Does fast loan growth predict poor bank performance?

An analysis of European banks' performance from 2000 to 2016

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"Predicting rain doesn't count. Building arks does."
- *Warren Buffett*

Preface

This thesis is the end product of my master's degree in Financial Economics at the Erasmus School of Economics. Hence, I would like to take this opportunity to thank my parents for their unwavering support and constant encouragement during the past six years.

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Abstract

This research is a replication of the research by Fahlenbrach, Prilmeier and Stulz (2016), who find that from 1973 to 2014 U.S. banks with relatively fast loan growth significantly underperformed the common stock of banks with relatively slow loan growth over the next three years. This paper adds to the research by Fahlenbrach et al. (2016) by investigating European instead of American banks. It concludes that the main result of Fahlenbrach et al. (2016) holds after 2007: banks with fast loan growth underperform banks with slow loan growth over the next three years. However, from 2000 to 2007 fast growing banks outperformed slow growing banks. In addition, this paper finds that Northern European banks outperform Southern European banks from 2000 to 2016 and that banks in countries with global systemically important banks reserve significantly less for loan losses than their counterparts.

Keywords: Credit boom, loan growth, bank performance, bank returns, loan loss provisions
JEL codes: G01, G12, G21

1 Introduction

In the wake of the 2008 financial crisis a lot has been said and written about bank performance and stability. One of the phenomena under severe scrutiny is excessive money creation by banks. Due to today's fractional reserve banking system, banks can create money by giving out loans. During the lead up to the financial crisis of 2008 money creation by banks skyrocketed, which led to an inflation of asset prices and, in the end, the inevitable collapse of the world economy. Hence, an overwhelming amount of scholars have since concluded that this excessive money creation was one of the root causes of the financial crisis.

However, only few scholars have researched what the effect of fast loan growth on individual banks is. Since excessive money creation was one of the root causes of the crisis, it is not a far-fetched to assume that if the loans of a bank grow relatively fast, this affects that bank's performance and stability. Hence, this is a rather interesting avenue for research. Moreover, not only pre- and post-crisis years will be investigated but a period of seventeen years.

Among the scholars that have researched the effect of fast loan growth on individual banks are Fahlenbrach, Prilmeier and Stulz (2016). They find that from 1973 to 2014 U.S. banks with loan growth in the highest quartile in a certain year, significantly underperform the common stock of banks with loan growth in the lowest quartile over the next three years. So, they find that banks with relatively slow loan growth perform significantly better than banks with relatively fast loan growth.

Moreover, Fahlenbrach et al. (2016) find that fast growing banks face significantly higher crash risk over this three-year period and that the risks of these loans are under-appreciated by banks. As a result, high growth banks reserve less for loan losses than other banks, which is reversed in subsequent years. The authors find a similar result for profitability: banks with fast loan growth initially have higher profitability but this is reversed in subsequent years. In addition, Fahlenbrach et al. (2016) find that equity analysts and investors do not anticipate the poorer performance by fast growing banks. Lastly, the worse performance of fast growing banks does not derive from the growth of other asset classes or M&A activity. Therefore, the question rises:"Does fast loan growth also predict poor performance for European banks?"

In order to contribute to this body of research, this paper replicates the research by Fahlenbrach et al. (2016) for European banks from 2000 to 2016. The fact that this paper researches European instead of American banks is a meaningful addition to the study by Fahlenbrach et al. (2016). It is a meaningful addition because of the differences between the European and American banking sector.

The first fundamental difference between the European and American banking system is the reliance of European companies on bank lending: almost 80 percent of corporate debt in Europe is in the form of bank lending, and just 20 percent comes from corporate bonds. Whereas in the U.S. this is almost the exact opposite, hence bank lending is a significantly more important for European companies than American ones (Open Markets, 2015).

Secondly, the European banking system is comprised of a few large 'champion' banks (banks that do not only seek profit but also look to advance a nation's interest) that traditionally operate within their own borders. These large banks are supported by a network of local banks and their governments.

The third fundamental difference between the two banking systems is that European banks do not securitise or sell on many of their loans, in contrast to the U.S.. In Europe a significantly larger portion of bank loans remains on a bank's balance sheets.

The final fundamental difference between the two banking systems is their profitability and recovery after the crisis. Patrick Lane of the Economist stated in June that: "American banks are beating their European rivals hollow." In addition, Schildbach of Deutsche Bank also sees large differences between bank performance in the U.S. and Europe, as a result of the crisis. Where European banks experienced a 'double dip', American banks recapitalised and recovered quickly. Moreover, loan growth has returned in the U.S. where it has not in Europe (Schildbach, 2013)

Hence, researching whether there is a relationship between fast loan growth and bank performance in Europe is a meaningful addition to the research of Fahlenbrach et al. (2016). And because this research is a European replication of the research by Fahlenbrach et al. (2016) the main question of this research is:

Does the common stock of European banks with the relatively fastest loan growth in year t underperform the common stock of banks with the relatively slowest loan growth in year t+1, t+2 and t+3 from 2000 to 2016?

Moreover, this paper researches seven subquestions:

1. *Does the common stock of European banks with the relatively fastest asset growth in year t underperform the common stock of banks with the relatively slowest asset growth in year t+1, t+2 and t+3 from 2000 to 2016?*

2. *Does relatively fast loan growth mean that fast growing banks have a lower return on assets (ROA)?*

3. *Do banks with fast loan growth have higher loan loss provision levels to mitigate the risk of their loans?*

4. *Is the performance of the relatively fastest growing banks affected by M&A activity instead of organic growth?*

5. *Is there a difference in performance between Northern and Southern European banks?*

6. *Do banks in countries with G-SIBs have lower loan loss provisions?*

7. *Does the common stock of European banks with the relatively fastest loan growth in year t underperform the common stock of banks with the relatively slowest loan growth in year t+1, t+2 and t+3 after 2007?*

In short, this research does not find support for the main finding of the paper by Fahlenbrach et al. (2016) before 2008: European banks with fast loan growth outperform their counterparts with slow loan growth from 2000 to 2007. This is the case because fast growing banks profited from the confidence in them and money creation by them in the run up to the financial crisis. However, the effect of fast loan growth after 2007 is negative. This last finding is in line with those of Fahlenbrach et al. (2016). Hence, it is concluded that the result from 2000 to 2007 is a result of the financial crisis, and that, in general, the results of Fahlenbrach et al. (2016) hold.

Moreover, most other findings of Fahlenbrach et al. (2016) also hold: asset growth apart from loans does not influence bank performance. Furthermore, loan growth has a positive effect on ROA and a negative effect on loan loss provisions in the short run. In the long run, the effect on ROA and on loan loss provisions does not last. The negative effect of M&A that Fahlenbrach et al. (2016) find, also holds. Albeit, for a relatively short period. The fact that the negative effect of M&A only holds for a short period is no surprise, as several scholars argue that banking mergers and acquisitions in Europe tend to go smooth due to strategic similarities.

In addition to the research of Fahlenbrach et al. (2016) this paper finds that Northern European banks outperform their Southern European and non-eurozone counterparts from 2000 to 2016, and that this difference in returns is considerably larger after 2007. Furthermore, banks in countries with global systemically important financial institutions succumb to moral hazard, as they reserve significantly less for loan losses than other banks. These results will be discussed in more detail in section six of this paper.

While these findings underline the importance of the research by Fahlenbrach et al. (2016), merely predicting good or bad bank performance is not enough. It is of paramount importance that governments, regulators and bankers ensure that the sector resolves poor performance issues by focusing on sustainable, instead of aggressive, growth. To put it another way:"Predicting rain doesn't count. Building arks does."

This paper proceeds as follows. Section 2 examines the research by Fahlenbrach et al. (2016) and its related literature in more detail. Section 3 will explain how the aforementioned literature has shaped this paper's research questions and hypotheses. Section 4 describes the data used for this research, along with the sample creation and measure construction. Section 5 will describe this research's methodology and formal regression. Section 6 will provide the main results of this research. Following the results of this research, section 7 will describe its limitations. Lastly, section 8 will provide a conclusion and short discussion of the results.

2 Literature Review

This section will give a brief overview of the body of research that is the foundation for this study. It will do so in eight sections. Firstly, the research by Fahlenbrach et al. (2016) and two related papers are discussed in more detail. Subsequently, other related literature will be discussed in seven sections: credit booms and economic performance, firm growth and subsequent returns, the recent financial crisis, loan standards and deteriorating credit quality, bank culture and performance, bank performance in Northern and Southern Europe and the relationship between moral hazard and G-SIBs.

2.1 Loan Growth and Poor Bank Performance

The vast majority of literature that tries to explain bad bank or firm performance following a period of growth can be subdivided in one of two categories. It is either a country-level study that researches whether credit expansions predict increased bank equity risk, or it is asset pricing literature that researches what the effect of fast asset growth on subsequent firm returns is. The research by Fahlenbrach et al. (2016) is rather unique in its design and results, and hence deviates somewhat from these bodies of literature.

Fahlenbrach et al. (2016) conduct a bank-level analysis of U.S. banks from 1973 to 2014. They study the relationship between loan growth and stock performance by dividing banks, and relevant non-bank financial institutions, into four quartiles in order of loan growth. Subsequently, Fahlenbrach et al. (2016) test the statistical relationship between loan growth and one- and three-year stock returns. The authors find that the top quartile underperforms the bottom quartile by a three-year cumulative common stock difference bigger than 12%. In addition, banks in the top quartile face significantly higher crash risk relative to other banks and make less reservations for loan losses, which is reversed over the next three years. This process, in turn, leads to lower return on assets (ROA). Fahlenbrach et al. (2016) find that this worse performance does not derive from a different asset class or M&A activity. Furthermore, the authors conclude that the risks that high-growth banks bear by making more loans are underappreciated by banks, analysts and investors.

In line with the study of Fahlenbrach et al. (2016), Foos et al. (2010) investigate how loan growth influences bank risk. Similar to Fahlenbrach et al. (2016), Foos et al. (2010) find that loan growth leads to an increase in loan loss provisions during the subsequent three years. In addition to this finding, the authors show that loan growth leads to a decrease in relative interest income and lower capital ratios. Furthermore, Foos et al. (2010) find that loan growth has a negative impact on risk-adjusted interest income. Therefore the authors conclude that loan growth is an important driver of the riskiness

of banks.

Moreover, Sinkey and Greenawalt (1991) investigated the drivers of credit risks of U.S. banks from 1984 to 1987 and conclude that credit risks have two main drivers: depressed economic conditions and poor lending decisions by banks. The authors find that in 1987 94% of the variation in loss rates within U.S. regions was due to banks having different loss rates on the same types of loans. In other words: the variation in loss rates was not due to macroeconomic conditions but due to poor decision making by banks. Therefore the authors conclude that "loan loss rates in 1987 were positively associated with loan rates, volatile funds, and loan volume from the preceding three years." (Sinkey and Greenawalt, 1991).

Hence, not only Fahlenbrach et al. (2016) conclude that loan growth is an important driver of poor bank performance. Thus, it is highly relevant to investigate whether a similar relationship holds for European banks as well.

2.2 Credit Booms and Economic Performance

As mentioned previously, Fahlenbrach et al. (2016) conclude that loan growth causes poor bank performance. However, there may be more factors that cause banks to perform badly. A vast amount of literature argues that credit booms end poorly because of macroeconomic shocks. Hence, banks make more loans because of profitable lending opportunities, but as the economy experiences a shock, the credit boom ends and is followed by poor economic performance.

In accordance with this theory, Krishnamurthy and Muir (2015) find that credit spreads are low before crises. This suggests that, if markets are efficient, investors' expectations of losses are low immediately before crises. In addition, Krishnamurthy and Muir (2015) find that credit supply expansions usually precede crises.

An alternative view to why credit booms end is that poor loans during a boom are the root cause for the ending of that same boom. This entails that banks make loans that are riskier than they realise and do not accurately account for the risk of these new loans. When the losses from these loans materialise, bank performance suffers and the boom ends. In line with this reasoning, Baron and Xiong (2016) conduct a country-level study from 1920 to 2012 and find overoptimism and neglect of crash risk by bank equity investors during credit expansions. In addition, Baron and Xiong (2016) find that, in spite of higher crash risk, the excess return for the bank equity index in the subsequent three years is -37.3%. It is important to note that this finding is conditional on bank credit expansion of a country exceeding a 95th percent threshold, which is a rather significant boundary.

Other scholars find similar results. Jorda, Schularick and Taylor (2011) for instance,

find that more credit-intensive expansions are followed by deeper recessions and slower recoveries. Moreover, Schularick and Taylor (2012) find that credit growth is a powerful predictor of financial crises, which suggests that policy makers ignore the risk that credit expansion bears. Lastly, Reinhart and Rogoff (2008) also conclude that debt increases in the run-up to crises.

The results of these papers are in line with the results of Fahlenbrach et al. (2016). Fahlenbrach et al. (2016) also find that investors do not expect poor returns and that poor lending decisions cause poor performance. However, an important difference is that the studies described in this subsection are country-level studies and the research by Fahlenbrach et al. (2016) is a bank-level study. This is important, as a bank-level study mitigates the effect of macroeconomic phenomena. However, this research is a combination of both: it is a bank-level study across several countries. Therefore, it is also important to look at what the effects of fast growth are at firm level. This will be discussed in the next section.

2.3 Firm Growth and Subsequent Returns

The academic literature about the effects of fast growth on subsequent returns is rather consentient: it shows that firms that grow more have lower subsequent returns. The research by Hou, Xue and Zhang (2014) for example, shows that firms that grow more have poorer subsequent returns. Furthermore, a study by Cooper, Gulen and Schill (2008) concludes that asset growth rates are powerful predictors of future abnormal returns. So much so that they are the most significant predictor of U.S. stock returns. Lastly, Titman, Wei and Xie (2004) and Polk and Sapienza (2009) find that firms with high abnormal investment subsequently have low stock returns. In addition, Titman et al. (2004) found that investors underreact to negative signs.

All these findings are in line with the research by Fahlenbrach et al. (2016), however, there are some important differences between this body of research and the research by Fahlenbrach et al. (2016). First, the research by Fahlenbrach et al. (2016) is not related to investment. Second, the research by Fahlenbrach et al. does not involve investment in production. In spite of these differences, the findings of this body of research are relevant, and the consensus is clear: firms that grow more have poorer subsequent returns than their peers. These findings lay an even stronger foundation for the main question of this research.

The next section will look at literature related to the recent financial crisis, in order to see whether loan growth was an important driver of the 2008 financial crisis.

2.4 The Recent Financial Crisis

To establish whether loan growth was an important driver of the recent financial crisis, this section describes a body of research that looks at the effect of securitisation and loans in the run-up to the financial crisis of 2008. Again, the vast majority of literature draws conclusions in line with the research by Fahlenbrach et al. (2016). For instance, Demyanyk and van Hemert (2011) find that the quality of loans deteriorated for six consecutive years before the crisis and that securitizers were aware of this process. Furthermore, they conclude that the recent crisis is an example of a classic boom-bust scenario, in which unsustainable growth leads to market collapse. In addition, Dell'Ariccia, Igan and Laeven (2009) also find that unsustainable growth is at the core of the recent financial crisis, as they find a decrease in lending standars prior to the crisis. Axelson, Jenkinson, Strmberg and Weisbach (2013) and Keys, Mukherjee, Seru and Vig (2010) add to this that securitisation was the main driver of the decrease in loan quality.

Another interesting study is that of Mian and Sufi (2009). Similar to Fahlenbrach et al. (2016) they conduct a study into the effects of growth rates. Mian and Sufi (2009) research the mortgage growth rates prior to the crisis and the subsequent default rates in a number of ZIP codes. They find that subprime ZIP codes experienced unprecedented relative mortgage growth before the crisis and a higher default rate after to the crisis.

In addition, Staikouras and Wood (2011) examine the determinants of European bank profitability and find that bank profitability is influenced by management decisions and by changes in a bank's external macroeconomic environment. As Europe's macroeconomic environment has undergone a considerable macroeconomic shock, after the crisis of 2008. Hence, the assumption that European bank performance has changed after the financial crisis, is a straightforward one. Therefore, it is interesting to investigate whether the results of this paper change pre- and post-2007.

Again, the conclusions of Fahlenbrach et al. (2016) are supported. However, there are two important differences between the studies discussed in this subsection and this paper. First, securitisation plays no role in this analysis, it solely focuses on the loans that banks keep on their books. Second, bank performance is not just measured pre- and post-crisis but over a period of seventeen years.

Since some of the literature reviewed in this section points to loan standards and its impact on bank and macroeconomic performance, the section will look at loan standards and their effect on credit quality under more scrutiny.

2.5 Loan Standards and Deteriorating Credit Quality

As described previously, poor lending decisions can have disastrous effects for bank returns and even the worldwide economy. Hence, it is important to look at why banks lower their loan standards. Dell'Arricia and Marquez (2006) find that when information asymmetries between banks decrease, banks lower their loan standards. This, in turn, leads to an equilibrium with deteriorated bank portfolios, lower profits and greater risk of financial instability (Dell'Arricia and Marquez, 2006). In contrast, Rajan (1994) finds that declining loan standards are the result of short term incentives of bank managers. Rajan (1994) also shows that it is profitable for bank managers in the short term to book fees at the expense of future credit quality. This process causes decline in loan standards. Lastly, Berger and Uddell (2004) argue for an "institutional memory hypothesis". This means that when bank personnel starts forgetting about previous periods of stress, credit standards are eased (Berger and Uddell, 2004). Therefore, Berger and Uddell (2004) argue that bank lending is a procyclical process, which means that loan standards decline during credit booms and increase during busts.

In line with the reasoning of Berger and Uddell (2004), Greenwood and Hanson (2013) find that credit quality of corporate debt issuers deteriorates during credit booms and that this deterioration forecast low excess returns to corporate bondholders. Furthermore, Lopez-Salido, Stein and Zakrajsek (2015) finds that when credit risk is aggressively priced, it tends to be followed by a subsequent widening of credit spreads and contraction of economic activity.

Hence, there are multiple explanations as to why banks lower loan standards, but it seems clear that economic activity suffers subsequently. To examine whether bank culture might be an explanation for differences in loan standards and credit quality, two studies about bank culture will be examined in the next part of this literature review.

2.6 Bank Culture and Performance

To examine the effect of bank culture on performance Fahlenbrach, Stulz and Prilmeier (2012) used bank performance during the crisis of 1998 to explain bank performance during the recent financial crisis. Fahlenbrach et al. (2012) found that bank's stock return performance during the 1998 crisis predicts its stock return performance and probability of failure during the recent financial crisis. Hence, Fahlenbrach et al. (2012) conclude that a bank's risk culture and/or aspects of its business model make its performance sensitive to crises. Similar to Fahlenbrach et al. (2012), Kohler (2015) conducts a study into the effects of business models on bank stability. Kohler (2015) finds that business models matter significantly for bank risk and stability.

These two studies implicate that bank performance is affected by bank culture, which points to a possibility of some banks always growing more aggressively and taking more risk than their peers. This also means that banks should be aware of the fact that their fast loan growth makes them riskier. Hence, this raises the question whether banks really did not know that aggressive growth would affect their performance and riskiness.

The penultimate subsection will elaborate on Northern and Southern European Bank Performance.

2.7 Bank Performance in Northern and Southern Europe

In order to determine whether there is a difference between the performance of Northern and Southern European banks, several scholars were examined. Firstly, Pestana Barros, Ferreira and Williams (2007) use a mixed logit approach to find that country-level and firm-level characteristics are the main determinants of European bank performance. More specifically, Pestana Barros et al. (2007) find that: "The probability of being a worst performer is lowered if banks operate in Denmark, Germany, Portugal and Sweden, whereas it is increased if operating in Finland, Luxembourg and the Netherlands." The authors do not find a specific reason as to why banks from these countries are more or less likely to perform better than their peers.

However, an important takeaway from the research by Pestana Barros et al. (2007) is that country-level effects matter for bank performance. On the other hand, the authors do not find a clear division in performance between Northern and Southern European banks.

In addition, Noeth and Sengupta (2012) conduct a meta-analysis of global European banks and the financial crisis and find that "the crisis was preceded by historically large global imbalances in current accounts, run up by a number of industrial economies that subsequently came to grief". This 'historical imbalance' was of course a side effect of the euro, and was run up in Europe by mainly Southern European countries such as Spain, Italy and Greece.

Moreover, it is important to note that, Greece Spain and Portugal adopted strict fiscal austerity after the crisis to combat their current account deficits and debt. This has caused their economies to deteriorate further after the crisis of 2008. On the other hand Iceland, as it is not a member of the EMU, did not succumb to austerity and has saw more recovery after the crisis. Hence, one might expect that Southern European banks underperformed compared to Northern banks after the financial crisis.

In contrast, Noeth and Sengupta (2012) argue that "U.S. toxic assets were concentrated in highly leveraged financial institutions in advanced economies such as Germany, France, Switzerland, and the United Kingdom - in short, the global European banks."

This could mean that Northern European banks' return suffered as much from the crisis as that of their Southern European counterparts.

Hence, a case could be made that either Southern or Northern banks perform worse after the crisis. But because of the way the European banking system is set up, one champion bank supported by 'local' banks, and the slow recovery of Southern economies after the crisis, it is expected that Southern European banks performed worse.

The final section of this review will look at Systematically Important Financial Institutions (G-SIBs) and moral hazard.

2.8 G-SIBs and Moral Hazard

After the crisis of 2011, 29 global banks were appointed as Global Systematically Important Banks, or G-SIBS. These G-SIBS were chosen to combat the systemic risk they pose if they fail. To combat this risk, these banks are now subject to additional capital requirements. However, the size of these banks makes them 'too big to fail', which means a government or Central Bank would almost certainly be a lender of last resort (LLR) for such a bank. Hence, it is interesting to see whether this explains intra-country differences in loan loss provisions. But before those differences are analysed, this section will analyse the debate on moral hazard and the lender of last resort.

Some authors believe that moral hazard is not (necessarily) a factor when there is a lender of last resort. Chang (2000), for instance, argues that the bailout by the IMF in the Asian crisis did not create moral hazard, and that hence, moral hazard did not play a role. In addition, Goodhart (1999) nuances this somewhat by arguing that moral hazard is not always a factor, even with an LLR. Furthermore, Goodhart (1999) argues that an LLR plays a valuable role in the financial system.

In contrast, a vast amount of scholars argue that the existence of an LLR spurs unnecessary risk taking by banks. Calomiris (1997) states that the role of the IMF and the Clinton administration in promoting financial bailouts after the Mexican crisis, decreased the efficiency of financial markets and increased moral hazard. Moreover, Rochet (2009) states that an LLR provokes moral hazard. Lastly, Goodfriend and Lacker (1999) argue that an LLR incites moral hazard, and propose five different approaches to saving banks in distress.

Because there is a heavily contested debate about the effects of an LLR on moral hazard, it is rather interesting to see whether the presence of G-SIBs actually influences moral hazard.

Before moving to the data used to conduct this analysis, section 3 will first explain how the examined literature translates into the research questions and hypotheses.

3 Research Questions and Hypotheses

This section explains how the reviewed literature developed the research questions and hypotheses of this study.

Since this research is a replication of Fahlenbrach et al. (2016) and the vast amount of scholars reviewed affirm the conclusions Fahlenbrach et al. (2016) draw, there is no reason to assume that the outcomes of this research will be any different than those of Fahlenbrach et al. (2016). However, this research adds to Fahlenbrach et al. (2016) by analysing European banks, which means that the dataset will be more heterogeneous. Therefore, the magnitude of some of the effects might be different and this study answers three additional research questions. This yields the following main research questions and hypothesis:

RQ1: Does the common stock of European banks with the relatively fastest loan growth in year t underperform the common stock of banks with the relatively slowest loan growth in year t+1, t+2 and t+3 from 2000 to 2016?

H1: Yes. In accordance with the findings of Fahlenbrach et al. (2016), it is expected that banks with loan growth in the top quartile in year t will underperform banks with loan growth in the bottom quartile over the next three years.

Moreover, based on the research by Fahlenbrach et al. (2016) and other relevant literature, this paper researches seven subquestions:

RQ2: Does the common stock of European banks with the relatively fastest asset growth in year t underperform the common stock of banks with the relatively slowest asset growth in year t+1, t+2 and t+3 from 2000 to 2016?
H2: No. In accordance with the findings of Fahlenbrach et al. (2016), it is expected that asset growth, apart from loans, does not influence bank performance.

RQ3: Does fast relatively fast loan growth mean that fast growing banks have a lower return on assets (ROA)?
H3: Yes and no. In accordance with the findings of Fahlenbrach et al. (2016), it is expected that fast growing banks have higher ROA in year t, but that this is reversed by year t+3.

RQ4: Do banks with fast loan growth have higher loan loss provision levels to mitigate the risk of their loans?
H4: Yes and no. In accordance with the findings of Fahlenbrach et al. (2016), it is expected that fast growing banks have lower loan loss provisions in year t, but that this is reversed by year t+3.

RQ5: Is the performance of the relatively fastest growing banks affected by M&A activity instead of organic growth?
H5: No. In accordance with the findings of Fahlenbrach et al. (2016), it is expected that the effect of M&A activity on bank performance holds separately from the effect of organic growth.

RQ6: Is there a difference in performance between Northern and Southern European banks?
H6: Yes, due to the long lasting crisis in Southern European countries, Southern European banks are expected to perform worse than their Northern European counterparts.

RQ7: Do banks in countries with G-SIBs have lower loan loss provisions?
H7: Yes, as banks believe the government or Central Bank will be a lender of last resort, banks in countries with one or more G-SIBs will have lower loan loss provisions.

RQ8: Does the common stock of European banks with the relatively fastest loan growth in year t underperform the common stock of banks with the relatively slowest loan growth in year t+1, t+2 and t+3 after 2007?
H8: Yes, it does. Fahlenbrach et al. (2016) mention worse performances of fast growing banks are increased by crises. Hence, the fastest growing banks will perform worse than the slowest growing banks after 2007.

Before these questions are answered, section 4 will provide a brief description of how the sample was constructed.

4 Data

This section provides a description of the sample creation, data sources, construction of variables, correlation, and a summary of the key independent and dependent variables used in this analysis.

4.1 Sample Creation

The sample includes all European banks for which data was available in the Compustat Capital IQ - Fundamentals Annual Global database, as well as Thomson Reuters Datastream and Orbis. The accounting data was obtained from Compustat, stock price data was obtained from Thomson Reuters Datastream and Orbis provided M&A data. Since all European capital markets were denominated in euros from 1999 onwards, the sample period is 2000 to 2016. An overview of how the sample was constructed can be found in Table 1 below.

measure	# observations
worldwide bank data	20909
european bank data	7770
merge with stock price data	3919
cleaning data for M&A data, number of observations and year	2882
manual data cleaning and removal 1997 to 1999	2122
total	2122

Table 1: Sample development

These steps will now be described in more detail: first, the relevant accounting data was retrieved from Compustat Capital IQ for firms that have a SIC code between 6020 and 6079 (Commercial Banks, Savings Institutions and Credit Unions) or from 6710 through 6712 (Offices of Bank Holding Companies), the same SIC codes that Fahlenbrach et al. (2016) use. This yielded a database that consisted of around 20,000 observations from 1987 to 2016. However, this research only investigates European banks. Hence, the country codes were tabulated and observations were deleted if the bank was not located in a country that is part of the European continent. This criterion is ambiguous in two instances, as both Turkey and the Russian Federation are part of both Europe and Asia. Considering the fact that Turkey has the desire to join the European Union and Russia has not, it was decided to include Turkish but exclude Russian banks from the sample. After this geographical selection 7770 banks from 1987 to 2016 were left.

Subsequently, the gvkey of these companies was transformed into ISIN. This process was compulsory because the Compustat Capital IQ database does not provide an option

to download ISIN. ISIN was chosen instead of SEDOL because ISIN provided the most observations. Using these ISINs, stock price data was downloaded from Thomson Reuters Datastream, after which the data was manually formatted to be used in STATA. Following this cumbersome job, the stock price data and accounting data were merged. This resulted in a dataset of 3919 observations from 1987 to 2016.

For the last two parts of the data collection, M&A data was downloaded using the ISINs of banks in the sample and added to the dataset. However, Orbis only has M&A data from 1997 onwards. Hence, it was decided to drop observations before 1997, after the measure construction was complete. After seeing that there was much heterogeneity in the data before 1999, possibly because of the announced arrival of the euro and the fact market were denominated in euros from 1999 onwards, it was decided to drop observations before 2000.

Lastly, the list was manually inspected to ensure that only companies were included that are either depository banks or bank holding companies. This analysis was conducted with the help of Google search and the business description obtained from Compustat Capital IQ. Moreover, banks with extreme values, after winsorising, were deleted from the sample. This resulted in a dataset with 2122 observations of 206 unique banks from 2000 to 2016. A more detailed overview of the sample will be given on the next page.

To provide a detailed view of the sample, Table 2 was constructed. The 206 sample banks span 29 countries and are in the dataset for 11 years on average. Moreover, there is a rather large intra-country difference: some countries have a lot of institutions in the sample while others have only one. For example, the German, Swiss, British, French and Italian banks together comprise a little more than 50% of the sample banks and almost 47% of the sample observations.

country code	country	# sample banks	# observations	# average years per bank	average 1-yr return
AUT	Austria	9	99	11	5%
BEL	Belgium	3	42	14	5%
CHE	Switzerland	17	205	12	5%
CYP	Cyprus	2	15	8	-13%
CZE	Czech Republic	3	18	6	8%
DEU	Germany	20	132	7	1%
DNK	Denmark	17	170	10	0%
ESP	Spain	6	69	12	2%
FIN	Finland	2	29	15	3%
FRA	France	27	283	10	6%
GBR	Great Britain	16	165	10	0%
GRC	Greece	3	25	8	-18%
GRL	Greenland	1	14	14	12%
HRV	Croatia	1	13	13	6%
HUN	Hungary	1	12	12	14%
IRL	Ireland	1	17	17	-6%
ISL	Iceland	2	14	7	-31%
ITA	Italy	24	208	9	-3%
LUX	Luxembourg	3	14	5	-4%
MLT	Malta	2	25	13	4%
NLD	the Netherlands	2	22	11	1%
NOR	Norway	19	225	12	3%
POL	Poland	10	129	13	3%
PRT	Portugal	3	34	11	-1%
ROU	Romania	1	12	12	-9%
SVK	Slovakia	3	23	8	-1%
SVN	Slovenia	1	11	11	3%
SWE	Sweden	3	50	17	9%
TUR	Turkey	4	47	12	0%
total	29	206	2122	11	2%

Table 2: Sample banks per country

However, the sample is not only diverse in the number of countries but there are also significant intra-bank differences: it comprises the largest and most well-known banks of the respective countries, but there are several rather small banks in the sample as well. For instance, most scholars will know the largest banks of the sample countries: Ceska Sporitelna in the Czech Republic, Barclays PLC in the United Kingdom, Credit Agricole in France and BBVA in Spain. However, it also includes Vinderup Bank, a rather small Danish bank that was acquired in 2012. Hence, the sample is heterogeneous with respect to the size and location of the banks. Furthermore, it is important to note that the sample does not consist of all European banks. Some banks are lacking because of data availability, while others were removed because of extreme values. However, the sample still gives a fair representation of European banks and can therefore be used to assess whether fast loan growth affects European banks' performance from 2000 to 2016.

4.2 Measure Construction

In order to adequately answer the main question of this research, several measures were constructed. This process wil be described in this subsection of the analysis. To keep the measure construction insightful, an overview of the downloaded variables is given in Table 3 below.

variable	description	source
year	Year obtained from datadate	WRDS
at	The total assets of a company	WRDS
ceq	The total amount of common/ordinary equity	WRDS
dvt	The total amount of dividends	WRDS
ebitda	Earnings Before Interest Taxes Depreciation and Amortization	WRDS
lcuacu	The monetary value of all outstanding loans made to borrowers	WRDS
lt	The total liabilities of a company	WRDS
rcl	Reserves set aside to absorb potential future losses in the loan portfolio	WRDS
re	Retained earnings	WRDS
nicon	Net income	WRDS
conm	Company name	WRDS
busdesc	S&P business description	WRDS
loc	Location of the bank's headquarters	WRDS
sic	Standard Industrial Classification	WRDS
price	Annualized share price	Datastream
isin	International Securities Identification Number	Datastream
madummy	Dummy variable for whether the bank was acquirer in an M&A deal	Orbis/Zephyr
dealvalue	The value of the merger or acquisition	Orbis/Zephyr

Table 3: Variable description

So, after the relevant data was retrieved from Orbis, Datastream and Compustat, several measures were created to effectively investigate the research questions of this paper. First off, it is important to note that the letter 'w' means that the variable in question is winsorized, the percentile at which the variable is winsorized depends on the variable's variance but this generally lies between the 1st and 5th percentile. Having said that, Fahlenbrach et al. (2016) use loan growth as their main independent variable and stock return as their main dependent variable. Furthermore, Fahlenbrach et al. (2016) also calculate asset growth, loan loss reserves, and ROA. Therefore, stock returns, loan growth, loan loss provisions and ROA needed to be constructed with the downloaded data. The formulas of these measures can be found in Table 4 on the next page.

variable	formula
1-yr return	$= \frac{pricew_{t+1} - pricew_t}{pricew_t}$
2-yr return	$= \frac{pricew_{t+2} - price_t}{pricew_t}$
3-yr return	$= \frac{pricew_{t+3} - pricew_t}{pricew_t}$
1-yr loan growth	$= \frac{lcuacuw_{t+1} - lcuacuw_t}{lcuacuw_t}$
2-yr loan growth	$= \frac{lcuacuw_{t+2} - lcuacuw_t}{lcuacuw_t}$
3-yr loan growth	$= \frac{lcuacuw_{t+3} - lcuacuw_t}{lcuacuw_t}$
1-yr asset growth	$= \frac{atw_{t+1} - atw_t}{atw_t}$
2-yr asset growth	$= \frac{atw_{t+2} - atw_t}{atw_t}$
3-yr asset growth	$= \frac{atw_{t+3} - atw_t}{atw_t}$
roa	$= \frac{niconw_t}{atw_t}$
llp	$= \frac{rclw_t}{lcuacuw_t}$

Table 4: Variable construction

Based on these variables, several dummy variables were also constructed. These are important to comprehend the remainder of this research and are described in Table 5 below.

variable	formula
topqt	= 1 if loangrowth1 is in the highest quartile
secondqt	= 1 if loangrowth1 is in the second highest quartile
thirdqt	= 1 if loangrowth1 is in the third highest quartile
topqt3	= 1 if loangrowth3 is in the highest quartile
secondqt3	= 1 if loangrowth1 is in the second highest quartile
thirdqt3	= 1 if loangrowth1 is in the third highest quartile
topnonloanqt	= 1 if non-loan assets are in the highest growth quartile
secondnonloanqt	= 1 if non-loan assets are in the second highest growth quartile
thirdnonloanqt	= 1 if non-loan assets are in the third highest growth quartile
topdealvalueqt	=1 if a bank is in the highest deal value percentile
northerneurope	= 1 if a bank is in a Northern European country and in the eurozone
southerneurope	= 1 if a bank is in a Southern European country and in the eurozone
G-SIBs	= 1 if a country has a global systemically important bank

Table 5: Dummy variable construction

Now that the necessary variables are constructed, section 4.3 will describe the summary statistics this data manipulation yielded.

4.3 Summary Statistics

The previously described data collection and manipulation eventually yielded the following summary statistics:

variable	N	mean	sd	min	p25	p50	p75	max
1-yr return	2122	0.02	0.29	-0.88	-0.13	0.03	0.19	1.04
2-yr return	2122	0.05	0.39	-0.78	-0.20	0.05	0.29	1.07
3-yr return	2122	0.08	0.43	-0.69	-0.26	0.04	0.35	1.10
1-yr asset growth	2122	0.05	0.21	-0.99	0.01	0.06	0.12	1.17
3-yr asset growth	2122	0.17	0.43	-0.99	0.02	0.17	0.37	1.40
1-yr loan growth	2122	0.05	0.25	-0.99	-0.02	0.05	0.14	1.37
3-yr loan growth	2122	0.16	0.46	-0.99	-0.05	0.15	0.40	1.39
ROA	1538	0.59	0.76	-2.25	0.25	0.56	0.86	5.44
loan loss provisions	1663	0.36	0.40	0.01	0.11	0.25	0.43	3.31

Table 6: Summary statistics

What immediately stands out when comparing the summary statistics of this research (Table 6) to those of Fahlenbrach et al. (2016) (in Table 7), is that almost all summary statistics of this research's variables differ from significantly from that of Fahlenbrach et al. (2016), even with winsorized variables. When a t-test is ran to check whether the mean of the variables of this research differ from that of Fahlenbrach et al. (2016), the alternative hypothesis holds every time: the mean of this research's variables differs at the five percent level of the variables of the research by Fahlenbrach et al.(2016).

variable	N	mean	sd	min	p25	p50	p75	max
1-yr return	7914	0.16	0.39	-0.98	-0.06	0.13	0.35	4.30
2-yr return	3728	0.13	0.29	-0.92	-0.03	0.13	0.29	1.72
3-yr return	2365	0.11	0.23	-0.83	-0.01	0.13	0.25	1.00
1-yr asset growth	7717	0.13	0.17	-0.16	0.03	0.09	0.17	0.94
3-yr asset growth	7185	0.13	0.11	-0.11	0.06	0.11	0.17	0.57
1-yr loan growth	7330	0.14	0.19	-0.21	0.03	0.10	0.20	1.01
3-yr loan growth	6834	0.13	0.13	-0.14	0.05	0.12	0.19	0.62
ROA	7910	0.77	0.65	-2.61	0.58	0.85	1.11	2.04
loan loss provisions	7431	0.68	0.80	-0.14	0.24	0.44	0.77	4.66

Table 7: Summary statistics Fahlenbrach et al.(2016)

In spite of these differences, only ROA and loan loss provisions (LLP) differ very significantly of that of Fahlenbrach et al. (2016). These differences might be due to several factors. Firstly, the difference between bank profitability, as American banks are generally more profitable than their European counterparts. Secondly, the dataset used

in this paper is rather heterogeneous. It spans 29 countries instead of one. Moreover, due to the difference in American an European data availability, Fahlenbrach et al. (2016) have significantly more observations: around three times as many. Lastly, the time period may also cause a significant difference: as the dataset by Fahlenbrach et al. (2016) ranges from 1973 to 2014, and this one ranges from 2000 to 2016. Due to the recent financial crisis, this time period is also rather unique. So, due to the shorter time span and the financial crisis, low average values of ROA and LLP can be explained.

The final subsection of this section will describe the correlation between the variables.

4.4 Correlation

For the last part of this section, the correlation between the variables will be briefly discussed. There is some correlation between explanatory variables but no the extent that there is a reason to suspect multicollinearity. Since Fahlenbrach et al. (2016) have not appended their correlation matrix to their research it is not possible to compare the correlation matrices. The full correlation matrix can be found in Table 28 the appendix.

Section 5 will describe the methodology of this research.

5 Methodology

The previous section described the data used for this analysis at length. This section will describe how those data are used to investigate the research questions of this paper.

The methodology used in this analysis is rather straightforward: a panel regression with time-fixed effects and bank-fixed effects is ran to investigate the research questions. Furthermore, the standard errros allow for clustering at bank levels. The main explanatory variables are the loan growth quartiles and the dependent variables is either the one-year, two-year or three-year stock return. This is the same methodology that Fahlenbrach et al. (2016) use. Like the paper of Fahlenbrach et al. (2016) this research has tried multiple types of approaches: panel regression with fixed effects and panel regression with gaps of three years. The last approach means that observations come in intervals: so observations in 2000, 2003, 2006 and so on. The results of this paper do not change with different methodologies, like that of Fahlenbrach et al. (2016). Hence, the results are robust for other methodologies.

All in all, this methodology translates into the following formal regression for the main research question of this paper:

$$return = c + \beta_1 * topqt + \beta_2 * secondqt + \beta_3 * thirdqt + \beta_4 * i.year + \beta_5 * i.comid + \epsilon \quad (1)$$

$$return = c + \beta_1 * topqt3 + \beta_2 * secondqt3 + \beta_3 * thirdqt3 + \beta_4 * i.year + \beta_5 * i.comid + \epsilon \quad (2)$$

These regressions are amended to deliver the outcome of the other research questions as well. So, in order to keep this section concise only these two regressions are specified. However, multiple regressions per subquestion are ran and the two aforementioned fixed effects will be included. This will be shown in the results section of this paper.

The next section will describe the outcomes of these regressions.

6 Results

This section describes the results of this research. It is important to note that the variables are described Tables 3, 4, and 5. Furthermore, the estimators are given in the tables, with the standard errors in parentheses underneath. Lastly, *, ** and *** indicate significance at the ten, five and one percent levels, respectively.

The description of the results will be given in eight sections, one for each research question. Section 6.1 will deal with the main question of this research: does fast loan growth predict poor bank performance? The subsequent section will examine whether good or bad performance is caused by loan growth or asset growth. Section 6.3 will examine the relationship between loan growth and profitability. The next section will examine how loan growth affects loan loss provisions. Moreover, section 6.5 will research both the effect of organic growth and M&A growth on return. The sixth section will review the difference in performance between Northern and Southern European banks. The penultimate section will discuss the effect of G-SIBs on loan loss provisions. Lastly, the relationship between loan growth and return after 2007 is examined.

6.1 Loan Growth and Returns

In contrast to Fahlenbrach et al. (2016) this paper finds that from 2000 to 2016 European banks with relatively fast loan growth profit from this in the long run.

Table 9 shows that banks in the top quartile of one-year loan growth have a 5.0 percentage point higher three-year return compared to banks in the bottom quartile. Moreover, firms in the third quartile outperform those in the bottom quartile by a similar margin. Both effects are significant at the five percent level.

A 5.0 percentage point difference is a rather significant effect, especially because the average 3-year return of the sample is 8%.

VARIABLES	(1) 1-yr return	(2) 1-yr return	(3) 2-yr return	(4) 2-yr return	(5) 3-yr return	(6) 3-yr return
topqt	0.0280	0.0258	0.0414**	0.0336	0.0542***	0.0504**
	(0.0174)	(0.0202)	(0.0200)	(0.0225)	(0.0201)	(0.0219)
secondqt	0.0465***	0.0302*	0.0330*	0.00764	0.0130	-0.00260
	(0.0154)	(0.0175)	(0.0189)	(0.0215)	(0.0209)	(0.0233)
thirdqt	0.0193	0.00781	0.0464**	0.0338	0.0552***	0.0518**
	(0.0149)	(0.0168)	(0.0186)	(0.0209)	(0.0213)	(0.0232)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	No	Yes	No	Yes	No	Yes
Number of observations	2122	2122	2122	2122	2122	2122
R-squared	0.38	0.44	0.45	0.48	0.52	0.60

Table 8: One-year loan growth and returns

On the other hand, a similar relationship is not found for three-year loan growth: there is no significant difference in performance between the four quartiles at the five percent level. Albeit, the top quartile having significance at the ten percent level. This can be seen in Table 9 below.

VARIABLES	(1) 1-yr return	(2) 1-yr return	(3) 2-yr return	(4) 2-yr return	(5) 3-yr return	(6) 3-yr return
topqt3	0.0156	0.0191	0.0216	0.0122	0.0478**	0.0475*
	(0.0157)	(0.0192)	(0.0208)	(0.0253)	(0.0224)	(0.0259)
secondqt3	0.0302*	0.00978	0.0242	-0.00269	0.0136	0.00338
	(0.0160)	(0.0183)	(0.0212)	(0.0250)	(0.0228)	(0.0256)
thirdqt3	0.00296	-0.0177	0.0101	-0.0108	-0.00808	-0.0227
	(0.0151)	(0.0170)	(0.0177)	(0.0209)	(0.0195)	(0.0223)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	No	Yes	No	Yes	No	Yes
Number of observations	2122	2122	2122	2122	2122	2122
R-squared	0.37	0.44	0.45	0.52	0.52	0.60

Table 9: Three-year loan growth and returns

The question then rises: how is it possible that the conclusion of Fahlenbrach et al. (2016) is not confirmed for European banks?

A possible explanation could be the confidence in European banks in the lead up to the 2008 financial crisis. Moreover, it is widely known that banks created enormous amounts of money in the run up to the crisis. Since there was a lot of confidence in banks, giving out loans was seen as a sign that banks saw profitable ways to lend money. As a result, share prices rose and so did returns.

However, one might ask why returns did not plummet after the crisis hit. The answer is that the worst performing banks were rescued by European governments. Hence, their share prices did not decline as much as they would have, if governments had not intervened. This means that their returns did not decline as much as they could have.

So, because banks profited from fast loan growth in the run up to the financial crisis and European societies took the hit after, the overall effect of fast one-year loan growth on returns is positive for European banks from 2000 to 2016.

Hence, the first hypothesis of this research *H1: "In accordance with the findings of Fahlenbrach et al. (2016), it is expected that banks with loan growth in the top quartile in year t will underperform banks with loan growth in the bottom quartile over the next three years."* is rejected at the five percent level for European banks from 2000 to 2016.

Therefore, it is even more interesting to see how banks performed after 2007. However, first the effects of loan growth and asset growth will be examined in more detail.

6.2 Loan Growth vs. Asset Growth

In accordance with the results of Fahlenbrach et al. (2016), this research finds that non-loan asset growth does not have a significant effect on returns, as can be seen in Table 10 below. The same result holds for three-year non-loan asset growth.

VARIABLES	(1) 1-yr return	(2) 1-yr return	(3) 2-yr return	(4) 2-yr return	(5) 3-yr return	(6) 3-yr return
topnonloanqt	-0.00987	-0.0110	0.000997	0.000695	-0.0134	-0.0110
	(0.0144)	(0.0162)	(0.0186)	(0.0212)	(0.0194)	(0.0211)
secondnonloanqt	-0.00282	-0.00194	0.0109	0.0148	0.0171	0.0187
	(0.0158)	(0.0187)	(0.0200)	(0.0232)	(0.0194)	(0.0216)
thirdnonloanqt	-0.0273*	-0.0292	-0.00783	-0.00261	0.00877	0.0110
	(0.0158)	(0.0179)	(0.0183)	(0.0212)	(0.0188)	(0.0208)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	No	Yes	No	Yes	No	Yes
Number of observations	2122	2122	2122	2122	2122	2122
R-squared	0.38	0.44	0.45	0.48	0.52	0.60

Table 10: One-year non-loan asset growth and returns

This is an important result because it underlines the importance of loan growth as a predictor of returns. As this result shows that assets other than loans do not have a significant effect on bank performance.

Therefore, the second hypothesis *"H2: No. In accordance with the findings of Fahlenbrach et al. (2016), it is expected that asset growth, apart from loans, does not influence bank performance."* is accepted at the five percent level.

The subsequent section will look at how loan growth affects profitability.

6.3 Loan Growth and Profitability

In accordance with the finding that fast loan growth has a positive and significant effect on returns for European banks from 2000 to 2016, this paper finds that fast loan growth also has a positive effect on profitability.

Both fast one- and three-year loan growth have a positive and significant effect on ROA. Banks in the top quartile of one-year loan growth outperform their peers in the bottom quartile by 21.4 percentage points. Moreover, banks in the third quartile outperform banks in the bottom quartile by 21.5 percentage points, and banks in the second quartile outperform those in the bottom quartile by 12.5 percentage points. These effects are significant at the one percent level and are rather large: the average ROA of the sample is 59%, hence a 21.4 percentage point difference between banks in the top quartile and banks in the bottom quartile is a lot.

Furthermore, banks in the top quartile of three-year loan growth outperform banks in the bottom quartile by 15.6 percentage points. This effect is significant at the one percent level as well, albeit significantly smaller than the effect of one-year loan growth. Both findings are in accordance with the findings of Fahlenbrach et al. (2016). They also find that fast loan growth has a significant and positive effect on ROA in the short run.

VARIABLES	(1) roa	(2) roa	(3) roa	(4) roa
topqt	0.247***	0.214***		
	(0.0489)	(0.0485)		
secondqt	0.129***	0.125***		
	(0.0481)	(0.0479)		
thirdqt	0.222***	0.215***		
	(0.0480)	(0.0487)		
topqt3			0.186***	0.156***
			(0.0540)	(0.0550)
secondqt3			0.0988**	0.0867*
			(0.0498)	(0.0499)
thirdqt3			0.0115	0.00591
			(0.0469)	(0.0471)
Time FE	Yes	Yes	Yes	Yes
Bank FE	No	Yes	No	Yes
Number of observations	1538	1538	1538	1538
R-squared	0.10	0.33	0.10	0.33

Table 11: Loan growth and ROA

However, the positive effect of fast loan growth on ROA is not long lasting: the effect of fast loan growth on the difference between ROA t+3 and ROA t is significant, and significantly bigger than the effects of fast loan growth on ROA: banks with fast one-year loan growth have a -34.2 percentage point difference between ROA t+3 and ROA t, compared to a positive effect of fast one-year loan growth on ROA of 21.4 percentage points. The difference between ROA t+3 and ROA t, can be seen in Table 12 below.

VARIABLES	(1) diffroa30	(2) diffroa30	(3) diffroa30	(4) diffroa30
topqt	-0.369***	-0.342***		
	(0.0886)	(0.0977)		
secondqt	-0.313***	-0.302***		
	(0.0782)	(0.0862)		
thirdqt	-0.324***	-0.328***		
	(0.0793)	(0.0893)		
topqt3			-0.279***	-0.297***
			(0.0832)	(0.0937)
secondqt3			-0.285***	-0.316***
			(0.0744)	(0.0857)
thirdqt3			-0.0732	-0.136*
			(0.0658)	(0.0725)
Time FE	Yes	Yes	Yes	Yes
Bank FE	No	Yes	No	Yes
Number of observations	1225	1225	1225	1225
R-squared	0.13	0.29	0.13	0.29

Table 12: Loan Growth and ROA development

Hence, in line with the findings of Fahlenbrach et al. (2016) the effect of fast loan growth is reversed in the long run. Because of the fact that the effect of fast loan growth on profitability is not long lasting, the third hypothesis of this research *H3: In accordance with the findings of Fahlenbrach et al. (2016), it is expected that fast growing banks have higher ROA in year t, but that this is reversed by year t+3.* is confirmed at the one percent level.

Section 6.4 will review the effect of loan growth on the reserves for credit losses.

6.4 Loan Growth and Loan Loss Provisions

In accordance with the fourth hypothesis of this research fast loan growth has a significant and negative effect on loan loss provisions. Banks with the fastest one-year loan growth reserve 19.7 percentage points less for loan losses than banks in the bottom quartile. This effect is significant at the one percent level. Banks in the second and third quartile also reserve less for loan losses: 10.9 and 14.7 percentage points respectively. All three of these effects are rather large: the mean of loan loss provisions is 36%, hence a 19.7 percentage point difference is very significant. In addition, the effect of fast three-year loan growth on loan loss provisions is even larger for banks in the top and second quartile: 24.8 percentage points and 18.3 percentage points, respectively. All of these effects are significant at the one percent level.

VARIABLES	(1) llp	(2) llp	(3) llp	(4) llp
topqt	-0.199*** (0.0317)	-0.197*** (0.0318)		
secondqt	-0.117*** (0.0252)	-0.109*** (0.0245)		
thirdqt	-0.159*** (0.0273)	-0.147*** (0.0267)		
topqt3			-0.248*** (0.0416)	-0.248*** (0.0425)
secondqt3			-0.192*** (0.0347)	-0.183*** (0.0350)
thirdqt3			-0.121*** (0.0331)	-0.112*** (0.0329)
Time FE	Yes	Yes	Yes	Yes
Bank FE	No	Yes	No	Yes
Number of observations	1663	1663	1663	1663
R-squared	0.10	0.13	0.10	0.12

Table 13: Loan growth and loan loss provisions

In contrast to what was expected, the effect of fast loan growth on loan loss provisions is not reversed in the following years, except for banks in the top quartile of three-year loan growth. Banks in the top quartile of three-year loan growth have a difference of 29.4 percentage points between *year t+3* and *year t*. This effect is larger than the negative effect of fast three-year loan growth on loan loss provisions: 29.4 percentage points versus 24.8 percentage point. Therefore, one could argue that there is a reversal in this case. These results can be found in Table 14 on the next page.

VARIABLES	(1) diffllp30	(2) diffllp30	(3) diffllp30	(4) diffllp30
topqt	0.101	0.0942		
	(0.0659)	(0.0646)		
secondqt	0.322	0.355		
	(0.289)	(0.280)		
thirdqt	0.159*	0.247*		
	(0.0856)	(0.128)		
topqt3			0.123*	0.294**
			(0.0709)	(0.119)
secondqt3			0.321	0.512
			(0.271)	(0.358)
thirdqt3			0.101	0.191
			(0.0808)	(0.145)
Time FE	Yes	Yes	Yes	Yes
Bank FE	No	Yes	No	Yes
Number of observations	1410	1410	1410	1410
R-squared	0.03	0.10	0.03	0.09

Table 14: Loan growth and the development of loan loss provisions

However, since the only reversal is that of three-year loan growth, the fourth hypothesis of this research *"H4: Yes and no. In accordance with the findings of Fahlenbrach et al. (2016), it is expected that fast growing banks have lower loan loss provisions in year t, but that this is reversed by year t+3."* is partially rejected and partially confirmed at the one percent level.

Section 6.5 will look at the effects of organic bank growth and growth through M&A on returns.

6.5 Organic vs. Merger Growth

In accordance with the findings by Fahlenbrach et al. (2016), a significant and negative effect of M&A growth is found. Albeit, only in the short run. However, this effect is rather large: an effect of 4.7 percentage points compared to an average of 2% is considerable. The fact that the effect of mergers only holds in the short run is not surprising: several scholars over the years have argued that because of strategic similarities among European banks, mergers are usually successful quickly.

Also in accordance with Fahlenbrach et al. (2016), the effect of loan growth holds separately of the effect of mergers: banks in the top quartile outperform those in the bottom quartile by 5.1 percentage points, which is a larger effect than that of mergers. This can be seen in Table 15 below:

VARIABLES	(1) 1-yr return	(2) 1-yr return	(3) 2-yr return	(4) 2-yr return	(5) 3-yr return	(6) 3-yr return
topqt	0.0288*	0.0273	0.0420**	0.0346	0.0549***	0.0511**
	(0.0175)	(0.0204)	(0.0201)	(0.0226)	(0.0202)	(0.0220)
secondqt	0.0478***	0.0310*	0.0338*	0.00812	0.0136	-0.00227
	(0.0157)	(0.0177)	(0.0191)	(0.0216)	(0.0210)	(0.0233)
thirdqt	0.0190	0.00719	0.0460**	0.0334	0.0548**	0.0516**
	(0.0150)	(0.0169)	(0.0187)	(0.0210)	(0.0214)	(0.0233)
topdealvalueqtt	-0.0272**	-0.0468**	-0.0231	-0.0304	-0.0228	-0.0210
	(0.0124)	(0.0219)	(0.0165)	(0.0257)	(0.0185)	(0.0244)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	No	Yes	No	Yes	No	Yes
Number of observations	2122	2122	2122	2122	2122	2122
R-squared	0.37	0.42	0.45	0.52	0.52	0.60

Table 15: Organic vs. merger growth

Therefore, the fifth hypothesis of this research *"H5: No. In accordance with the findings of Fahlenbrach et al. (2016), it is expected that the effect of M&A activity on bank performance holds separately from the effect of organic growth."* is confirmed at the five percent level.

The next section will look at the difference between Northern and Southern European performance.

6.6 Northern and Southern European Performance

In the beginning of this research it was hypothesised that Southern European eurozone banks underperform their Northern European eurozone counterparts because of the effects of the crisis. This hypothesis is confirmed at the one percent level, as can be seen in Table 16 below.

VARIABLES	(1) 1-yr return	(2) 2-yr return	(3) 3-yr return	(4) 1-yr return	(5) 2-yr return	(6) 3-yr return
topqt	0.0258	0.0336	0.0504**			
	(0.0202)	(0.0225)	(0.0219)			
secondqt	0.0302*	0.00764	-0.00260			
	(0.0175)	(0.0215)	(0.0233)			
thirdqt	0.00781	0.0338	0.0518**			
	(0.0168)	(0.0209)	(0.0232)			
northerneurope	0.134***	0.167***	0.155***	0.148***	0.155***	0.148***
	(0.0101)	(0.0131)	(0.0147)	(0.0117)	(0.0162)	(0.0162)
southerneurope	-0.132***	-0.143***	-0.0856***	-0.130***	-0.156***	-0.103***
	(0.0125)	(0.0171)	(0.0184)	(0.0155)	(0.0214)	(0.0234)
topqt3				0.0191	0.0122	0.0475*
				(0.0192)	(0.0253)	(0.0259)
secondqt3				0.00978	-0.00269	0.00338
				(0.0183)	(0.0250)	(0.0256)
thirdqt3				-0.0177	-0.0108	-0.0227
				(0.0170)	(0.0209)	(0.0223)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	2122	2122	2122	2122	2122	2122
R-squared	0.43	0.52	0.60	0.43	0.52	0.60

Table 16: Loan Growth and the Difference in Northern and Southern Performance

So, Northern European banks outperform the three-year return of banks from non-eurozone countries by 14.8 percentage points from 2000 to 2016. However, Southern European countries underperform the three-year return of non-eurozone countries by 10.3 percentage points from 2000 to 2016. These effects are significant at the one percent level and are of considerable size. The average three-year return of the sample is 8%, therefore a 25.1 percentage point difference in three-year return between Northern European eurozone banks and Southern European eurozone banks is enormous.

Hence, *"H6: Yes, due to the long lasting crisis in Southern European countries, Southern European banks are expected to perform worse than their Northern European counterparts."* is accepted at the one percent level.

6.7 G-SIBs and Moral Hazard

As mentioned in the literature review of this research, there is a heavily contested scientific debate about whether or not moral hazard plays a role for banks when there is a lender of last resort. The findings of this research suggest that there is moral hazard when there is a larger propensity that a government will act as a lender of last resort. In this case, the propensity for a lender of last resort is measured by the presence of one or more G-SIBs. Because the presence of a G-SIBs would make it more likely that a government intervenes, hence these banks have an incentive to reserve less for loan losses.

In Table 17 below it is shown that banks in countries with global systemically important banks indeed reserve significantly less for loan losses than banks in countries without a global systemically important bank. Banks from countries with a G-SIB save significantly less for loan losses than their counterparts: there is a -62.6 percentage point difference for one-year loan loss provisions and a -42.3 percentage points difference for three-year loan loss provisions. Both these effects are significant at the one percent level, and considerable: 62.6 percentage points compared to a mean of 36% is rather significant, as well as 42.3 percentage points compared to a mean of 46%.

VARIABLES	(1) 1-yr llp	(2) 1-yr llp	(1) 3-yr llp	(2) 3-yr llp
topqt	-0.197***		-0.0896*	
	(0.0336)		(0.0483)	
secondqt	-0.109***		0.192	
	(0.0259)		(0.219)	
thirdqt	-0.147***		0.0824	
	(0.0282)		(0.0981)	
g-sibs	-0.629***	-0.626***	-0.382***	-0.423***
	(0.0139)	(0.0143)	(0.0207)	(0.0543)
topqt3		-0.248***		0.0401
		(0.0449)		(0.0893)
secondqt3		-0.183***		0.297
		(0.0369)		(0.298)
thirdqt3		-0.112***		0.0771
		(0.0347)		(0.113)
Time FE	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes
Number of observations	1663	1663	1614	1614
R-squared	0.33	0.33	0.11	0.11

Table 17: One- and three-year LLP and G-SIBs

This implicates that banks in countries with one or more G-SIBs make the assumption that the government will rescue them when things take a turn for the worst. As a G-SIB be highly interconnected with other banks in that country and will pose systemic risk to a country when it fails. Hence *H7: "Yes, as banks believe the government or Central Bank will be a lender of last resort, banks in countries with one or more G-SIBs will have lower loan loss provisions."* is accepted at the one percent level. In the last part of this section, the main question of this research will be tested after 2007.

6.8 Results Post-2007

As hypothesised at the beginning of this research the crisis of 2008 matters for the results of this research, Table 18 makes this abundantly clear.

VARIABLES	(1) 1-yr return	(2) 2-yr return	(3) 3-yr return	(4) 1-yr return	(5) 2-yr return	(6) 3-yr return
topqt	0.000527	0.00805	0.0500*			
	(0.0288)	(0.0326)	(0.0290)			
secondqt	0.0574**	0.0175	0.0161			
	(0.0279)	(0.0334)	(0.0315)			
thirdqt	-0.00174	0.00881	0.0278			
	(0.0259)	(0.0333)	(0.0331)			
northerneurope	0.701***	0.763***	0.740***	0.670***	0.703***	0.637***
	(0.0259)	(0.0333)	(0.0331)	(0.0286)	(0.0360)	(0.0365)
southerneurope	-0.132***	-0.0207	-0.0113	-0.130***	-0.0225	-0.0397
	(0.0250)	(0.0286)	(0.0268)	(0.0239)	(0.0267)	(0.0268)
topqt3				-0.0492*	-0.0811**	-0.0716*
				(0.0274)	(0.0372)	(0.0381)
secondqt3				-0.0322	-0.0508	-0.0751**
				(0.0286)	(0.0360)	(0.0365)
thirdqt3				-0.0593**	-0.0255	-0.0858***
				(0.0286)	(0.0329)	(0.0325)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	1111	1111	1111	1111	1111	1111
R-squared	0.43	0.55	0.51	0.61	0.51	0.63

Table 18: Loan Growth and Returns post-2007

What immediately stands out when looking at these results is that the main conclusions of Fahlenbrach et al. (2016) are partially confirmed after 2007: banks with relatively fast three-year loan growth underperform their slowly growing counterparts. This holds true for all three quartiles, albeit for different returns. The two-year return of banks in the top quartile is 8.1 percentage points lower than that of banks in the bottom quartile, the three-year return of banks in the second quartile is 7.5 percentage points lower than that of banks in the bottom quartile, and the one- and three-year return of banks in the third quartile is 5.9 and 8.6 percentage points lower than that of banks in the bottom quartile. These effects are considerable compared to the means of these variables, and at least significant at the five percent level. However, Fahlenbrach et al. (2016) find negative effects for all quartiles and all returns. However, since the researched period is a rather volatile and the effects differ considerably from those found in section 6.1, the main conclusion of Fahlenbrach et al. (2016) is partially confirmed: fast three-year loan growth predicts poor bank performance.

In spite of these results being less significant than those of Fahlenbrach et al. (2016), this does affirm the belief that the confidence in European banks in the lead up to the financial crisis, was indeed unparalleled and the fact that the results of Fahlenbrach et al. (2016) do not hold for the entire sample is because of the excessive returns and money

creation from 2000 to 2007. Moreover, Northern European banks outperform their non-eurozone and Southern counterparts by 63.7 percentage points in three-year common stock return, this effect is even larger after than before the crisis.

Hence *H8: "Yes, it does. Fahlenbrach et al. (2016) mention worse performances of fast growing banks are increased by crises. Hence, the fastest growing banks will perform worse than the slowest growing banks after 2007."* is confirmed at the five percent level.

7 Limitations

Although this research was carried out in a highly conscientious manner, it has a few limitations. These limitations revolve mainly around data, as the data availability of European banks is not as good as that of their American counterparts.

Firstly, Fahlenbrach et al. (2016) include Standardized Unexpect Earnings (SUE) in their regressions as a control variable. This data is lacking for European banks, or at least it is not available on an annual basis. Furthermore, analyst forecasts and analyst forecast revisions are also not available for European banks. Both variables might be relevant in explaining bank returns, hence this affects the robustness of this research. In addition, the heterogeneity between banks and countries may cause some noise in the regression, but this is inevitable when researching European banks.

The absence of these three variables and heterogeneity of the data does not affect the credibility of the results. However, it does make the results less robust, as these three variables might have significant explanatory power. Hence, further research into the effects of loan growth on European bank performance is necessary to determine the robustness of these results, when more variables are included.

The aforementioned results will be discussed briefly in the eighth and final section of this paper.

8 Conclusion

In spite of the limitations of this research, its main conclusion stands: European banks with fast loan growth outperform their peers with slow loan growth from 2000 to 2016. This is believed to be the case because fast growing banks profited from the confidence in them and money creation by them in the run up to the financial crisis. However, the effect of fast three-year loan growth after 2007 is negative. This last finding is in line with those of Fahlenbrach et al. (2016). This means that the financial crisis has caused an anomaly in the results of this research. Hence, in general the results found by Fahlenbrach et al. (2016) are confirmed by this paper.

Moreover, most of the other findings by Fahlenbrach et al. (2016) also hold: asset growth apart from loans does not influence bank performance. Furthermore, loan growth has a positive effect on ROA and a negative effect on loan loss provisions in the short run. In the long run, the effects on ROA and loan loss provisions do not hold. The negative effect of M&A that Fahlenbrach et al. (2016) find, also holds. Albeit, for a relatively short period.

In addition to the research of Fahlenbrach et al. (2016) this paper finds that Northern European banks outperform their Southern European and non-eurozone counterparts from 2000 to 2016, and that the difference in returns is considerably larger after 2007. Furthermore, banks in countries with global systemically important financial institutions succumb to moral hazard, as they reserve significantly less for loan losses than other banks.

All in all, more research is needed to further establish the effects of loan growth on bank performance, that of global systemically important banks on moral hazard and the difference in performance between Northern and Southern European banks. However, the most important task of scholars, regulators, governments, and bankers is not predicting bank performance: it is to take or suggest measures to prevent catastrophically bad bank performance in the future. To put it in the words of Warren Buffet: "Predicting rain doesn't count. Building arks does."

9 Appendix

	1-yr return	2-yr return	3-yr return	topqt	secondqt	thirdqt	bottomqt	year	comid	loc
1-yr return	1.00									
2-yr return	0.60	1.00								
3-yr return	0.41	0.71	1.00							
topqt	-0.01	-0.01	0.01	1.00						
secondqt	0.05	0.01	-0.01	-0.32	1.00					
thirdqt	-0.01	0.03	0.04	-0.32	-0.35	1.00				
bottomqt	-0.05	-0.04	-0.04	-0.32	-0.35	-0.34	1.00			
year	-0.03	-0.13	-0.13	0.03	-0.02	-0.01	-0.01	1.00		
comid	0.01	-0.01	-0.01	0.04	-0.01	-0.01	-0.03	0.04	1.00	
loc	-0.02	-0.01	-0.02	0.15	-0.07	0.02	-0.10	0.02	0.04	1.00

Table 19: Correlation matrix

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