

**An analysis of the effects that the evolving financial  
environment has on banks assessment of borrowers**

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## **Abstract**

This master thesis examines the effect changes in the environment surrounding the banking industry have on the banks assessment of borrowers.

Our main approach to this subject is to interview different banks. Further on we do an analysis of financial figures to examine the assertions made in the interviews.

Our research shows that banks make changes in the credit approval system continuously. These changes are either based on the bank's own experience or changes in the regulations the bank is subjected to. Practically all of these changes affect the borrowers to some extent, mainly in the form of higher interest rates. The banks have also gotten more selective when they assess new clients, specially the clients they perceive as high-risk. As a result some corporations experience difficulties in getting financing from banks.

# Table of Contents

1. Introduction	4
1.1 Research question	4
1.2 Organisation of the thesis	5
2. The banks objective	6
2.1 The banks business objective	6
2.2. Bank funding structures	6
2.3 The banks role in the economic welfare	7
2.4 Banks in Norway	8
2.4.1 Savings banks	8
2.4.2 Commercial banks	8
3. Regulation of the banking industry	9
3.1 The Basel Committee	9
3.1.1 The committee's objective	9
3.1.2 Basel capital ratios	10
3.2 Basel II	11
3.2.1 The purpose of Basel II	11
3.2.2 The Standardised Approach	11
3.2.3 The Internal Rating-based (IRB) Approach	13
3.3 CRD IV	14
3.3.1 The purpose of CRD IV	14

3.3.2 Implementation of CRD IV in Norway	15
3.4 Equity requirement for mortgages on residential property	15
4. The credit approval process	16
4.1 Credit risk	16
4.2 The banks assessment of borrowers	16
4.2.1 Credit ratings	16
4.2.2 Credit Analysis	18
4.2.3 Credit scoring	18
4.3 Pricing the engagement	19
5. Historical events	19
5.1 The Norwegian Banking Crisis	20
5.2 The financial crisis	21
5.2.1 Initiatives following the financial crisis	22
6. Data collection	23
6.1 Choice of method	23
6.1.1 Interview	23
6.1.2 Financial comparison of current risk models	24
6.2 Checklist for the interviews	25
6.3 Interview objects	26
7. Changes in the banks assessment of borrowers	26
7.1 Changes in the credit rating process	28

7.1.1 Implementation of the Internal Rating-Based (IRB) Approach	28
7.1.2 Comparing internal models applied by IRB banks	28
7.2 Changes in the credit rating process for standard banks	31
7.3 Changes in the decision making process	32
7.3.1. Approving engagements	33
7.3.2. Monitoring and supervision	34
7.3.3 Pricing the engagement	35
7.3.4 Client portfolio	36
7.3.5 Collaterals and covenants	37
7.3.6 Effects of the equity requirement for mortgages on residential property	38
7.4 Expected changes due to the new capital requirements in CRD IV	39
8. Criticism of the regulations imposed on the banks	41
8.1 An evaluation of current risk models	42
8.2 The degree of complexity	46
8.3 Regulations and human failure	48
9. Conclusion	48
10. Reference List	50
10. 1 Legislation	55

## Figures

- Figure 1: Loan losses in Norwegian banks in percentage of total loans
- Figure 2: Norwegian banks source of funds in percentage of total
- Figure 3: Average risk weights in percentage for housing loans and corporate loans after IRB models for the Norwegian IRB banks as of the 31.12.11
- Figure 4: Average risk weights in percentage for housing loans and corporate loans after IRB models for the six largest financial groups in Scandinavia per 31.12.11
- Figure 5: Portion of companies that depend on external financing
- Figure 6: Portion of companies that depend on external financing and are experiencing a slowdown in their development due to limited access to external financing in some extent or large extent
- Figure 7: Loan losses in Norwegian banks in percentage of total loans for the period 1998-2012
- Figure 8: Loan loss provision in Norwegian banks in percentage of total loans for the period 1998-2012
- Figure 9: Loan loss provision in Norwegian banks in percentage of total assets for the period 1998-2012
- Figure 10: Loan losses in Norwegian banks in percentage of income for the period 1998-2012
- Figure 11: Loan loss in percentage in percentage of total loans for Denmark and Norway for the period 1998 to 2012
- Figure 12: The house price index for Norway, Denmark, Sweden and USA for the period 1992 to 2012 (1992=100)

## **Tables**

Table 1: Basel II capital requirement risk weights, percentage weightings

Table 2: Capital requirements under specified PD bands

Table 3: Long-term bond credit ratings

## **Preface**

The research for this thesis was done over the course of the spring 2013. The decision to write about the effect changes in the environment surrounding the banking industry has on the banks assessment of borrowers' spring from our interest in the banking industry. We did not study any subject relating directly to the economics of banks and therefore we seized this opportunity to learn more about the industry.

We would like to thank our supervisor Bernt Arne Ødegaard who has guided us along the way and supplied us with relevant reading material. We would also like to thank Mads Holm. He provided us with valuable insights to the industry and helped steer us in the right direction.

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# 1. Introduction

## 1.1 Research question

Banks have an influential position in the society. They provide important services to businesses, household and individuals. In this way they stimulate growth in the economy. People rely on the banks to be ethical in their guidance and price setting. However, just like any other businesses the banks objective is to maximise their profit.

Since the banking industry is such an important part of the economy, it is subjected to different regulations. These regulations constantly change, forcing banks to adapt. The latest major change in the regulations came in the aftermath of the financial crisis. The financial crisis showed the degree of influence banks have on the economy. Many banks experienced financial difficulties, some even went bankrupt. The new regulations were introduced to prevent this from happening in the future.

Most banks will also learn for their own mistakes and change their processes based on their experience. We know that banks practice change as a result of changes in regulatory requirements, lessons learned from downfalls in the economy and lessons learned from events in the individual banks.

We are interested to see what effect these changes have on the banks customers. The bank's revenue is provided by borrowers, in form of paid interest. They are consequently vital customers for the bank. We therefore want to focus our research on how the changes in the credit approval process affect them. This lead to the following research questions:

*To what extent does the evolving financial environment impact banks assessment of borrowers in practice?*

We believe that this is an important question because it is difficult to predict the full effect of changes before they are carried out. The regulators want the banks to have enough capital to survive financial challenges. The banks want to maximise their profits and minimise their risk. Sometimes these goals are not compatible. It is therefore interesting to examine how the banks adopt to the changes in the financial environment, both changes in the economy and changes in

regulations. Furthermore it is interesting to examine how the borrowers experience these changes.

To understand the banks reaction to the evolving environment you also have to understand the banks objective. To gain this insight we have interviewed different banks. The main focus of our interviews was to understand the banks credit approval process, and gain an insight into the changes that have been done in the last decade. We also try to determine if the changes are due to changes in regulations or if they are based on the bank's own experience. Further on, we have analysed financial figures to see if this support the information received from the banks.

Our research shows that the banks continuously make changes to their credit approval process. Nearly all these changes affect borrowers to some extent, mainly in the form of increased interest rates but also by the banks increased selectiveness.

We focus on the practical changes in the credit approval process. This practical approach to the problem will differ from other research on the topic that has a more theoretical approach.

## **1.2 Organisation of the thesis**

This thesis starts with an overview of the banks objective, focusing on their funding structure, their role in the economic welfare and how banks are organised in Norway. We continue by explaining the regulatory requirements banks must comply with. Since we have chosen a practical approach we will only include an explanation of the requirements we believe have an effect on the banks credit approval process.

We then give a short overview of the theory behind the credit approval process. This theory is applied by the banks when they design their own individual process.

Furthermore we present historical events that might have had an effect on the credit approval process.

Before we present our empirical results we present our method. Our main section present changes in the banks assessment of borrowers. We have divided this chapter into three parts. In the first part we distinguish between banks that report after the Internal Rating-based Approach and banks that report according to the Standardised Approach, and focus on changes in the credit rating process. The second part presents changes in the decision making process. This section is

divided according to topics raised during the interviews. The third section examines the expected changes due to the new capital requirements.

Our final chapter focus on criticism of the regulations the banks have to apply by. We start by assessing the quality of the current models applied by banks when calculating risk weights. We follow by presenting the standpoints our interviewees have on the new capital requirements and standpoints from other individuals with experience in this field.

We finish with a conclusion based on our research and some reflections regarding our topic.

## **2. The banks objective**

Banks in Norway require a licence from the Financial Supervisory Authority of Norway in order to conduct banking business. Banks need a start-up capital of minimum five million euro, or the Norwegian equivalent. Furthermore, the bank's capital must be related to the bank's operating activities. The management must be deemed suitable by the Financial Supervisory Authority of Norway (FSA 2009a).

### **2.1 The banks business objective**

The typical business objective is to maximise profits by increasing revenue and decreasing cost. This object also applies to banks. They aim to maximise profit by increasing their revenue in form of interest income. Their interest income stems from the loan the bank give. There is always some risk involved in lending money. The bank aims to include the cost of the risk in their margins. However, there is still some level of unexpected losses that increase the banks cost. Banks are constantly trying to improve their risk calculating models in order to decrease their unexpected losses.

### **2.2. Bank funding structures**

Banks relay on equity, customers deposits, issued debt and deposits from other financial institutions for their funding. The largest banks derive a significant portion of its external market financing from foreign markets. The long-term market funding consists of preferential bonds and regular bonds (Hoff 2011). Preferential bonds are among the most actively traded corporate

bonds on the Oslo Stock Exchange, and are considered to be one of the safest securities in the Norwegian market (FNO 2013a). Preferential bonds finance a significant portion of bank lending for housing purposes. Regular bank bonds are used to fund lending to businesses and mortgages that have not been transferred to housing credit. The regular bank bonds are most vulnerable to turmoil, both in terms of price and availability (Hoff 2011).

Preferential bonds and ordinary bank bonds can have fixed or floating rates. The floating rate in Norway is usually the Norwegian Interbank Offered Rate (NIBOR), also called the money market rate. The bank's assets consist of cash and deposits, loans to customers and commercial papers and bonds (Hoff 2011).

### **2.3 The banks role in the economic welfare**

There is an important relationship between banks and economic welfare. Banks stimulate the economy by giving loans and allowing businesses to grow. It is economically profitable that banks fulfill their functions in the society. Financial imbalances can build up during periods with economic expansion. When the positive trend is reversed, especially if the change comes quickly and the downturn is significant, banks can experience substantial losses (Norges Bank 2013a). Weakened banks cause problems in the financial sector, which can quickly deteriorate into a crisis of the system with loss of confidence in the economy. Lack of credit supply, lack of important financial services such as payment service, and uncertainty about the safety of bank deposits and savings affect people's spending. It forms a bad circle in the economy with increasing unemployment rates and impaired growth (Ministry of Finance 2011a).

The current situation in Europe with difficult financial conditions and high unemployment rates impacts the Norwegian key policy rate. The Norwegian central bank, Norges Bank, states in their quarterly report from March 2013 that the prospects for growth among Norway's trading partners are lower than estimated in the report from December 2012. This, in addition to low inflation, forces Norway to keep a lower key policy rate than domestic conditions would suggest (Norges Bank 2013).

The consequence of a low key policy rate in a strong economy is high levels of debt and rising property prices. Borrowers with high levels of debt are highly exposed to interest fluctuations. A

sudden rise in interest rates can cause some of them to default on their loans. The banks will experience the effect by increased loan losses.

## **2.4 Banks in Norway**

In Norway there are three main types of bank: commercial banks, savings banks and branches of foreign banks. According to the Financial Supervisory Authority of Norway license registry (2013a) there are 109 savings banks, 17 commercial banks and 43 branches of foreign companies.

### **2.4.1 Savings banks**

Savings banks were traditionally organised as foundations. They were funded by customer deposits and their equity consisted of retain earnings. The law changed in 1987 which made it possible for savings banks to obtain equity in the market by issuing equity certificates. Equity certificates resemble stocks. Profits are distributed in proportion to the equity certificate shares and other institutional capital (The Norwegian Savings Association 2013a).

The largest savings bank is DNB, with total assets of 1 736 786 million Norwegian kroner as of the 31<sup>st</sup> of December 2012. Most of the other savings banks are part of one of two groups; Eika Gruppen AS (former Terra Gruppen AS) with a total of 75 banks and the SpareBank 1 Alliance with a total of 15 banks as of the 26<sup>th</sup> of November 2012. The rest of the Norwegian savings banks are independent. As of the 21<sup>st</sup> of December 2012 the total assets for the savings banks was 2 792 797 million Norwegian kroner (FNO 2013a).

### **2.4.2 Commercial banks**

Section §3 of the Norwegian Commercial Banks Act state that a commercial bank can only be formed as a limited company or a public limited company. The largest commercial bank is Nordea with total assets of 511 681 million Norwegian kroner as of the 31<sup>st</sup> of December 2012<sup>2</sup>. The total assets for the commercial banks as of the 31<sup>st</sup> of December 2012<sup>2</sup> were 725 283 million Norwegian kroner (FNO 2013a).

### **3. Regulation of the banking industry**

Norwegian banks are governed by the Financial Supervisory Authority of Norway. The Financial Supervisory Authority is an independent governing body that builds on laws and resolutions from the Norwegian Parliament, the Government and the Ministry of Finance and on international standards for financial supervision and regulation (FSA 2013b). The Financial Supervisory Authority of Norway is through the European Economic Area agreement obliged to follow regulations from the European Union, which is based on the rules set by the Basel Committee (Balzersen 2013).

#### **3.1 The Basel Committee**

##### **3.1.1 The committee's objective**

The Basel Committee determines the Basel rules. The central bank managers of the G10 countries established the committee in 1975. It is governed by the Bank of International Settlement located in Basel in Switzerland. This is an international organisation with members from 54 of the world's central banks (BIS 2013a). Its decisions do not have legal force, but provides recommendations on banking regulations (BIS 2013b).

The Bank of International Settlement acts as a bank for central banks and aim to help them achieve monetary and financial stability, and to foster international collaboration (BIS 2013c).

The Basel committee is established with the purpose of enhancing financial stability. They aim to provide a forum for cooperation on banking supervisory matters. The committee aims to strengthen the regulation, supervision and practices of banks worldwide (BIS 2013a).

Members of the G20 group have all joined the Basel Committee's proposals. The members are Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South, Korea, Turkey, United Kingdom, United States, European Union (Ministry of Finance 2011b).

### 3.1.2 Basel capital ratios

The traditional way to assess the financial strength of a business is to review the equity ratio. The equity ratio is calculated by dividing equity by total assets. This traditional method does not account for the different risk of a bank's assets and that is why the Basel capital ratios were formed. Under these requirements all cash and off-balance sheet instruments in a bank's portfolio are assigned a risk weighting based on their perceived credit risk. The capital ratio is the percentage of a bank's capital to its risk weighted assets (Syversten 2012).

Under Basel I the bank's capital is divided in two levels where different types of debt are included. Tier 1 capital is equity reduced by regulatory deductions, where intangible assets such as goodwill and deferred tax asset are the most important, plus capital bonds. The capital bonds can be converted to equity or written down should the bank be hit by a financial difficulty. Primary capital is Tier 1 capital plus Tier 2 capital, also called supplementary capital. The supplementary capital consists of other forms of debt, such as undisclosed reserves, revaluation reserves, general provisions, hybrid instruments and subordinated term debt, which can be used to cover a loss in a crisis (Syversten 2012).

When a capital ratio is calculated the bank's assets are adjusted by a risk weight to form the banks risk weighted assets:

$$\text{Risk Weighted Assets} = \sum_{i=1}^n \text{Asset}_i * \text{Risk weight}_i$$

The different capital ratios are calculated as follow:

$$\text{Tier 1 Capital Ratio} = \frac{\text{Tier 1 Capital}}{\text{Risk Weighted Assets}}$$

$$\text{Capital Adequacy Ratio} = \frac{\text{Tier 1 Capital} + \text{Tier 2 Capital}}{\text{Risk Weighted Assets}}$$

Basel I required the Tier 1 Capital Ratio to be a minimum of 4 % and the Capital Adequacy Ratio to be a minimum of 8 %. Credit weighting (0%, 20%, 50% and 100%) was appointed to different classes of assets to reflect their credit risk. These weights were constant and alike for all banks (Choudhry 2012).

## **3.2 Basel II**

### **3.2.1 The purpose of Basel II**

Basel II was published in June 2004 and implemented in the European Economic Area in 2007 (Borchgrevink 2012). The new guideline emphasised safety and soundness in the financial system, with a more comprehensive approach to calculate risk (Choudhry 2012). The objective was to bring bank capital requirements more closely into line with actual risk. Basel II retained the risk weighted capital requirements set under Basel I. However, the new risk weightings reflect individual circumstances more accurately because they are based on the borrower's individual risk assessment. Banks with low-risk activity were to hold a lower capital requirements than banks with high- risk activity (Colquitt 2007). The aim was that the capital adequacy ratio should reflect the actual risk of each bank.

Three pillars were introduced in Basel II. Pillar I focuses on the minimum capital requirements and how they are calculated. Pillar II targets the assessment of overall capital requirements and supervisory monitoring. Pillar III states requirements for the disclosure of information. Some of the regulations are supplementary and constitutes more flexibility if it is less irrelevant to a banks operational activity. The disclosures include the elements that make up the bank's Tier 1 and Tier 2 capital, the capital adequacy and risk exposure (Choudhry 2012).

Basel II had elements that became subjected to criticism. It was said that the required equity and Tier 1 capital was set too low and the Tier 1 capital was too weak to bear losses (Hvistendahl 2009).

### **3.2.2 The Standardised Approach**

The Standardised Approach is one of two methods of calculating risk weights under Basel II. It is applied by most Norwegian savings banks and by many of the commercial banks. The risk-weights are based on the borrower's external credit rating. The weights of 0 %, 20 %, 50 % and

100 % is maintained from the Basel I requirement. In addition there is a new weight for borrowers with the lowest ratings of 150 %. Loans to companies that do not have an external rating will receive a risk weight of 100 %. The Standardised Approach does not allow weights to vary with maturity, except in the case of short-term facilities with banking counterparties in the mid-range of ratings (Bessis 2010).

For lending to other banks there are two options; for the first option the sovereign risk of the home country of the bank is used, and the bank is placed in the next lower category. In the second option, the credit rating of a bank itself is used (Choudhry 2012, p. 85).

There is a lot of small banks in Norway that do not have a credit rating, and if they were to be rated they would receive a lower rating than the big banks due to their size. This would again impact the cost of their funding. Since these small banks have a solid capital adequacy, the Supervisory Authority of Norway and Norges Bank have given their support to option 1 (Aamo 2003).

Credit rating							
Asset	AAA to AA	A+ to A-	BBB+ to BBB-	BB+ to B-	B+ to B-	Below B-	Unrated
<b>Sovereign</b>	0 %	20 %	50 %	100 %	100 %	150 %	100 %
<b>Banks</b>							
option 1 <sup>1</sup>	0 %	20 %	50 %	100 %	100 %	150 %	100 %
option 2 <sup>2</sup>							
< 3 months	20 %	20 %	20 %	50 %	50 %	150 %	20 %
> 3 months	20 %	50 %	50 %	100 %	100 %	150 %	50 %
<b>Corporate</b>	20 %	50 %	100 %	100 %	150 %	150 %	100 %

**Table 1:** Basel II capital requirement risk weights, percentage weightings (Choudhry 2012, p. 86, Table 2.5)

<sup>1</sup> Based on the risk-weighting if the sovereign in which the bank is incorporated.

<sup>2</sup> Based on the assessment of the individual bank.

The standardised approach also has a special treatment of retail risk exposure. If the regulatory retail portfolio is sufficiently diversified, risk weights are 75 %. In addition, lending fully secured by mortgages is risk weighted at 35 %. Mortgages on commercial real estate are assigned a 100 % weight (Bessis 2010).

### 3.2.3 The Internal Rating-based (IRB) Approach

After an initiative from the European countries, where external ratings are less common, the Basel committee developed an Internal Rating-based approach. To be able to use this approach the bank need approval from the supervisory body in the bank's country of origin. To get the approval their risk calculating systems and procedures must have been in place for at least three years previous to the approval (Choudhry 2012).

Within IRB there is a foundation approach and an advanced approach. If a bank uses the foundation approach they use their own internal ratings to categorise loans in probability-to-default (PD) bands. Then the Basel II guidelines are used to set loss-given-default (LGD), exposure-at-default (EAD) and maturity (M) parameters. These inputs are then used to calculate risk-weights for each asset class using the Basel II capital formula. Table 2 sets out the capital requirements under Basel I, and both the standard and IRB approaches under Basel II.

	PD band	Basel I	Standard approach	IRB foundation approach
<b>AAA</b>	0,03 %	8,00 %	1,60 %	1,13 %
<b>AA</b>	0,03 %	8,00 %	1,60 %	1,13 %
<b>A</b>	0,03 %	8,00 %	4,00 %	1,13 %
<b>BBB</b>	0,20 %	8,00 %	8,00 %	3,61 %
<b>BB</b>	1,40 %	8,00 %	8,00 %	12,35 %
<b>B</b>	6,60 %	8,00 %	12,00 %	30,96 %
<b>CCC</b>	15,00 %	8,00 %	12,00 %	47,04 %

**Table 2:** Capital requirements under specified PD bands.  
(Choudry 2012, p. 87, Table 2.6)

Under the advanced IRB approach a bank will calculate risk weights using its own parameters. These parameters stem from the bank's own internal models and default data. For the first two years after the approval, the credit risk element of capital allocation cannot be lower than 90 % of the allocation calculated under the foundation approach (Choudhry, 2012).

In Norway the following banks use the IRB Approach as of May 2013 DNB, SpareBank 1 SR-Bank, SpareBank 1 Nord-Norge, SpareBank 1 SMN, Sparebanken Vest, Nordea Bank Norge, Bank 1 Oslo Akershus and Sparebanken Hedmark (Norges Bank 2013b)

### 3.3 CRD IV

In December 2010 the Basel Committee released new capital requirements in Basel III as a response to the financial crisis that started in 2007. The Capital Requirements Directive (CRD IV) implements the standards for capital management and liquidity management. In Norway the regulations will apply to credit institutions and investment firms, along with financial companies that are not credit institutions and financial groups (Ministry of Finance 2013a).

#### 3.3.1 The purpose of CRD IV

The intention behind CRD IV is to build more reliable and secure banks. The Basel Committee wants banks to build buffers in periods of expansion in order to be better equipped to handle periods with economic downturns.

According to the Norwegian Ministry of Finance (2013a) the following requirements will be introduced:

The Capital Adequacy Ratio is still 8 %. A new capital ratio is introduced, the Core Tier 1 Capital Ratio. The core Tier 1 capital is equity reduced by regulatory deductions. The Core Tier 1 Capital Ratio has to be 4,5 % by 2015. The Tier 1 Capital ratio has to be 6 % by 2015.

The new capital ratio is calculated as follow:

$$\text{Core Tier 1 Capital Ratio} = \frac{\text{Core Tier 1 Capital}}{\text{Risk Weighted Assets}}$$

In addition CRD IV introduces different capital reserve buffers to help banks during period of financial troubles (Ministry of Finance 2013a):

- Capital Conservation buffer:

The regulation suggests a requirement for a conservation buffer holding 2.5 % core Tier 1 capital by 2019. If the requirement is not met the banks have to present a plan stating

how they aim to meet the objectives. There will also be restrictions on dividends and bonuses if the requirement is not met.

- Systemic Risk Buffer:

The systemic risk buffer has to hold 2 % core Tier 1 capital when first implemented. The aim is to achieve 3 % before the 1<sup>st</sup> of July 2014.

- Buffer for Systemically Important Banks:

This buffer is especially important for the economy. It requires that system-bearing banks hold an additional buffer of 1%. Which banks that are system-bearing are not decided as of April 2<sup>nd</sup> 2013 (FNO 2013b). The buffer will rise with 1% on July 1<sup>st</sup> 2015, and 2% on July 1<sup>st</sup> 2016.

- Countercyclical capital buffer:

The countercyclical capital buffer should hold between 0 and 2,5% pure core capital. The level ought to be based on the general economic situation and is stated by Norges Bank in collaboration with the Financial Supervisory Authority of Norway.

### **3.3.2 Implementation of CRD IV in Norway**

The Norwegian Ministry of Finance (2013b) announced in March 2013 that the first new requirements will apply in Norway from the 1<sup>st</sup> of July 2013.

Norwegian banks and credit institutions have good access to capital funding and achieved good results in 2012 (Norges Bank 2013a). The Norwegian government states that the economy in Norway is well poised for an early implementation of new regulations. Countries with a weaker economy will in a transitional period have limited ability to raise capital. The higher capital requirements in the short term can have negative consequences for economic growth in Norway (Ministry of Finance 2011b).

### **3.4 Equity requirement for mortgages on residential property**

Due to strong growth in household debt and house the Financial Supervisory Authority in Norway introduced ten guidelines for a sound lending practise in December 2011. The increased

equity ratio requirement is the one that has been most discussed. The new guidelines stated that the buyer of a residential property have to hold a minimum of 15% equity (Balzersen 2013).

## **4. The credit approval process**

### **4.1 Credit risk**

The banking industry is exposed to various types of risk such as; credit risk, liquidity risk/funding risk, interest rate risk, mismatch risk, market liquidity/market price risk, market risk, foreign exchange risk and operational risk.

According to Bessis (2010) credit risk is the most important risk in banking. This is the risk of a counterparty defaulting on payment obligations. He splits credit risk up in the following components:

- Default risk – The risk that the borrower fail to comply with their loan agreement
- Migration risk – The risk of a decline in the credit standing of the borrower
- Exposure risk – The uncertainty with respect to the future value of the amount subject to loss at the unknown time of default
- Counterparty risk – A specific form of credit risk that is encountered with derivative products, which can shift from one counterparty to another
- Recovery risk – Indicates the extent of recovery from a loan, post default

These risks are all a part of the credit risk and are not mutually exclusive.

### **4.2 The banks assessment of borrowers**

#### **4.2.1 Credit ratings**

A credit rating is an assessment of the borrower's ability to meet its payment obligations as they fall due. This method is normally applied when assessing larger entities. There is a distinction between external credit rating and internal credit rating. External credit ratings are performed by agencies that are independent of the lending bank. They rate the debt issues rather than issuers. External ratings from agencies exist only for issues of large listed companies (Bessis 2010). The

biggest rating agencies are Fitch IBCA, Standard & Poor’s (S&P) and Moody’s. Table 3 show the scales applied by these companies. This shows that the underlying risk assessments are still compatible although the companies apply different rating symbols, methods and systems.

<b>Fitch</b>	<b>Moody's</b>	<b>S&amp;P</b>	<b>Summary description</b>
<i>Investment grade - High creditworthiness</i>			
AAA	Aaa	AAA	Extremely strong: highest credit rating, virtually no risk of default
AA+	Aa1	AA+	Very strong: high likelihood of repayment, low risk of insolvency
AA	Aa2	AA	
AA-	Aa3	AA-	
A+	A1	A+	Strong: adequate capacity to meet financial commitments; risk of insolvency still low
A	A2	A	
A-	A3	A-	
BBB+	Baa1	BBB+	Adequate: adequate capacity to meet financial commitments; medium risk of insolvency (speculative characteristics, vulnerable to
BBB	Baa2	BBB	
BBB-	Baa3	BBB-	
<i>Speculative - Lower creditworthiness</i>			
BB+	Ba1	BB+	Somewhat weak: moderate capacity to meet financial commitments, higher risk of insolvency
BB	Ba2	BB	
BB-	Ba3	BB-	
B+	B1	B	Weak: no guarantee as to ability to meet financial commitments, high risk of insolvency
B	B2		
B-	B3		
<i>Predominately speculative, substantial risk or in default</i>			
CCC+	Caa	CCC+	Vulnerable: barely sufficient credit standing, very high risk of insolvency
CCC		CCC	
CC		CC	
C	C	C	Extremely speculative
		CI	Income bonds - no interest being paid
DDD			Unable to meet payment obligations: in default or insolvent
DD			
D		D	

**Table 3:** Long-term bond credit ratings (Choudhry 2012, p. 133, Table 3.1)

Financial institutions that operate in the middle and small business markets face credit risks entirely different from large companies that are covered by the external credit ratings. These

banks need to rely on their own internal credit ratings. The internal rating system varies across banks (Bessis 2010)

#### **4.2.2 Credit Analysis**

Credit analysis is concerned with issuer-specific considerations and consists of a quantitative analysis and a qualitative analysis. The credit analysis results in the assignment of an internal credit rating. Traditionally a credit analysis relied heavily on a financial analysis. The more modern approach first do a review of the industry the company is operating in, before considering financial considerations. An industry analysis will focus on the economic cycle, the growth prospects, the competition, the supply sources, research and development, the regulations for the industry, labour relations and the political climate (Bessis 2010).

After the industry is reviewed a financial analysis is conducted. This is typically done in three phases, namely (Bessis 2010):

- Ratio analysis of the bonds
- Analysis the company's return on capital
- Non-financial factors such as management expertise and reputation, the company's systems and the degree of exposure to overseas markets

The main aim of this analysis is to understand the borrower's ability to repay the loan and their willingness to repay the loan. Ability to pay and willingness to pay are different concepts. A consumer who derives a high benefit from the consumption of a good may be willing to pay an expensive price even though his budget is limited. Ability to pay is a constraint that prevents the consumer to take decision according to his willingness to pay (Grassi 2010).

#### **4.2.3 Credit scoring**

The credit approval process for high-volume business, such as the retail portfolio, often follows a credit scoring model. Credit scoring is a statistical method that models credit risk using techniques for discrimination between defaulters and non-defaulters. The credit scoring model can also be used for smaller entities. The principle of scoring is to use a metric for dividing "good" and "bad" credits into distinct groups, using observable characteristics and attributes of borrowers. For businesses the technique uses current and past values of observable attributes such as financial ratios. For individuals their income, age and professional activities are assessed.

For each individual, the method set a credit score. If the score is high, the credit is good. The higher the score the less risk the borrower represent. A bad score indicates a lower quality credit (Bessis 2010).

### **4.3 Pricing the engagement**

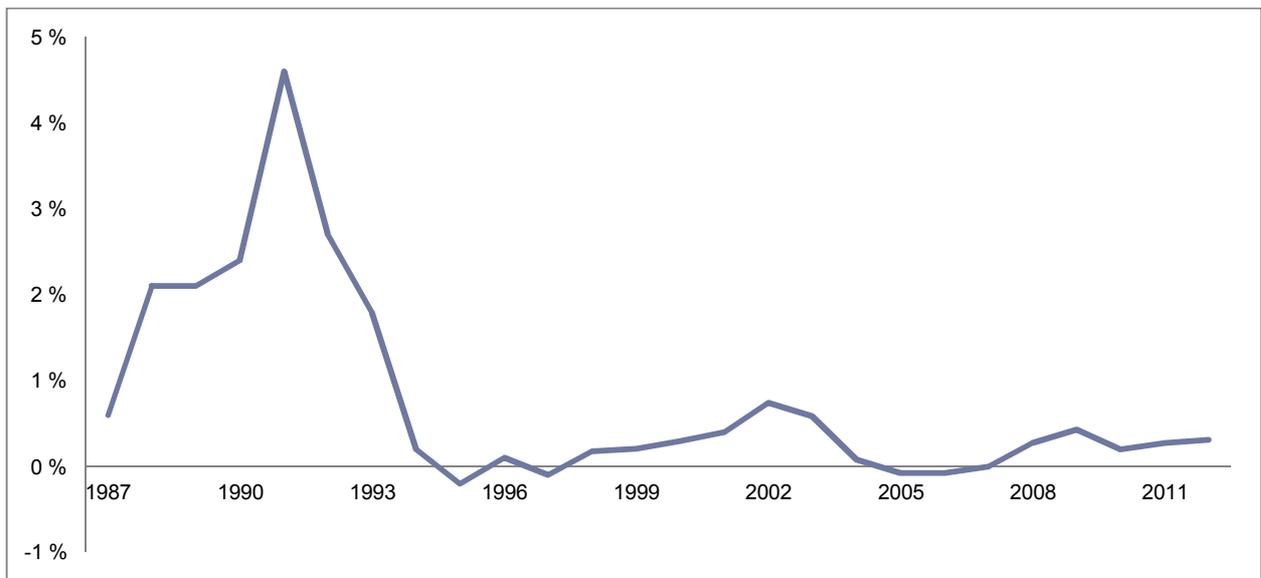
Banks aim to maximize their profits, deliver good results and stay solid. They therefore want their profit margins to be as high as possible. Demirguc-Kunt and Huizinga (1998) sums up the determinants that affect bank interest margins and profitability. The determinants include a comprehensive set of bank characteristics. Size, leverage, type of business and foreign ownership all affect their margins, along with macro indicators, taxation and regulatory variables, financial structure variables and legal indices

Norges Bank determines the key policy rate. This is the rate banks have to pay when lending from Norges Bank. The key policy rate can be viewed as the minimum rate. The money market rate (NIBOR Norwegian Interbank Offered Rate) is the interest rate on loans between banks, and is affected by their supply and demand. In short, it is NIBOR that forms the basis for interest rates that customers pay. The difference between the key policy rate and NIBOR is called credit spread. The credit spread is a key determinant of banks profitability. The margins covering the banks costs and profit are added to the credit spread (Queseth 2011).

## **5. Historical events**

Deregulation in the banking business and economic expansion in the 1980 was followed by a banking crisis with major bankruptcies and recession. Prior to the financial crisis, the market was also characterised by optimism, an optimism that eventually resulted in high risk taking. It is a paradox that the possibility of a financial crisis is often at its highest when the financial sector appears to be strong and there is great optimism (Steffensen 2012).

The graph in figure 1 below shows the extent to which the Norwegian banks were affected by the banking crisis in the beginning of 1980. It also shows how the financial crisis impacted Norwegian banks.



**Figure 1:** Loan losses in Norwegian banks in percentage of total loans (1987 to 1997 is estimated based on a graph by Norges Bank (2009), 1998 to 2012 is developed based on data sourced from FNO and the Norwegian Savings Banks Association)

## 5.1 The Norwegian Banking Crisis

The first half of the 1980's was characterised by economic expansion. The financial market experienced deregulation and abolition of requirements for additional reserves in 1984 and 1985. This led to an increase in lending to households and corporations. During this period lending increased by approximately 20 percent each year. Banks also experienced an increase in deposits. The revenue from the increased deposits was not sufficient to fund loans. Banks therefore financed loans through short-term borrowing abroad and loans from Norges Bank. The loans abroad caused problems in the sense that they fluctuated in accordance with the exchange rate (Torsvik 1999).

The monetary- and credit policy tightened at the beginning of 1986. Reserve requirements increased and an additional reserve requirement was introduced. This new policy was maintained throughout 1980's. At the same time an international economic recession occurred with an overall decrease in the stock market and a fall in real-estate prices. This reinforces the problems in the financial industry and in 1987 banks experienced their first major losses on loans and guarantees. The following year the first banks lost their equity holdings (Torsvik 1999). It is the definition of a banking crisis when the equity in several major banks is lost or greatly reduced (SNLa 2013).

The banking crisis reached a dramatic climax in 1991, when the share capital of the three large commercial banks, DnB, Fokus Bank and Christiania Bank og Kredittkassen, was written down to zero (SNLa 2013). Several banks merged. Some banks were placed under public administration and special concessional loans were given from Norges Bank. The Banks Guarantee Fund was eventually weakened and could not meet banks capital requirements. As a result, the Government Bank Guarantee Fund was established in the spring of 1991. This additional fund provided new capital so that the requirement of adequate capital was reached. In 1991 new capital adequacy requirements were introduced. The goal was to ensure that the banks at any time should have a sufficient capital and thus ensure solvency (Torsvik 1999).

## **5.2 The financial crisis**

The financial crisis that started in 2007 originated in the United States housing market. High rated, subprime loans were given to borrowers with poor credit history (SSB 2009). This coupled with a political objective that everyone should own their own home was a dangerous mix. Even households with no ability to service debt were able to borrow through bank partially owned by the state. Mortgages were packaged into complex products that made it difficult for investors, financial institutions and rating agencies to see the whole risk associated with them. When it became clear that major banks in several countries were having problems relating to their investments in subprime securities, turbulence spread to the money market and banks stopped lending to each other. By this time it was discovered that some financial institutions had become so large and complex that the state felt the need to save them. They did not dare to risk the consequences of what would have happened if they did not save them. The sovereign debt problems in a number of countries, and the challenges they bring with them, was accentuated by the crisis (Steffensen 2012).

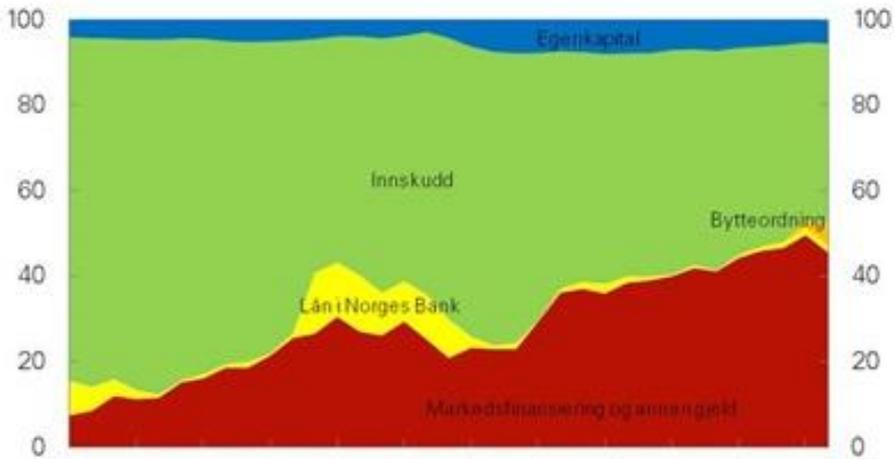
The manufactory industry was particularly affected by the financial crisis. This is an important fact for understanding why Norway was not as affected by the crisis as other countries. Norway has a relatively small manufacturing sector, and produces a small portion of the goods that were subjected to the greatest decline. A significant part of the Norwegian manufactory industry delivers goods to the petroleum sector. The demand from the petroleum sector held up well through the recession. A large public sector and a rise in public spending contributed to growth in the Norwegian economy (FSA 2013c).

Both monetary and fiscal policy was used actively to mitigate the impact of the financial crisis. Fiscal policy was quickly placed in an expansionary direction and Norges Bank introduced a historically low key policy rate (FSA 2013c).

### 5.2.1 Initiatives following the financial crisis

The Financial crisis led to liquidity problems for Norwegian banks. Banks' liquidity management was not adequately robust to handle turbulence in the money market and the capital market. Financial institutions in Norway, and worldwide, had been dependent on short-term market funding to finance investments with long durations (FSA 2011). The Central Bank Governor in Norway, Svein Gjedrem, expressed his concern in the aftermath of the financial crisis. He wanted banks to focus on deposits and long term lending, not short term market funding (Gjedrem 2009).

Figure 2 show the Norwegian banks source of funds in percentage of total assets. Market funding have gradually increased and in 2008 accounted for over 40% of the funding sources. The market funding has replaced a substantial amount of funding from customer deposits.



**Figure 2:** Norwegian banks source of funds in percentage of total assets (Gjedrem 2009)  
Red= Market funding, Yellow= funding from the Norwegian central bank  
Orange=swap arrangement, Green=customer deposits, Blue=equity.

The comprehensive efforts that have been made in the aftermath of the crisis may have amplified the impression that public authorities will intervene and prevent potential banking crises. This may cause the banks to accept a higher risk exposure. The Norwegian government highlights lessons learned from the financial crisis in a report published in 2011. The report emphasises the

importance of public intervention to avoid negative interactions between the economy and the financial sector. The central bank in Norway initiated actions after the crisis. The aim of these actions was to restore confidence in the financial market. The key policy rate was at a historical low, the government led an expansionary monetary policy and a State Finance Fund was established to provide core capital to banks. These actions made it possible for banks to maintain access to liquidity. 28 banks were reassigned capital from the State Finance Fund. The banks that were assigned capital had to meet requirements stated in a contract (The Norwegian State Finance Fund). In addition other banks benefitted from the contributions by an increased faith in the banking system and that they were given the flexibility to await the market situation before they started withdrawing capital from the market funding (FSA 2011).

The need for rapid actions led to a degree of improvisation. This meant that the actions depend on “the right people behind the wheel”. The leading positions in the civil service included individuals with experience from the banking crisis. There are no guarantees regarding the experience in the civil service when the next crisis occurs.

When a crisis occurs the Norwegian system for handling these situations is subjected to the Bank Guarantee Act. The law states different actions depending on how advanced the crisis is.

The document concludes that even though the Norwegian system was not exposed to a major test during the financial crisis, the international situation has shown us that there is room for improvement. Great Britain, USA, Switzerland and Denmark have all made changes in their crisis resolution regime after the financial crisis (FSA 2011).

## **6. Data collection**

### **6.1 Choice of method**

#### **6.1.1 Interview**

To gain an understanding of how the evolving environment impacts banks' assessment of borrowers in practice we needed information about the banks' credit approving process. These processes are individual for each bank and not revealed to competitors. We considered different

ways to acquire the information we needed, and decided that in-depth interviews were the best approach.

In-depth interviews are commonly used to gain an understanding of the interviewee's point of view. It can also be used to explore interesting areas for further investigation. This type of interview involves asking informants open-ended questions, and probing wherever necessary to obtain data deemed useful by the researcher. There are three approaches to the in-depth interview (Berry 1999):

1. The informal conversational interview – The interview resembles a chat. Most of the questions will flow from the immediate context.
2. The general interview guide approach – The interviewer have a basic checklist prepared to ensure that all relevant topics are covered. The interviewer is still free to explore, probe and ask questions deemed interesting to the researcher.
3. The standardised open-ended interview – The researcher prepare a set of carefully worded and arranged open-ended questions to minimise the variation in the questions posed to the interviewees. This method allow less flexibility than the other two methods, but probing is still possible.

When we started our research we did not know how much information the banks would be willing to give us. We therefore felt the need to be able to follow up on the answers given in the interviews. By allowing the interviewees to speak freely about a subject we were able to get more information compared to asking them specific questions. However, it was important to our research that each bank answered questions related to certain topics. For this reason we chose the general interview guide approach.

After we finished our interviews we sent some clarification questions to each interviewed bank to make sure that we had understood them correctly and to get some minor additional details.

### **6.1.2 Financial comparison of current risk models**

During our interviews it became clear that the banks that report after the Internal Rating-based Approach believed that they had a better approach when calculating default risk, compared to the banks that report according to the Standardised Approach. We were curious to see if an analysis

of the financial key figures would support this assertion. We therefore collected data containing the annual accounts from each savings bank and commercial bank in Norway for every year in the period 1998 to 2012. The data was sourced from the websites to Finance Norway (FNO 2013c) and the Norwegian Savings Banks Association (2013b).

## **6.2 Checklist for the interviews**

The primary goal of our interviews was to gain an understanding of the changes the banks have done to the credit approval process. Our checklist for the interviews included the following topics:

- The bank's process for granting credit
  - The main points during this process
  - Rating of clients
- The difference in assessing a retail client and a corporate client
- Basis considered when setting the price (interest rate) on loan engagements
- Supervision and monitoring of clients
  - Routines for monitoring and helping clients in trouble
- Changes in these processes
  - Changes due to the bank's own experiences, for example during the financial crisis
  - Changes due to new regulations
- The interviewee's thoughts on why some clients that probably should not be granted a loan still receive a loan
- The interviewee's thoughts on what effect the new equity requirements will have, especially in the credit approval process
- The interviewee's thoughts on how the clients will be affected by the new equity requirements

### **6.3 Interview objects**

In order to obtain the information we needed to interview someone that had knowledge about the changes the bank had been through during the last decade. First of all this meant that the person had to be employed by the bank for some time, but also that they had a good understanding of the credit granting process. We approached most of the banks with offices in the Stavanger region and managed to get interviews with four different banks. Some of the other banks did not have the time and some were just not interested in helping.

Two of the banks we interviewed are approved by the Financial Supervisory Authority of Norway to report after the Internal Rating-based Approach. They will be referred to as IRB banks. One of the banks is a local savings bank that report according to the Standardised Approach. This bank is referred to as a standard bank. The last bank we spoke to is a branch of Nordic bank. This bank reports after the IRB Approach in its country of origin, but we did not receive enough information about their changes regarding the implementation of this approach. We therefore decided not to include them in the group with the other two IRB banks. This bank will be referred to as a branch.

We spoke to employees in different positions and with different sonority. They will therefore have different experience on the topics we discuss, as well as different views and thoughts. Due to this we cannot with absolute certainty say that the answers we get are correct.

Since the banks do not want to reveal all the details regarding the credit approval process to their competitors, the names of the banks we interviewed will be kept confidential. Their answers will also be made anonymous.

## **7. Changes in the banks assessment of borrowers**

In the following section we present findings from our research concerning the credit approval process. We have divided the process into two parts; the credit rating process and the decision making process. The credit rating process involves changes to the banks systems and models, while the decision making process looks at the changes in the decisions that are made based on

the output from the credit rating process. We will differentiate between IRB banks and standard banks because their systems and models differ largely in complexity.

Our research shows that the IRB banks went through a large organisational change during the conversion to the Internal Rating-based Approach introduced in Basel II. They have not had any substantial changes in their credit rating process after the implementation. This indicates that they believe their system and models are satisfactory in predicting risk. One of the IRB banks also states that their models are better at predicting risk than the models applied by the standard banks.

While the major change in the credit rating process in the IRB banks were due to the regulations introduced by Basel II, we see that the changes done by standard banks are mainly based on their own experience. Often these are experiences of financial troubles. The changes we have seen in the credit approval process for standard banks are not always large organisational changes, but they are fundamental improvements.

All changes in the credit rating process affect the borrowers to some extent.

Our research indicates that banks change their decision making process more often than their credit rating process. These changes are based on their own experience, as well as changes in the regulations. Close to all of these changes affect the borrowers, mainly in form of higher interest rates. Some borrowers also experience difficulties in getting financing from banks due to the stricter demands. All banks interviewed stated that they had become more selective due to the new capital requirements in CRD IV. They have all increased their margin in order to increase and retain more profit. Research shows that these changes cause some businesses to experience difficulties in getting external finance from banks. Lack of external financing slows the economic growth in the business sector. The intention behind CRD IV was to create secure financial institutions, not to slow down the economic growth. However, some businesses can obtain finances from an external market, for example the bond market. As long as there is a supply of capital in other markets, the impact on economic growth will be short-term.

## **7.1 Changes in the credit rating process**

### **7.1.1 Implementation of the Internal Rating-Based (IRB) Approach**

Both of the IRB banks we interviewed have not had any substantial changes in their credit rating system after they got the approval to use the IRB approach. This indicates that they believe that their system and models are satisfactory.

To be able to use the Internal Rating-Based Approach the banks need approval from the Financial Supervisory Authority of Norway. Both banks started the process in the beginning of the 2000's. For both banks this was a major process, and the change was evolutionary.

Professionalising risk management was a costly process. Most of their systems used in the credit process were reformed. In some instances new work flow systems were introduced. Their current models for calculating credit risk were improved and new models were developed with the help of professional mathematicians.

It was not just the system and models that changed, the process introduced a new way of thinking. There was an organisational development along with a change in the company culture. A great deal of new competence was acquired.

To get the approval they had to document that their system worked. To be able to do this they needed data from several previous years. Both banks received their approval in the beginning of 2007.

After they received their approval there has only been a few changes to the credit rating process. One bank mentioned that they had improved their level of system integration together with improving their risk models slightly. Both of the IRB banks have implemented the changes in requirements received from the Norwegian financial regulators as they have been announced.

### **7.1.2 Comparing internal models applied by IRB banks**

The banks credit rating process is individual and differs between banks. They have their own business objectives, which result in different strategies regarding risk. It is therefore logical that we observe some differences in the risk weights applied by the IRB banks.

The approval to use internal models when calculating risk weights is given by the Financial Authority in the bank's country of origin. There might be some differences between the countries regarding this process.

Our research shows that the average risk weights for IRB banks are quite different. The intention behind Basel II was that the bank's capital adequacy should better reflect the risk of the assets they had. It may not be logical that these weights differ as much as they do. It is however difficult for us to say that the differences in the applied risk weights is due to actual differences in risks or if this is due to differences in the IRB approval process.

The two IRB banks we have interviewed each have their own system that is used in their credit rating process. One bank focuses on the three following steps:

1. Earnings – The client's ability to pay
2. Financial analysis– To determine how long the client (business or private) can survive financially with their current funds should anything unforeseen happen.
3. Behaviour – If the client has any previous payment remarks and how the management acts.

The other IRB banks differentiate between the process for corporate clients and retail clients. The main points in their process of assessing corporate clients are:

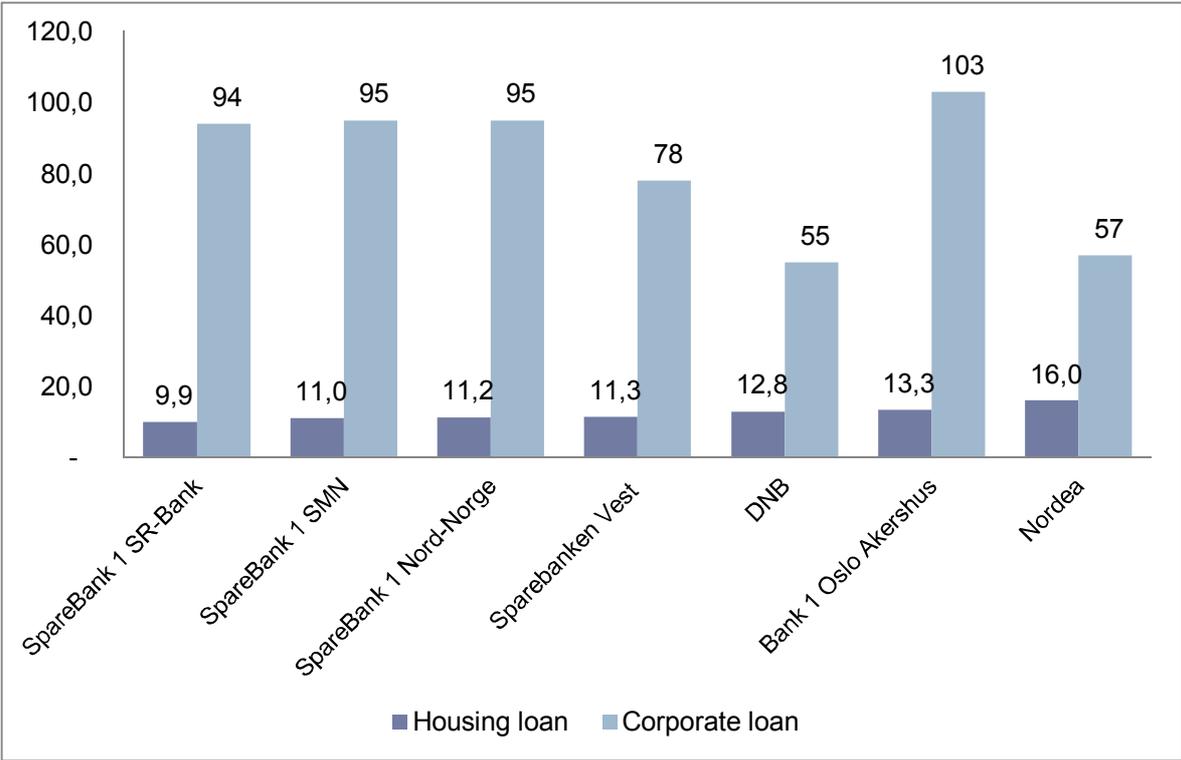
1. The management's reputation and knowledge, and their systems and strategies.
2. Assessment of the market for the client's products.
3. Financial analysis where the client's ability to pay is the most important aspect.
4. Assessment of collateral

The main points in their process for assessing retail customers are:

1. Ability to pay
2. Willingness to pay
3. Collateral

Both banks focus on the client’s ability to pay, and they have both stated that this is the most important aspect to consider when assessing a new client. They also both focus on financial aspects and assess the client’s behaviour. One of the banks mention assessment of collateral as part of their process, but they do emphasise that this is the least important aspect.

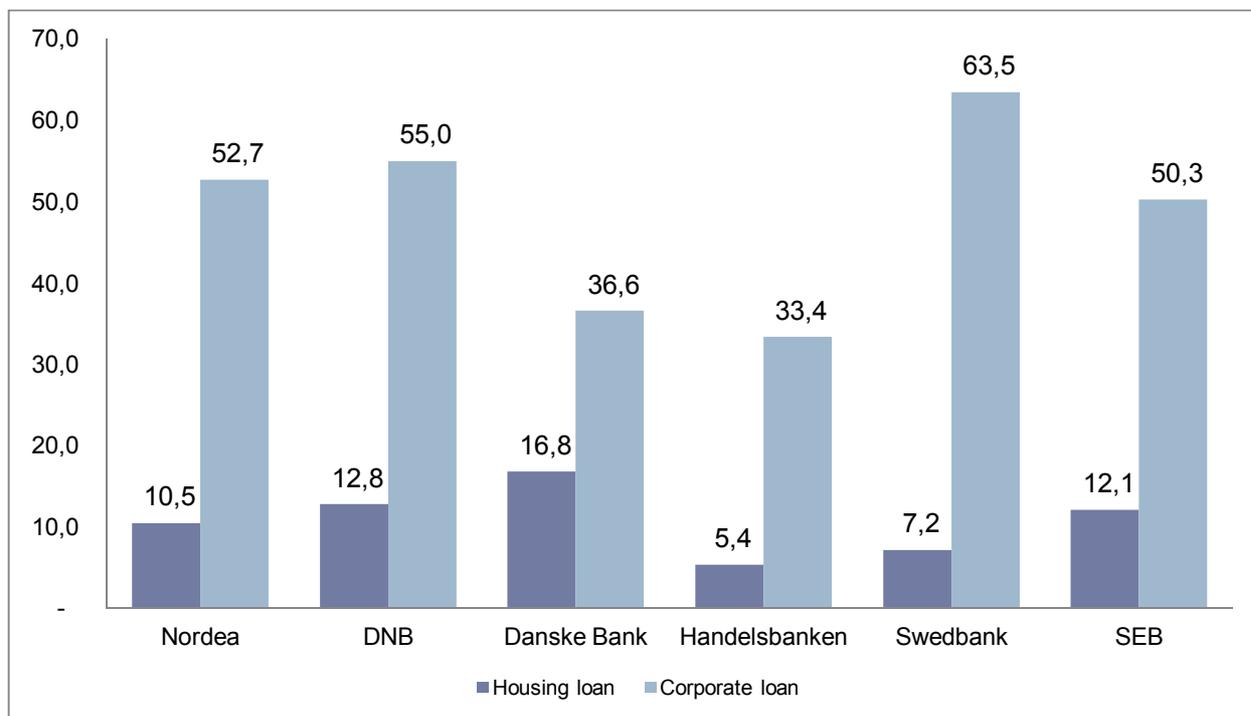
The similarities in models applied by IRB banks can suggest that they would use similar risk-weights for their portfolio. However, when we compare the applied risk weights in the Norwegian IRB banks we see some differences:



**Figure 3:** Average risk weights in percentage for housing loans and corporate loans after IRB models for the Norwegian IRB banks as of the 31.12.11. (Syvertsen 2012)

DNB and Nordea have considerably lower average risk weights on their corporate loans than the other IRB banks. SpareBank 1 SR-Bank have the lowest average risk weights for housing loans, their average is about 62 % lower than Nordea’s average.

When we compare the average risk weights in the six largest financial groups in Scandinavia we see an even more substantial difference in the average risk weights for both their housing loans and corporate loans:



**Figure 4:** Average risk weights in percentage for housing loans and corporate loans after IRB models for the six largest financial groups in Scandinavia per 31.12.11. (Syvertsen 2012)

The highest average risk weight for housing loans is 16,8 %, which is more than 200 % higher than the lowest average risk weight for housing loans. The highest average risk weight for corporate loan is 63,5 %, which is about 90 % higher than the lowest average risk weight for corporate loans of 33,4 %.

The difference in the average risk weights can result from differences in the actual risks in the bank's portfolio. Common for all these banks is that they all operate in different countries and the risks will differ according to the geographical location. The risks also differ according to the economy in the client's country of origin. However, the differences in the risk weights can also be caused by differences in the internal models applied by the banks, and differences in the approval process.

## 7.2 Changes in the credit rating process for standard banks

Our research indicates that the standard banks change their credit rating process based on their own experiences. Often these were experiences of financial trouble, for example during the financial crisis. The changes were not always large organisational changes, but they still

improved their credit rating process radically. In addition they changed their process to accommodate any new regulations from the regulators.

The standard bank we interviewed has a system to assess their clients' likelihood of default. This system aims to calculate the client's ability to pay. In addition they also have a system that rate the quality of the client's collateral. They updated their models for default risk in 2009. The new model has 11 different risk categories, compared to five categories in the previous model. The model is validated every year based on actual default on the bank's loans. As many other standard banks in Norway, this bank struggled during the financial crisis. That the change came just after the financial crisis indicate that it was done based on the bank's experience during the crisis.

Another local standard bank that experienced financial difficulties during the financial crisis was Hjelmeland Sparebank. In 2012 a previous manager of the retail market, was convicted of financial fraud after lending money to a group of companies that had investments abroad. The Financial Supervisory Authority of Norway was notified of the breach of the limit for large engagements in the fall of 2008. The large engagement was a result of a breach on the personal authorisation matrix and in violation of the bank's credit policy. After an inspection in November 2008 a need for a write down of the commitment was identified. This resulted in a need to strengthen the Bank's core capital. The bank was criticised for a weak internal control in the credit allocation process and weak monitoring systems relating to securities financing. The Banks capital situation was solved by a primary capital certificate placement (FSA 2009b).

We do not have confirmation that Hjelmeland Sparebank changed their processes and systems after the inspection, but it is implied that they did since all bank are subject to the regulations governed by the Financial Supervisory Authority of Norway.

### **7.3 Changes in the decision making process**

Our research shows that the changes in the decision making process is based on both the banks own experience and new regulations. Close to all of these changes affect the borrowers, mainly in form of higher interest rates. We saw several changes in the aftermath of the financial crisis. The banks evolve through better technology and learning from past mistakes. There has been an increased focus on different risk-weights associated with engagements.

### 7.3.1. Approving engagements

During the interviews we got the impression that the process related to approving engagements have become more formalised and rigorous in the recent years. The most significant changes have occurred after financial problems in the banks. This indicates that the changes are based on experience. They are introduced to improve the existing process. Our impression is that the IRB banks reviewed their approval process during the process of getting their IRB approval.

The court case that led to the conviction of the manager of the retail market in Hjelmeland Sparebank caused a discussion in the media about the banks internal control systems.

The manager had lent money to a group of companies that had investments in real estate properties abroad. Each loan that was given was in accordance with the authorisation matrix, but the total sum of the engagements was higher than the authorisation limit. The companies did not form a group company, but they were owned by the same two individuals (Andersen 2008).

Former manager in SR-Bank, Terje Vareberg, criticised the bank's internal control system during an interview with Stavanger Aftenblad. Vareberg points out that the loans should never been authorised, certified and paid by just one person. He believes that is a fundamental principle that all loan applications are approved by a minimum of two individuals. This is not only to minimize the potential loss for the banks, but also to ensure that employees do not make serious misjudgement. Vareberg claims that if Sparebank 1 SR-bank's approving routines were on the same level as the systems in Hjelmeland Sparebank, a single employee would be able to grant loans that could possibly drain the whole equity of six billion kroner (Wigestrand 2012).

One of the IRB banks interviewed emphasise that a loan is never approved by the person that advise the loan. For small loans a colleague must approve the payment and for other loans a superior must approve.

The other IRB bank has a policy stating that they do not take collective decisions. The approval should always be linked to one person. We got the impression that these routines have been applied for several years and that they are most likely introduced based on their own experience.

One of the IRB banks states that the whole credit approving process is done in a more formal setting today. The consumers also have more rights and protection. A potential borrower must

provide a wide range of information and documents, and advisors have several reports that have to be written. The bank states that there are no implications that the degree of formality will diminish.

All the banks interviewed stated that they have an authorisation matrix for approving credit. This is based on the size of the loan and the degree of risk. The matrix is individual for each bank. However, there are some similarities; the largest loans have to be approved by the board of directors, and in the corporate market each case needs the credit committees' approval.

Only one of the banks we interviewed has changed their approval limits during the recent years. They were increased as a result of their business volume expanding. A business volume expansion indicates more employees with more competence in the credit approval committee. This shows how the approval matrix changes with business expansion. One of the IRB banks stated that their approval matrix is based both on the risk of the engagement and the amount.

### **7.3.2. Monitoring and supervision**

The interviews show that banks are more focused on monitoring their high-risk customers. Specific measures to improve monitoring were introduced during the financial crisis. Banks have also changed their monitoring of clients with an increased risk of default, as well as their process for handling clients that default on their loan. Our research indicates that the changes in monitoring and supervision of borrowers were due to the banks experience together with the economical environment. Each bank has advanced systems that notify the financial advisor if there is issued a reminder for payment of interests or instalments. Retail customers with no reminders are followed up when they require refinancing or additional loans. This happens on an average of every three and a half years.

The IRB banks also have systems that notify the financial advisors if anything unusual happens in the customer's account. For example if the salary decrease or if a large lump sum is deposited.

All the banks closely monitor high-risk corporate engagements. Key numbers from the financial statements are registered annually. These key numbers can change the default rating of a business loan. An increase in the default rating of an engagement result in closer monitoring if the new default risk put the engagement in the high-risk range. The financial advisors also keep track off any media attention their clients receive.

Specific covenants in the contract also affect the need for closer monitoring. That the client comply to the covenants set in the loan agreement were previously the financial advisors responsibility. For example if there was shares put up as collateral the covenant typically state that price of said shares cannot drop below a certain price. The financial advisor manually had to sell the shares when the price falls below the agreed price. This could be challenging as the price of shares often drop fast. Sometimes the share price would drop too low for the bank to have any chance of recovering a substantial amount of the loan. This process is now automated. The standard bank emphasise that they still have covenants in their loan agreements that need to be monitored manually, but they are more stringent when it comes to enforcing them.

When the financial crisis hit Norway one of the IRB banks had their financial advisors picking out 25 of their most vulnerable clients. Of these 25 clients between 40 and 50 clients were selected for close monitoring. By doing this, the bank got involved at an early stage and was able to help some of their clients to survive the crisis. This also helped minimise the bank's losses during the crisis.

The standard bank implemented new systems for calculating the probability of default in 2009. The new models have made client monitoring more efficient. Today the bank is able to detect negative trends at an earlier stage. Customers defined as high risk are monitored quarterly.

All the banks have also changed their routine for loans that are in default. The financial advisors were previously responsible for collecting the debt. Their close relationship made it difficult not to pity or be too optimistic on the clients' behalf. Today advisors hand over default cases to colleagues that have the relevant experience to handle these cases.

### **7.3.3 Pricing the engagement**

Our interviews show that banks have increased their focus on pricing risk when they set their interest margin. This indicates that clients the bank perceive as high-risk have to pay higher interest on their loans. IRB banks can hold a smaller amount of capital for low-risk loans, compared to standard banks holding the same amount on all loans. On the contrary the IRB banks often need to hold a higher amount of capital for high-risk loans. This influences the prices and enables IRB banks to give a lower price on low risk engagements and still have the same

return on equity as standard banks. Standard banks, on the other hand, can give a lower price on high-risk engagements compared to IRB banks.

One of the IRB banks pointed out that this difference in the pricing makes the IRB banks more competitive on low-risk engagements. On the other hand they often lose high-risk clients to the standard banks. They lost some of their more profitable clients during the reorganisation to get the IRB approval. That was because these clients had a higher risk and their models were not pricing them correctly. This caused a temporary imbalance in their client portfolio. The IRB process taught them the importance of pricing the risk correctly. The bank takes calculated risks. For example, they know that one out of 100 will receive disability benefits, and this may affect their ability repay their loan. This is accounted for in their models.

The banks often have a greater variation in interest rates for their corporate clients, compared to their retail clients. This is explained by the increased focus on the pricing of risk, but also on the exploitation of the market. Banks do business on equal terms with any other business in the sense that they want to price the engagement at the economic equilibrium. Prices from competitors, engagement risk and engagement classification are the main decision factors for the price. Prices in the corporate market are less sensitive than prices in the retail market.

The interest rates are set on the basis of each bank's individual rating system. The banks also calculate expected return on each customer. If a client uses other services the bank provides the expected return will be higher. With a higher level of return the banks can offer a lower interest rate on the loan.

Interest rate on mortgages was traditionally based on the equity ratio and collateral. While the equity ratio is still the most important factor when pricing mortgages, the banks we interviewed have stated that they also have increased their valuation of the risk the mortgage represents.

#### **7.3.4 Client portfolio**

The experiences from the financial crisis changed banks' portfolio. The banks became more concerned with risk and this made the clients they perceived as high risk less attractive. Especially loans to fund property that would be leased became less attractive.

The standard bank emphasis that the financial crisis reminded banks how quickly the market can drop. Before the crisis banks willingly lent money, and there were minimal capital requirements for the borrowers. In today's market banks put more fund in safe low risk projects instead of high-risk projects that can generate more profit. Both the standard bank and one of the IRB banks mentioned that lending money to commercial real estate companies became less attractive. These were previously long term stable contracts desirable to include in the balance sheet. One of the IRB bank previously had 25 years duration on such loans. Now they have duration of five years, with a 25 year repayment profile. The loan will be reassessed every five years, which gives the bank the opportunity to change the conditions attached. The bank now considers these engagements to have a higher level of risk, due to the real estate companies' dependence on the tenants to service the loan. These commercial real estate companies normally do not have revenue from other sources than the lessees.

The retail market also experienced changes in the portfolio related to mortgages. The branch states that they have become stricter on loans to fund clients' second or third property. These clients now have to provide a minimum of 30 percent equity.

The branch also stopped providing bridge financing during the financial crisis. This was determined by the parent company that experience more severe financial trouble in its country. This policy created difficulties for the branch's retail clients, but it was only enforced for a short period during the financial crisis.

### **7.3.5 Collaterals and covenants**

The interviews show that collateral no longer holds the same importance as it used to. For approximately a decade ago you could get a loan just with collateral, today the client's ability to pay is most important focus. In addition, some covenants are now automatically enforced.

The standard banks say that they have introduced rigorous clauses regarding loans with market shares as collateral. Before the financial crisis the bank was more hesitating with acting on these clauses. Today the system is programmed to take action if the price of shares falls.

The banks all state that the borrower's ability to pay is the deciding factor when considering credit. They also state that no one can get credit approval with just collateral today. Contrary the

banks will give loans without collateral to borrowers that have the ability to pay. The lack of collateral will be counteracted with a higher price.

The standard banks rate collateral according to its value to them and how easy it is to sell. A house is easier to sell than various machinery or inventory, and is therefore of greater value as collateral. The collateral also gives the banks an impression of to what extent the borrowers take risk. If borrower has nothing to lose it could affect the contract.

### **7.3.6 Effects of the equity requirement for mortgages on residential property**

The 15 percent equity requirement for mortgages on residential property was introduced in 2011. It aimed to slow down the growth of housing prices, and reduce the debt ratio on the mortgages. Our research shows that the requirements mainly make it difficult for first time buyers to enter the housing market.

The branch emphasised that the new equity requirement mainly affect first homebuyers. These clients are important to banks because they are in an establishing phase. They have many years ahead of them to provide revenue to the bank. The new equity requirement of 15 percent makes it difficult for young people to enter the housing market.

A survey from Finansnæringens Fellesorganisasjon shows that eighth out of ten believe that the requirement of 15 percent equity creates an undesirable class distinction between those who have financial support from others and those who do not. The survey also shows that there has been an increase from 15 to 35 % in borrowers receiving help from family when buying a property. 53 % states that they do not feel that the requirement slows down the price growth in the housing market (FNO 2012).

Our research has showed us that the client's ability to pay is the most important aspect for the bank. The equity requirement of 15 % prevents potential borrowers with good and sound income receiving a mortgage. Such limitation of access to mortgages causes customers to look for other sources of financing. The ability to obtain other sources of funding, often from wealthy parents, can create a class distinction with A and B teams in the housing market (FNO 2012).

## **7.4 Expected changes due to the new capital requirements in CRD IV**

The objective of the new capital requirements in CRD IV is to ensure that the financial institutions are solid enough to sustain losses during a recession. It is not the regulators intention to slow down the economic growth of the business sector. Our research has shown that this may be a possible outcome of the new requirements. However, this might just be temporary. In order to comply with the new equity requirements the banks have to either retain more profit by reducing dividends, issue new shares or equity certificates or increase their profits. All the banks we have spoken to wishes to increase their profits. One way they do this is by increasing their margin on loans, which then affect the borrowers.

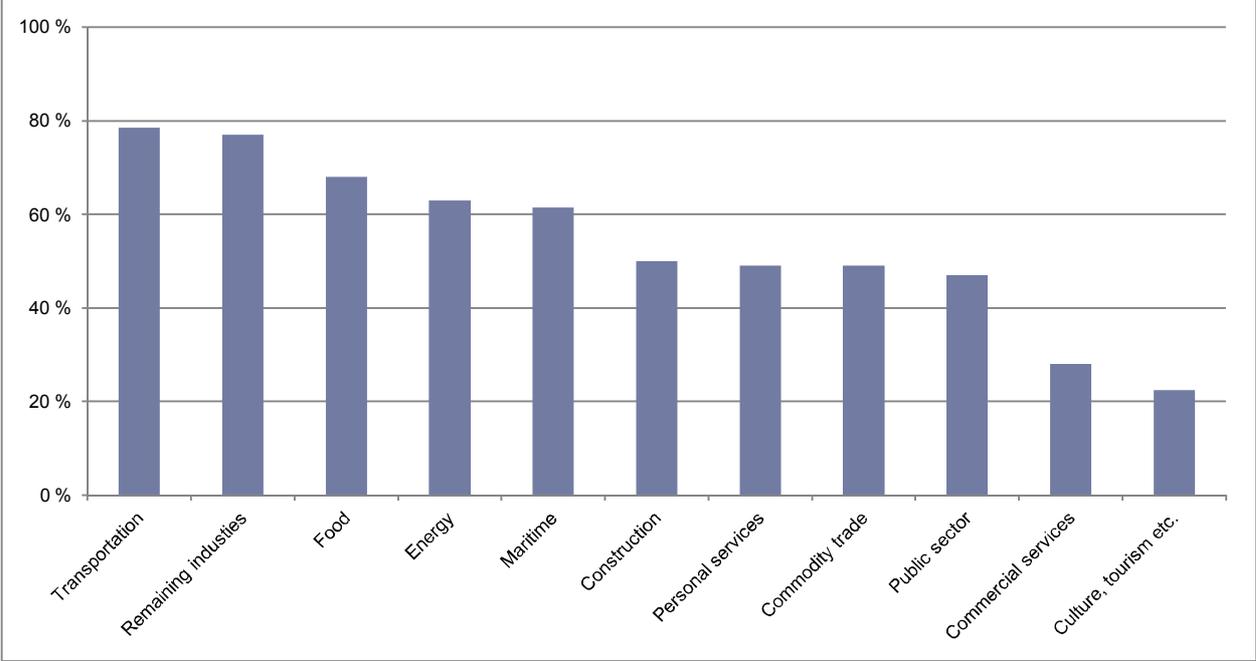
Basel III focuses on banks liquidity and funding. The banks interviewed state that they will focus on long term funding and hold more cash to increase their buffers. More funds will be put in low risk projects, instead of being used in projects with higher risk that generate higher profit. Holding more capital is therefore costly for the bank. To counteract this they raise their margins on loans.

When the banks increase their margin they do it according to the risk the client represents. Customers that the bank perceive as high risk might therefore experience at higher increase in their interest rate compared to low risk customers. The IRB banks emphasis that as a result of the stricter capital requirements they have to hold more capital for their high-risk customers. In some instances it is difficult for them to fully include this in the margin, and therefore these customers become less attractive.

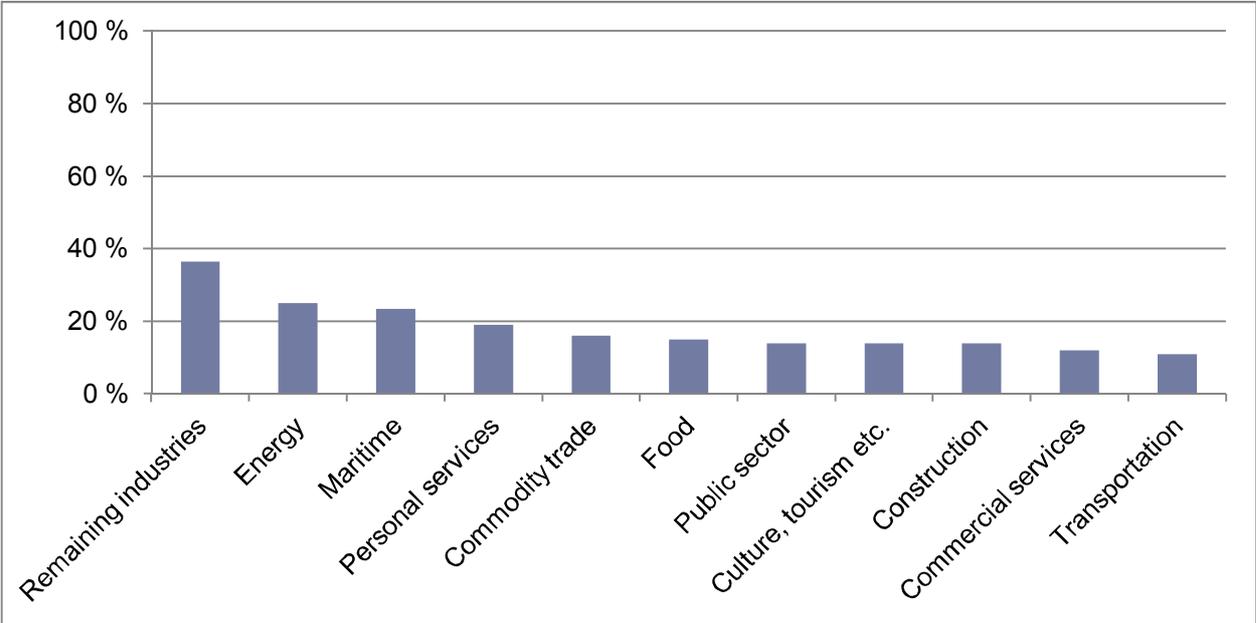
Standard banks normally have a 100 % risk weight on their corporate loans and 35 % for mortgages on residential properties, which mean that they need to hold more capital for their corporate loans. The standard bank interviewed believes that corporate loans might become less attractive due to the new capital requirement.

The banks interviewed differ in their opinion regarding the affects the new regulations will have on entrepreneurial companies. One of the IRB banks believes that these companies will not be affected. The branch on the other hand gives the impression that these may become less attractive.

A survey done by Konjunkturbarometeret (2013) in January show that about 15-25 % of business that rely on external financing, believe that their development is slowed down due to limited access to external financing. This supports our research and show that the banks are more hesitant in lending to some businesses.



**Figure 5:** Portion of companies that depend on external financing (Konjunkturbarometeret 2013, p. 27)



**Figure 6:** Portion of companies that depend on external financing and are experiencing a slowdown in their development due to limited access to external financing in some extent or large extent (Konjunkturbarometeret 2013, p. 27)

About 75 percent of businesses in other industries rely on external capital. 37 percent of these businesses state that their development is slowed down because of limitations in external financing.

Konjunkturbarometeret (2013) discuss other ways businesses can get the finance they need. One alternative is to raise capital from the shareholders, by issuing shares or receiving loans. They can issue debenture loans. A debenture loan is smaller amounts of capital that are sold to individuals, companies, banks and other institutions. Debenture loans are long-term, but the lender can still redeem the money by selling the bonds. The survey from Konjunkturbarometeret (2013) also states that the banks reduced lending have led to an increase in demand for debenture loans. However, it is mainly larger companies that qualify for the debenture loans.

According to a working paper written by Slovik and Cournède (2011), Basel III will have an estimated medium-term impact on Gross Domestic Product growth ranging between -0,05 to -0,15 percentage point per annum. The main reason for the decline in economic output is explained with an increase in bank lending margins as banks have higher funding costs due to higher capital requirements.

## **8. Criticism of the regulations imposed on the banks**

The aim of regulatory requirements is stable and safe bank which is important to the survival of banks. However, there has been a fair amount of criticism concerning the need for the increasingly complex regulations.

The IRB banks we interviewed were positive to the new regulations. Nevertheless they press the importance of not having too complex regulations, and that the regulations need time to be implemented.

One of the IRB banks interviewed also pointed out that competition between banks have been the driving force in emphasising risk management, not the regulations. The Financial Supervisory Authority of Norway requires that banks hold enough capital to survive a recession, while banks focus on reducing the probability of defaults.

### 8.1 An evaluation of current risk models

The Norwegian banks use one of two methods when calculating risk weights, the Standardised Approach or the Internal Rating-based Approach. Neither of the IRB banks we interviewed have not had any substantial changes in their credit rating system after they got the approval to use the IRB approach. This indicates that they believe their system and models are satisfactory in predicting risk.

The IRB banks we interviewed told us that they have not had any substantial changes in their credit rating system after they got the approval to use their internal models to calculate their risk weights. This indicates that they believe that their system and models are satisfactory. We then expected the comparative analysis of IRB banks and standard banks to support this. However, the graphs suggest that while the standard banks have higher losses, they price their engagements to account for this.

An analysis of the key figures in IRB banks and standard bank over a longer period of time, and in further detail might have given other data to support the assertion made by the IRB banks. This analysis is therefore not sufficient to make a final conclusion on this matter.

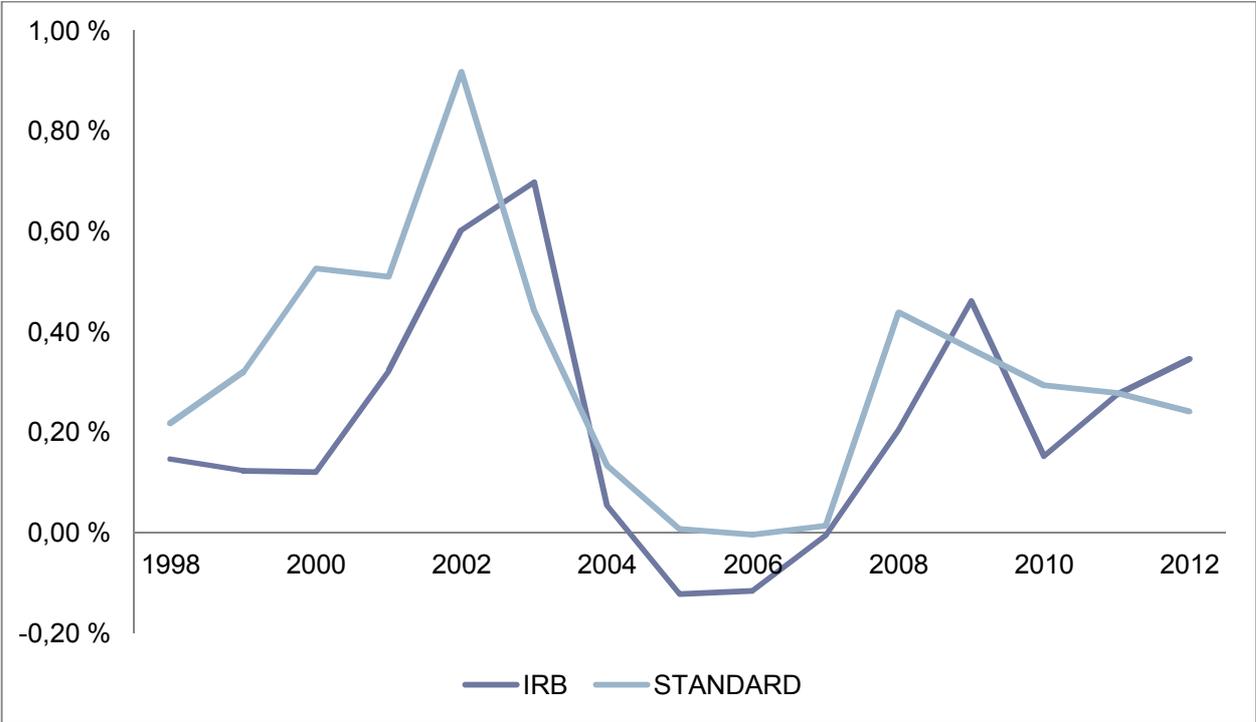


Figure 7: Loan losses in Norwegian banks in percentage of total loans for the period 1998-2012

The graphs demonstrate the cycles of the banks losses. We see an increase in losses in 2001-2003 that was due to the dot com crisis (Beattie) and the bankruptcy of Finance Credit Group AS. The bankruptcy of Finance Credit Group AS caused a loss in the Norwegian banks of about 1,4 MNOK (SNL 2013b).

After the recorded losses in 2001-2003 we see negative losses. Recognised loan losses consist of confirmed losses and changes in the impairment provision. A negative recognised loss mean that the bank have reversed previous impairments.

One of the IRB banks point out that loan losses in the banks follow the business cycle. Before the financial crisis they did not record any losses, they received payments on previously impaired loans. During the financial crisis they went back to the expected level of loan losses. The banks have to accept some risk when they lend money, and it is therefore expected that they have some loan losses. The IRB bank did not have any large loan losses during the financial crisis. The loan losses they experienced were according to the expectation their models calculated. The bank also pointed out that several of the standard banks in Rogaland experienced severe financial trouble during the financial crisis, and that 25 Danish standard banks went bankrupt. Their impression is that the standard banks are always overrepresented among the banks in financial trouble.

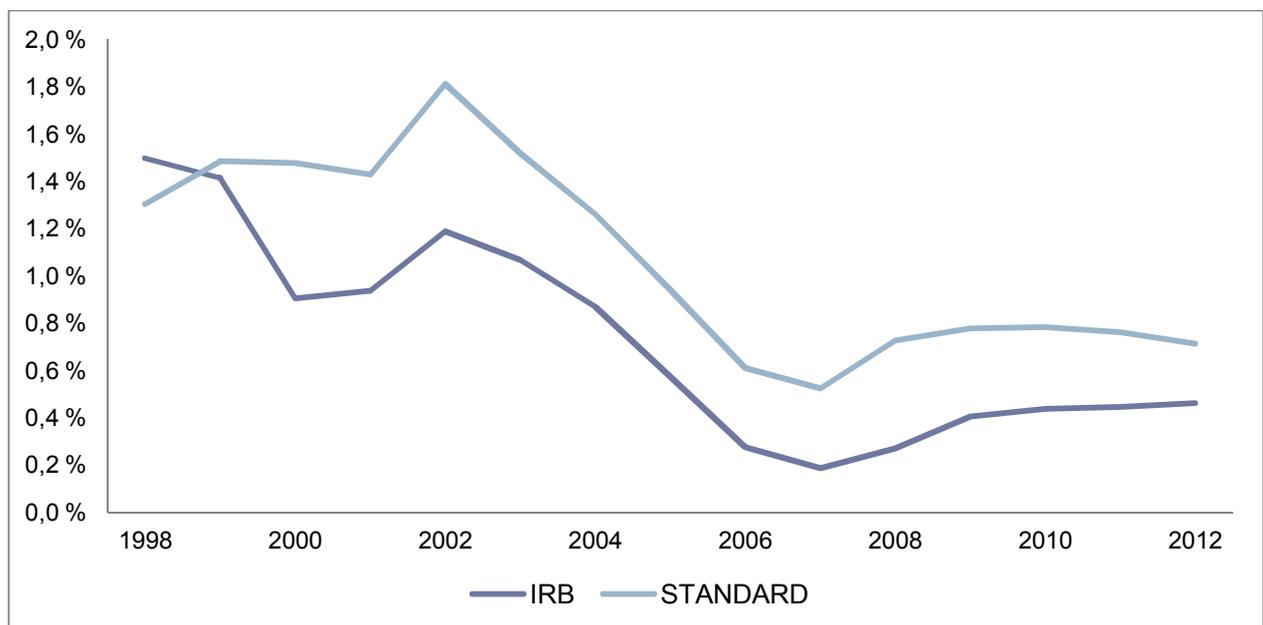
The graphs show that the losses in IRB banks are lower than the losses in the standard banks. For the period from 1998 to 2012 the loan losses in percentage of total assets were 44% lower in the IRB banks than for the standard banks. This is supported by the loan loss provision:



Figure 8: Loan loss provision in Norwegian banks in percentage of total loans for the period 1998-2012

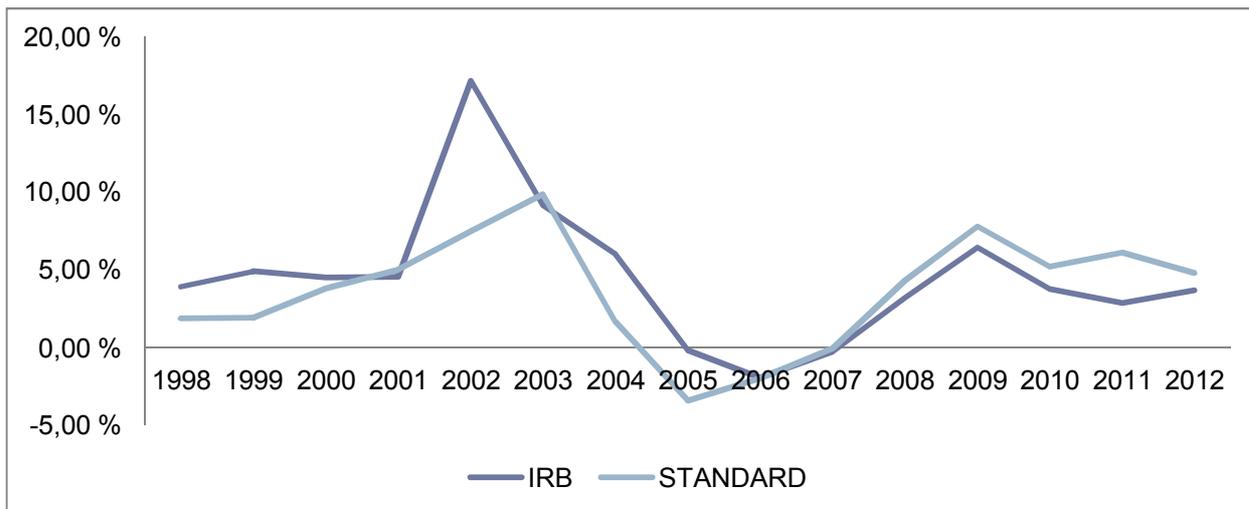
Here we can see that the provisions are the same for the two groups for 2012. This is due to a decrease in the loan loss provision for standard banks and an increase in the provision for the IRB banks. The increase for IRB banks are caused by changes in the balance sheet for two banks. One bank have an increase in the provision of 20,7% while the increase in total loans is just 0,4%. The other bank has a decrease in total loans of 9,4% with an increase of the provision of 1,1%. The average difference between the two groups for the period is 26%.

If we look at the loan loss provision in percentage of total assets we see a total difference between the IRB banks and standard banks of 48 % for the period.



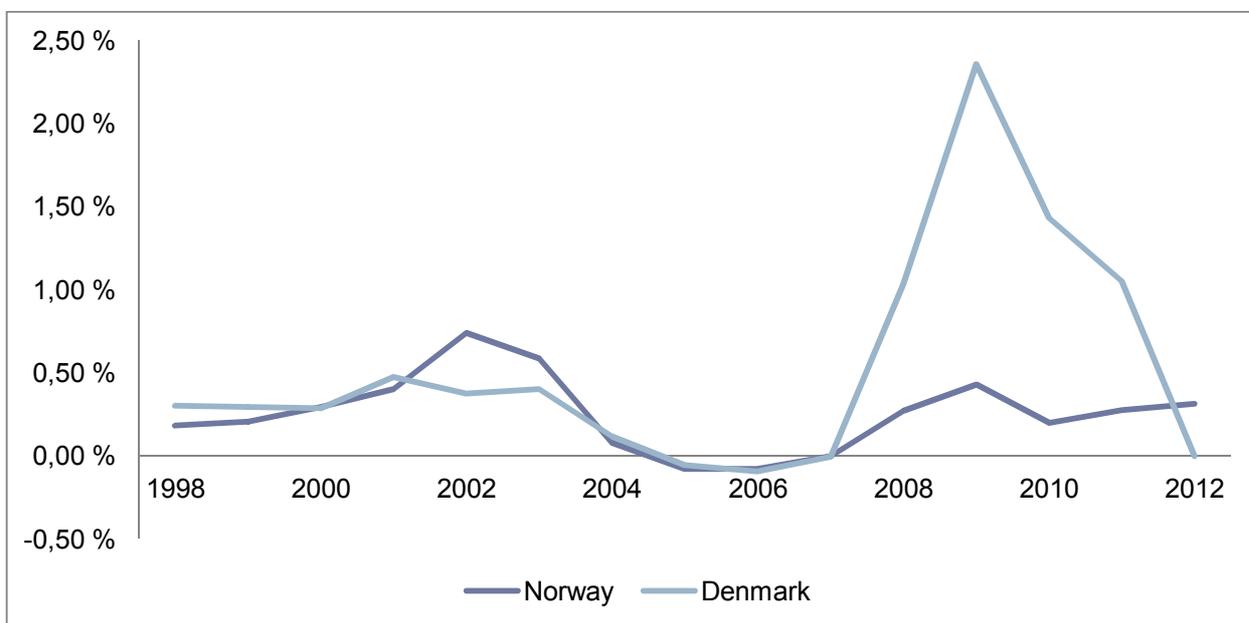
**Figure 9:** Loan loss provision in Norwegian banks in percentage of total assets for the period 1998-2012

Both the difference in loan loss and the difference in loan loss provision support the statement from the IRB banks that their models are satisfactory in calculating risks, and that standard banks experience higher losses. However, they have also said that the standard banks are more competitive on high-risk engagements. A review of the recorded loan losses as a percentage of income reveals that the average recorded loan loss for IRB banks for the period was 4,53 %, 25 % higher than for the standard banks average for the period of 3,62 %. This indicates that the standard banks might be better at pricing the high risk for their portfolio.



**Figure 10:** Loan losses in Norwegian banks in percentage of income for the period 1998-2012

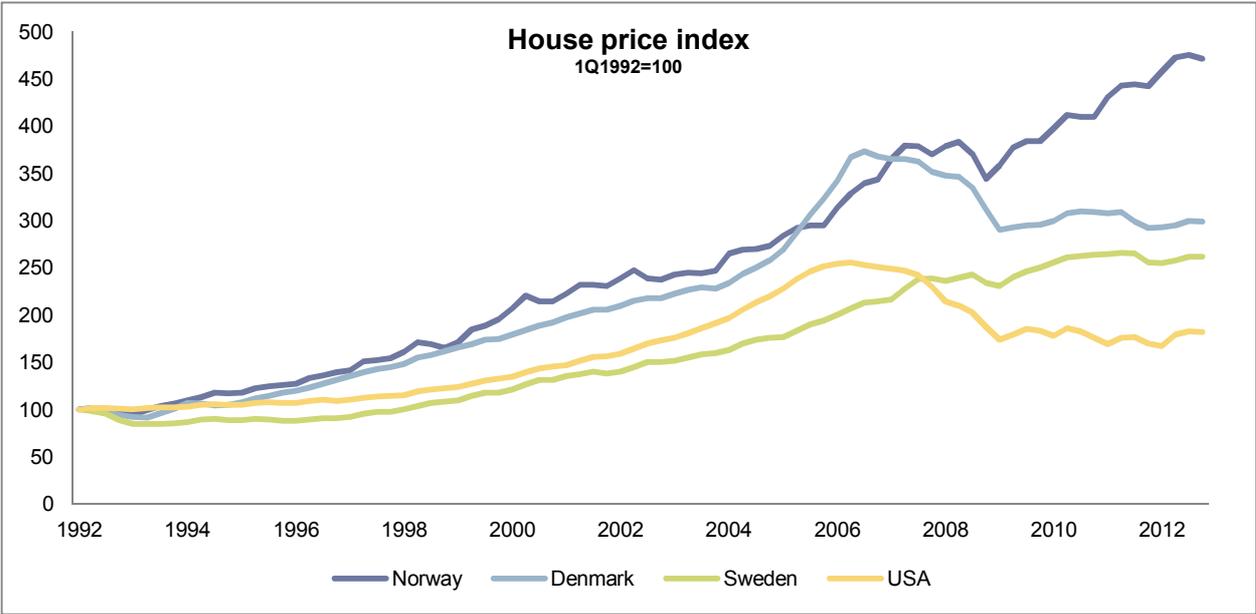
This analysis is not detailed enough to make a final conclusion on whether the IRB banks have systems that are better than the standard banks. If we compare loan losses in Norwegian bank to loan losses in Danish banks for the last 14 years we see that Danish banks have significantly higher losses during the financial crisis:



**Figure 11:** Loan loss in percentage in percentage of total loans for Denmark and Norway (Graphs are developed based on data from FNO, The Norwegian Savings Banks Association and DST 2013)

Further on, a comparison of the house price index for Norway, Sweden, Denmark and USA show that while the house prices dropped significantly in both Denmark and USA, Norway just experienced a small temporary drop in the housing prices. We also see that house prices in Norway increase more rapidly than in any of the other countries.

These graphs show that there was not a proper crisis in Norway. This might also be the reason why the Norwegian IRB banks got through the financial crisis without any financial trouble. The first IRB banks in Norway received their approval in 2007. Since there has not been any crisis in Norway after their implantation it cannot defiantly be said that their systems are sufficient in predicting credit risk.



**Figure 12:** The house price index for Norway, Denmark, Sweden and USA for the period 1992 to 2012 (1992=100) (Graphs are developed based on data from SSB, DST, SCB and S&P 2013)

**8.2 The degree of complexity**

One of the banks we interviewed emphasised the importance of not creating excessively complicated regulations. Stein Klakegg, managing director in Sparebanken Vest, supports this statement in an article in Dagens Næringsliv 2013. He questions the importance of complex regulation imposed on small savings banks in Norway. These are banks that are not a threat to the global economic market compared to large international banks. When the financial crisis hit the largest international banks were about ten times as large as Norges Bank. Klakegg questions the comparability these banks have to small savings banks (Flæte 2013).

When the Basel regulations were first introduced it consisted of 30 pages, it is now an imposing several thousand pages. Klakegg questions the ability to regulate and control the few large banks that are a threat to the international market. These banks are so complex that this is difficult to do (Flæte 2013).

Naill Ferguson, a British historian, also criticizes the modern banking regulations in a BBC podcast “The Rules of Law and its Enemies” 26 June 2012. Ferguson states that complex regulations can have the opposite effect from what is intended. The biggest disasters in relations to the financial crisis were seen within the most regulated financial institutions. The financial crises normally originate from within the system. The regulated framework is also created from within the system. This framework holds an intelligent design, but Ferguson questions how intelligent it really is. Regulations are very complex and often contradictory. He also asks the question of who regulate the regulators. Ferguson’s solution is to strengthen the central banks as the ultimate authority in both the monetary and supervisory systems. He also wants to insure that those in charge are apprehensive and experienced, so that they will act when they see excessive credit growth and asset price inflation. The central bank should be given considerable breadth in their use of the central banking tools of reserve requirement, interest rate changes and open market securities, purchases and sales. He also emphasises the importance of teaching them financial history.

His last principle is the principle that is most different from today’s actions. Ferguson wants those who fail and do not follow the regulatory authority to pay for their transgressions. After the financial crisis banks were given loans at a low interest rate. No one pays for their mistakes. None of the banks we interviewed mentioned any desire for tougher sanctions.

The Financial Supervisory Authority of Norway also states that the focus has been on regulating the financial industry, and that there has been a lack of focus on supervision. The complexity of the financial system makes it impossible to have regulations that take into account all possible situations that can arise. Supervision must ensure the flexibility that the regulations cannot cover in an efficient manner (Steffensen 2012).

### **8.3 Regulations and human failure**

Banks loan losses can be caused by human failure. These losses will be hard to prevent with regulations. The most common mistake is to overestimate the client's income, an underestimate their expenditure. Assessment of the borrowers' personality is an important element in the credit approval process. The majority of borrowers have personal meetings with their financial advisors. During these meetings the financial advisor gets an impression of the borrower.

One of the IRB banks states that an assessment of the managing director in entrepreneurial companies is one factors being considered during the credit approval process. The financial advisors also make assessments about the market the businesses operate in. Such reviews can greatly vary from person to person. It is easy to become too optimistic on the clients behalf if you get a good impression.

## **9. Conclusion**

The objective for this thesis was to examine the extent to which changes in the evolving environment affect banks assessment of borrowers in practice. Based on our research we can conclude that close to all changes affect borrowers, but perhaps not as intended.

Basel II gave banks the opportunity to calculate their capital requirements using the Internal Rating-based approach. Our research has showed that the banks converting to this method made evolutionary changes to the credit rating process during the conversion. After the conversion the IRB banks have not had any substantial changes to their credit rating process. The banks using the Standardised Approach to calculate their capital requirements have made more radical changes to their credit rating process in recent years. These changes are mainly based on the banks own experience from periods with financial difficulties.

Our research indicates that there have been more changes to the decision making process for both IRB banks and standard banks. These changes are due to changes in the regulatory environment, as well as changes based on the banks own experiences.

Most changes done to the credit approval process affect the borrowers. Many businesses experience increased difficulties in getting financing from the banks. In addition all banks we interviewed state that they have increased their interest margin due to the new capital requirements in CRD IV. Current research shows that some businesses have experience difficulties in getting external finance from banks. However, as long as there is a supply of capital in other markets, the impact on economic growth will be short-term.

Our research shows that the changes in regulations are being introduced too late. Basel III is for example introduced after the financial crisis, with the intention of preventing a banking crisis in the future. Furthermore, our research shows that there was not a real financial crisis in Norway. Because of this we cannot substantiate the assertion made by the IRB banks that their models are satisfactory in predicting risk.

If we extended our research out of the Stavanger region we might have gotten an even better understanding on how the evolving environment impact banks assessment of borrowers. In addition we would have liked to have interviewed more standard banks. We did contact all the standard banks in the region, but only one of them wanted to take part in our research. We still believe that our research is sufficient to conclude that practically all changes in the bank's credit approval process affect borrowers to some extent.

An interesting aspect for further discussion is the actual need for regulations in the banking industry. During the banking crisis in Norway several banks was saved from bankruptcy by the government. This implicates that if this happens again the government will help the banks survive. If the banks were left on their own they might have learnt more from this experience and recognised the need for higher capital buffers.

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## **10. 1 Legislation**

The Commercial Banks Act 1961

