.036	0.013	0.023	0.066
mHHIxAge	4.050	0.911	3.139	3.580
lHHIxAge	-2.974	-8.129	5.155	10.239
AT2004	11.939	10.896	1.043	0.815
AT2004xhHHI	-17.690	-18.206	0.516	1.622
ETA	-0.460	-0.461	0.000	0.038
CFL	0.052	0.053	-0.001	0.014
CI	-0.098	-0.086	-0.012	0.004
NLTA	0.020	-0.002	0.022	0.012
TA	0.000	0.000	0.000	0.000
MS	115.278	108.048	7.230	66.927
BURDENTA	123.133	81.124	42.009	10.757
TEATA	0.702	10.010	-9.308	3.449
NEATA	-0.854	10.643	-11.498	3.610
AU	754.697	738.560	16.137	5.661
BAAM	0.165	0.160	0.005	0.012
CR	-2.639	-2.531	-0.108	1.563
LR	4.409	3.404	1.005	0.637
CE	0.000	0.000	0.000	0.000
Overheads	0.000	0.000	0.000	0.000
LA	0.000	0.000	0.000	0.000
GDPC	0.000	0.000	0.000	0.000
CPI	0.141	0.179	-0.037	0.035
Inequality	-0.009	-0.009	0.001	0.005

Fin_crisis	-1.378	-0.920	-0.458	0.241

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained

Test: Ho: difference in coefficients not systematic

chi2(15) = (b-B)'[(V_b-V_B)^(-1)](b-B)

53.13

Prob>chi2 = 0.0000

(V_b-V_B is not positive definite)

. ***Breusch-Pagan LM test for REM vs OLS (ROAE)

. quietly xtreg $ylist $xlist, re

. xttest0

Breusch and Pagan Lagrangian multiplier test for

ROAE[b_id,t] = Xb + u[b_id] + e[b_id,t]

Estimated results:

	Var	sd = SQRT(Var)
ROAE	168.70	12.99
e	37.57	6.13
u	21.22	4.61
Test: Var(u) =	0	
	chibar2(01)	835.47
	Prob > chibar2	0

. ***Recovering individual-specific effects (ROAE)

. quietly xtreg $ylist $xlist, fe

. predict alphafehat, u

(3,050 missing values generated)

. sum alphafehat

Variable	Obs	Mean	Std. Dev.	Min	Max
alphafehat	2,180	1.02E-09	5.59	-21.62	26.88

. ***Hausman test for FE & RE model - ROAE

. quietly xtreg $ylist $xlist, fe

. estimates store fixed

. quietly xtreg $ylist $xlist, re

. estimates store random

. hausman fixed random

Note: the rank of the differenced variance matrix (12) does not equal the number of coefficients being tested (23); be sure this is what you expect, or there may be problems computing the test. Examine the output of your estimators for anything unexpected and possibly consider scaling your variables so that the coefficients are on a similar scale.

Coefficients ----

	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b V_B)) S.E.
Age	-0.076	-0.001	-0.074	0.016
hHHI	-0.006	0.002	-0.008	0.004
mHHI	-107.992	-450.193	342.201	416.598
lHHI	4284.127	4840.096	-555.969	846.743
hHHIxAge	0.000	0.000	0.000	0.000
mHHIxAge	-8.305	1.990	-10.294	3.889
lHHIxAge	-82.979	-76.762	-6.217	10.277
LR	1.747	2.449	-0.702	0.234
CFL	-0.215	-0.324	0.108	0.013
CI	0.019	0.019	-0.001	0.002
Overheads	0.000	0.000	0.000	0.000
NLTA	0.007	0.014	-0.008	0.003
TA	0.000	0.000	0.000	0.000
MS	-454.931	95.569	-550.500	180.644
BURDENTA	-48.999	-56.314	7.315	4.657
TEATA	-4.307	-4.924	0.616	0.330
NEATA	4.696	-4.695	9.391	1.427
AU	790.504	781.427	9.076	2.495
BAAM	0.079	0.051	0.028	0.010
CR	7.953	5.841	2.112	0.851
GDPC	0.000	0.000	0.000	0.000
CPI	0.072	0.132	-0.060	0.014
Fincrisis	-0.580	-0.846	0.266	0.323

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(12) = (b-B)'[(V_b-V_B)^(-1)](b-B)

87.69

Prob>chi2 = 0.0000

(V_b-V_B is not positive definite)

***Hausman test for FE & RE model 2 - QLTTTA

. hausman fixed random

Note: the rank of the differenced variance matrix (10) does not equal the number of coefficients being tested (23); be sure this is what you expect, or there may be problems computing the test. Examine the output of your estimators for anything unexpected and possibly consider scaling your variables so that the coefficients are on a similar scale.

Coefficients ----

	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b V_B)) S.E.
Age	-0.003	0.000	-0.003	0.000
hHHI	0.000	0.000	0.000	.
mHHI	1.882	-2.294	4.176	0.861
lHHI	16.639	11.255	5.384	.
hHHIxAge	0.000	0.000	0.000	.
mHHIxAge	-0.020	0.000	-0.020	0.008
lHHIxAge	-0.086	0.064	-0.151	.
LR	-0.004	0.012	-0.016	.
CFL	0.000	0.000	0.001	0.000
CI	0.000	0.000	0.000	.
Overheads	0.000	0.000	0.000	0.000
NLTA	0.000	0.000	0.000	0.000
TA	0.000	0.000	0.000	0.000
MS	1.756	-0.862	2.618	0.339
BURDENTA	0.115	0.183	-0.067	.
TEATA	0.031	0.030	0.001	0.000
NEATA	0.156	0.275	-0.119	.
AU	0.009	0.140	-0.131	.
BAAM	0.000	0.000	-0.001	.
CR	0.062	0.135	-0.073	.
GDPC	0.000	0.000	0.000	0.000
CPI	0.000	0.002	-0.002	.
Fincrisis	-0.010	-0.018	0.008	.

b = consistent under Ho and Ha; obtained from xtreg

	B =	inconsistent under Ha, efficient under Ho; obtained from xtreg
Test:	Ho:	difference in coefficients not systematic
		chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
		= -3430.20 chi2<0 ==> model fitted on these
		data fails to meet the asymptotic
		assumptions of the Hausman test;
		see suest for a generalized test

***Breusch-Pagan LM test for RE vs OLS - ROAE

. quietly xtreg $ylist $xlist, re

. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

ROAE[b_id,t] = Xb + u[b_id] + e[b_id,t]

Estimated results:

Var	sd	SQRT(Var)
ROAE	10.95	3.31
e	2.59	1.61
u	1.27	1.13

Test: Var(u) = 0

chibar2(01) = 3505.37

Prob > chibar2 = 0.0000

. ***Breusch-Pagan LM test for RE vs OLS - QLTTTA

. quietly xtreg $y1list $xlist, re

. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

QLTTTA[b_id,t] = Xb + u[b_id] + e[b_id,t]

Estimated results:

Var	sd	SQRT(Var)
QLTTTA	0.00022	0.01481
e	0.00001	0.00362
u	0.00002	0.00412

Test: Var(u) = 0

chibar2(01) = 6779.74

Prob > chibar2 = 0.0000

. ***Recovering individual-specific effects - ROAE

. quietly xtreg $ylist $xlist, fe

. predict alphafehat, u

(4,548 missing values generated)

. sum alphafehat

Variable	Obs	Mean	Std. Dev.	Min	Max
alphafehat	9,901	7.29E-11	3.69	-13.92	15.46

. ***Recovering individual-specific effects - QLTTTA

. quietly xtreg $y1list $xlist, fe

. predict alphafehat1, u

(4,533 missing values generated)

. sum alphafehat1

Variable	Obs	Mean	Std. Dev.	Min	Max
alphafehat1	9,916	-6.79E-11	0.111	-0.239	0.178

Robustness Tests for EU Savings Banks

. ***Hausman test for FE & RE model 1 - ROAE

hausman fixed random

Note: the rank of the differenced variance matrix (12) does not equal the number of coefficients being tested (25); be sure this is what you expect, or there may be problems computing the test. Examine the output of your estimators for anything unexpected and possibly consider scaling your variables so that the coefficients are on a similar scale.

Coefficients ----

	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b V_B)) S.E.
Age	-0.083	0.001	-0.084	0.020
hHHI	-41.267	10.224	-51.491	6.231
mHHI	-812.049	-141.934	-670.114	132.558
lHHI	-3340.815	5223.565	-8564.380	680.230
hHHIxAge	0.140	-0.025	0.165	0.051
mHHIxAge	4.078	-0.770	4.848	1.032
lHHIxAge	56.600	36.709	19.890	6.210
AT2004	0.410	0.548	-0.139	0.010
hHHIxAT2004	4.553	6.333	-1.780	0.037
LR	-0.565	0.498	-1.063	0.325
ETA	0.063	0.032	0.031	0.035
CFL	-0.017	0.013	-0.030	0.021

CI	-0.037	-0.036	-0.001	0.002
Overheads	0.000	0.000	0.000	0.000
NLTA	-0.015	0.000	-0.016	0.006
TA	0.000	0.000	0.000	0.000
MS	-655.252	172.428	-827.680	87.476
BURDENTA	0.929	-0.544	1.473	1.972
TEATA	0.033	0.035	-0.002	0.027
NEATA	0.063	0.195	-0.132	0.312
AU	-1.710	-2.542	0.832	0.536
BAAM	0.002	0.002	-0.001	.
CR	-23.932	-21.651	-2.280	1.022
GDPC	0.000	0.000	0.000	0.000
CPI	-0.214	-0.125	-0.089	0.016

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(12) = (b-B)'[(V_b-V_B)^(-1)](b-B)

513.66

Prob>chi2 = 0.0000

(V_b-V_B is not positive definite)

*****Hausman test for FE & RE model 2 - QLTTTA**

hausman fixed random

Note: the rank of the differenced variance matrix (12) does not equal the number of coefficients being tested (25); be sure this is what you expect, or there may be problems computing the test. Examine the output of your estimators for anything unexpected and possibly consider scaling your variables so that the coefficients are on a similar scale.

Coefficients ----

	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b V_B)) S.E.
Age	-0.004	0.000	-0.004	0.000
hHHI	-0.885	-0.075	-0.810	0.082
mHHI	-18.205	5.382	-23.587	1.694
lHHI	-114.311	-100.172	-14.139	.
hHHIxAge	0.009	0.000	0.009	0.001
mHHIxAge	0.175	-0.024	0.199	0.013
lHHIxAge	0.494	0.535	-0.041	0.026
AT2004	-0.010	-0.004	-0.006	.
hHHIxAT2004	0.015	0.021	-0.006	.

LR	0.011	0.038	-0.027	0.004
ETA	-0.003	-0.003	0.000	0.000
CFL	0.002	0.001	0.001	0.000
CI	0.000	0.000	0.000	0.000
Overheads	0.000	0.000	0.000	0.000
NLTA	0.000	0.000	0.000	0.000
TA	0.000	0.000	0.000	0.000
MS	-0.706	1.072	-1.778	1.108
BURDENTA	1.672	1.707	-0.035	0.023
TEATA	0.021	0.020	0.001	0.000
NEATA	0.082	0.085	-0.002	0.004
AU	-0.425	-0.423	-0.002	0.005
BAAM	0.000	0.000	0.000	.
CR	-0.379	-0.310	-0.069	0.005
GDPC	0.000	0.000	0.000	0.000
CPI	0.005	0.008	-0.003	0.000

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(12) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 362.19

Prob>chi2 = 0.0000

(V_b-V_B is not positive definite)

. ***Breusch-Pagan LM test for RE vs OLS - ROAE

. quietly xtreg $ylist $xlist, re

. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

ROAE[b_id,t] = Xb + u[b_id] + e[b_id,t]

Estimated results:

Var	sd	SQRT(Var)
ROAE	6.83	2.61
e	3.81	1.95
u	1.49	1.22

Test: Var(u) = 0

chibar2(01) = 2123.08

Prob > chibar2 = 0.0000

. ***Breusch-Pagan LM test for RE vs OLS - QLTTTA

. quietly xtreg $y1list $xlist, re

. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

QLTTTA[b_id,t] = Xb + u[b_id] + e[b_id,t]

Estimated results:

Var	sd	SQRT(Var)
QLTTTA	0.043	0.209
e	0.001	0.026
u	0.000	0.019

Test: Var(u) = 0

chibar2(01) = 1967.64

Prob > chibar2 = 0.0000

. ***Recovering individual-specific effects - ROAE

. quietly xtreg $ylist $xlist, fe

. predict alphafehat, u

(2,108 missing values generated)

. sum alphafehat

Variable	Obs	Mean	Std. Dev.	Min	Max
alphafehat	5,060	2.09E-09	6.97	-10.45	19.02

. ***Recovering individual-specific effects - QLTTTA

. quietly xtreg $y1list $xlist, fe

. predict alphafehat1, u

(2,083 missing values generated)

. sum alphafehat1

Variable	Obs	Mean	Std. Dev.	Min	Max
alphafehat1	5,085	3.69E-10	0.29	-0.36	0.69

Robustness Tests for US Commercial Bank - ROAE

Performance - ROAE

. quietly xtreg $ylist $xlist, fe

. estimates store fixed

. quietly xtreg $ylist $xlist, re

. estimates store random

. hausman fixed random

Note: the rank of the differenced variance matrix (8) does not equal the number of coefficients being tested (27); be sure this is what you expect, or there may be problems computing the test. Examine the output of your estimators for anything unexpected and possibly consider scaling your variables so that the coefficients are on a similar scale.

Coefficients ----	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b S.E.
Age	-0.001	0.001	-0.002	0.040
hHHI	0.000	0.000	0.000	0.000
mHHI	28.520	19.746	8.775	5.969
lHHI	-164.191	-124.188	-40.002	37.226
hHHIxAge	0.000	0.000	0.000	0.000
mHHIxAge	-0.081	-0.072	-0.009	0.045
lHHIxAge	0.579	0.515	0.063	0.285
AT2002	0.118	0.126	-0.008	.
AT2002xhHHI	0.064	0.072	-0.008	.
LR	-0.365	-0.394	0.028	0.004
ETA	-0.574	-0.645	0.072	0.005
CFL	0.356	0.358	-0.003	0.003
CI	0.005	0.005	-0.001	0.000
Overheads	0.000	0.000	0.000	0.000
NLTA	-0.011	-0.009	-0.002	0.001
TA	0.000	0.000	0.000	0.000
MS	5057.402	3265.348	1792.054	227.701
BURDENTA	-20.830	-7.967	-12.863	1.039
Fin_crisis	-0.350	-0.383	0.033	0.025
TEATA	-0.020	-0.019	-0.001	.
NEATA	-3.884	-4.103	0.219	0.059
AU	726.402	729.196	-2.794	0.475
BAAM	-0.009	-0.009	0.000	.

CR	-0.070	-0.072	0.002	.
GDPC	0.000	0.000	0.000	0.000
CPI	0.060	0.061	-0.001	0.004
GDGDP	-0.008	-0.007	-0.001	0.003

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficie

nt under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B)

251.11

Prob>chi2 = 0.0000

(V_b-V_B is not positive definite)

. ***Breusch-Pagan LM test for RE vs OLS - ROAE

. quietly xtreg $ylist $xlist, re

. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

ROAE[b_id,t] = Xb + u[b_id] + e[b_id,t]

Estimated results:

		Var	sd= sqrt(Var)
	ROAE	86.94982	9.324689
	e	9.785488	3.128177
	u	5.680322	2.383343
Test:	Var(u)	0	
	chibar2(01) =	64049.97	
	Prob > chibar2 =	0	

. ***Recovering individual-specific effects ROAE

. quietly xtreg $ylist $xlist, fe

. predict alphafehat, u

(16,973 missing values generated)

. sum alphafehat

Variable	Obs	Mean	Std. Dev.	Min	Max
alphafehat	89,396	-1.32E-10	2.88	-31.66	14.18

Robustness Tests for Canadian Commercial Bank - ROAE

*****Hausman test for FE & RE model 1 - ROAE**

quietly xtreg $ylist $xlist, fe

estimates store fixed

quietly xtreg $ylist $xlist, re

estimates store random

hausman fixed random

Note: the rank of the differenced variance matrix (3) does not equal the number of coefficients being tested (19); be sure this is what you expect, or there may be problems computing the test. Examine the output of your estimators for anything unexpected and possibly consider scaling your variables so that the coefficients are on a similar scale.

---- Coefficients ----

	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b V_B)) S.E.
Age	5.525	0.247	5.278	2.555
hHHI	-8199.722	2059.060	-10258.780	3864.513
mHHI	2772545.000	-524409.200	3296954.000	1342194.000
lHHI	653000000.0	139000000.0	514000000.0	287000000.0
hHHIxAge	-0.142	-1.608	1.466	.
mHHIxAge	8654.752	4209.213	4445.539	2255.452
lHHIxAge	1381889.000	897775.400	484114.000	.
LR	16.559	9.426	7.133	2.918
ETA	0.421	-0.527	0.949	0.074
CFL	-0.047	0.344	-0.392	0.022
CI	-0.044	-0.020	-0.024	0.006
Overheads	0.000	0.000	0.000	0.000
TA	0.052	0.049	0.003	0.018
BURDENTA	-257.697	-19.649	-238.048	58.969
TEATA	-1.725	-1.106	-0.619	.
NEATA	8.356	18.857	-10.501	.
AU	101.676	367.851	-266.175	62.334
CR	-0.417	-0.974	0.557	0.192
GDPC	-0.006	0.001	-0.007	0.003

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(3) = (b-B)'[(V_b-V_B)^(-1)](b-B)

0.96

Prob>chi2 = 0.8105

(V_b-V_B is not positive definite)

. ***Breusch-Pagan LM test for RE vs OLS - ROAE

. quietly xtreg $ylist $xlist, re

. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

ROAE[b_id,t] = Xb + u[b_id] + e[b_id,t]

Estimated results:

		Var	sd = SQRT(Var)
ROAE		57.60	7.59
e		1.99	1.41
u		4.58	2.14
Test:	Var(u) =	0	
	chibar2(01) =	36.13	
	Prob > chibar2 =	0	

. ***Recovering individual-specific effects - ROAE

. quietly xtreg $ylist $xlist, fe

. predict alphafehat, u

(218 missing values generated)

. sum alphafehat

Variable	Obs	Mean	Std. Dev.	Min	Max
alphafehat	100	1.86E-07	378.90	-684.57	360.84

Appendix 1A – Pivot Data Analysis of European and North American Commercial Bank Performance.

Country (2000-2014)	Sum of Operating Profit $	Sum of Net Income $	Sum of Overheads
AUSTRIA	52,056,576	38,185,832	158,654,222
BELGIUM	60,395,303	30,886,330	202,621,799
BULGARIA	3,944,356	3,466,328	8,510,655
CANADA	2,616,680	1,746,757	4,323,209
CROATIA	8,132,105	5,937,056	25,304,430
CYPRUS	4,018,582	- 2,000,961	35,354,821
CZECH REPUBLIC	38,188,577	30,478,617	48,945,164
DENMARK	46,488,779	30,848,121	114,898,919
ESTONIA	4,332,481	4,404,184	6,425,828
FINLAND	29,459,192	24,047,558	33,304,498
FRANCE	383,466,598	277,740,456	1,178,916,708
GERMANY	146,139,433	92,473,358	787,327,835
GREECE	- 53,855,951	- 32,147,008	88,791,367
HUNGARY	14,172,730	7,306,729	60,486,643
IRELAND	- 26,289,392	- 22,635,171	79,734,911
ITALY	77,899,868	50,294,851	617,466,956
LATVIA	1,249,113	867,378	8,128,499
LITHUANIA	1,611,461	1,427,432	6,301,499
LUXEMBOURG	50,873,892	37,756,957	64,156,019
MALTA	4,207,091	2,894,297	4,664,705
NETHERLANDS	89,758,879	65,257,352	248,677,276
POLAND	36,815,647	30,947,513	65,927,196
PORTUGAL	3,353,988	4,878,156	79,966,692
ROMANIA	8,201,747	6,922,632	28,537,558
SLOVAKIA	7,381,522	5,317,296	14,613,484
SLOVENIA	- 2,960,859	- 3,158,463	16,029,784
SPAIN	237,166,633	176,792,756	556,330,425
SWEDEN	53,596,953	42,441,824	72,959,618
U.S.A	2,018,090,331	1,375,835,162	4,318,993,179
UNITED KINGDOM	324,788,993	201,453,234	1,451,462,638
U.S.A VS AUSTRIA	3877%	3603%	2722%
U.S.A VS BELGIUM	3341%	4455%	2132%
U.S.A VS BULGARIA	51164%	39691%	50748%
U.S.A VS CANADA	77124%	78765%	99902%
U.S.A VS CROATIA	24816%	23174%	17068%
U.S.A VS CYPRUS	50219%	-68759%	12216%

U.S.A VS CZE. REP	5285%	4514%	8824%
U.S.A VS DENMARK	4341%	4460%	3759%
U.S.A VS ESTONIA	46580%	31239%	67213%
U.S.A VS FRANCE	526%	495%	366%
U.S.A VS GERMANY	1381%	1488%	549%
U.S.A VS HUNGARY	14239%	18830%	7140%
U.S.A VS ITALY	2591%	2736%	699%
U.S.A VS LITHUANIA	125234%	96385%	68539%
U.S.A VS LUXEMBOURG	3967%	3644%	6732%
U.S.A VS NETHERLAND	2248%	2108%	1737%
U.S.A VS ROMANIA	24606%	19874%	15134%
U.S.A VS SLOVAKIA	27340%	25875%	29555%
U.S.A VS SLOVENIA	-68159%	-43560%	26944%
U.S.A VS SPAIN	851%	778%	776%
U.S.A VS SWEDEN	3765%	3242%	5920%
U.S.A VS PORTUGAL	60170%	28204%	5401%
EU CB	1,567,778,651	1,082,137,131	5,998,572,953
U.S.A VS EU COMMERCIAL BANK	129%	127%	72%

Comments	US CB outperformed EU CB during the 2000-2014 period by 29% and 27% in terms of operating profit and net income
Calculated Item	However, EU commercial banks incurred more overheads of approximately 28% during the same period.
	Our pivot data analytics implied that the European banks underperformed compared to United State commercial banks because it had more overheads and reduced profitability.

Appendix 2-8 is in the external appendix not included in this thesis draft. Further information is available upon request.