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**Different regulatory regimes and banking crises -
The role of moral hazard**

A comparative study on European and U.S. banks

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A handwritten signature in black ink, appearing to read 'FOL', with a long horizontal stroke extending to the right.

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Abstract: Since 1988 there have been international attempts to regulate banks with the Basel Rules; despite these international efforts to regulate banks within the Basel Rules, the rules have been insufficient. The financial crisis of 2008 highlighted the importance of regulatory oversight in the banking sector. The crisis resulted in strengthened regulatory approaches worldwide, within the USA and Europe, adopting various liquidity and capital regulations to avoid future mistakes. Later on, bonus regulations were also implemented to avoid future extensive risk-taking. However, the recent bank crises, such as the collapse of SVB and other financial institutions, demonstrate that banking regulation is essential to prevent misconduct. For instance, in 2018, the American government decided to roll back the Dodd-Frank Act that was implemented after the financial crisis, which may have weakened the regulatory framework for the US banking sector and been a pivotal part of the new bank crises.

This thesis explores how different approaches to regulating banks lead to different outcomes and how moral hazard affects these decisions. Through the theoretical framework of moral hazard, the thesis analyzes the impact of liquidity regulations and bonus caps on the behavior of banks in Europe and the United States. The study finds that the absence of a bonus cap in the US may increase the risk of moral hazard, as management teams and boards are more incentivized to take higher risks. In contrast, Europe's bonus cap system is designed to minimize the personal gain of taking chances on behalf of customers, stock owners, and taxpayers, therefore abstracting moral hazard from the calculation. Additionally, the study reflects on the impact of a risk-based regulatory approach and different liquidity regulations and how tighter liquidity regulations may reduce the risk of moral hazard, as they limit the ability of banks to engage in excessive risk-taking behavior. The study also shows what will occur if the authorities increase the liquidity regulations and implement more restrictions on the sector. Overall, the study contributes to the ongoing debate about the optimal regulatory approach for the banking sector and the effects of moral hazard.

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Abbreviations

EU	-	European Union
US	-	United States
RQ	-	Research questions
SVB	-	Silicon Valley Bank
OECD	-	The Organisation for Economic Co-operation and Development
EBA	-	European Banking Authority
LRC	-	Liquidity Coverage Ratio
NSFR	-	Net Stable Funding Ratio
CRR	-	Capital Requirements Regulation
CET 1	-	Common Equity Tier 1
BRRD	-	Bank Recovery and Resolution Directive
CRD	-	Capital Requirements Directive
SEB	-	Skandinaviska Enskilda Banken
SHB	-	Svenska Handelsbanken
FDIC	-	Federal Deposit Insurance Corporation
OCC	-	Office of the Comptroller of the Currency
RWA	-	Risk-weighted asset
SLR	-	Supplementary leverage ratio
CLAR	-	Comprehensive Liquidity Analysis and Review
CRV4	-	Capital Requirements Directive IV
SEC	-	Securities and Exchange Commission
CEO	-	Chief Executive Officer

FED	-	Federal Reserve System
MBS	-	Mortgage Backed Securities
CMBS	-	Commercial Mortgage Backed Securities
CFO	-	Chief Financial Officer
ROE	-	Return on Equity
HTM	-	Hold-to-maturity
AFS	-	Available-for-Sale
P& L	-	Profit and loss Statement

1. Introduction

1.1 Background

The banking sector has always played a critical role in the global economy, facilitating financial intermediation, capital allocation, and economic growth. However, after the financial crisis in 2007-2008, the sector showed several challenges and risks within the industry. The crisis raised many global concerns about how to manage the financial stability and integrity of the market. One of the prominent issues was the presence of moral hazard within the industry, which can potentially threaten financial stability as it impacts the decision-making processes.

The concept of moral hazard has been described since the 18th century when it was used in the insurance industry; in the 20th century, the term started to be used in the banking industry. In 1979, Bengt Holmström wrote the book "Moral hazard and observability" in which he refers to a situation where banks take excessive risks, knowing they are shielded from the consequences of their actions. The unreasonable risk-taking is created from a misalignment of incentives, where the banks' compensation structure is guided towards prioritizing short-term profitability over long-term stability. These incentives from the bank as bonus structures are tied to short-term performance leading to bankers pursuing high-risk strategies to reap the benefits and not bear the potential losses of their endeavors. If no moral hazard is mitigated in the banking sector, it can lead to careless decision-making and potential devastation.

In light of these challenges, different regulatory frameworks and policies have been implemented to try and mitigate the risks associated with moral hazard in the banking sector. This thesis focuses on the interaction between regulatory approaches to moral hazard and assesses whether the regulations implemented are as effective as intended.

When explaining how moral hazard affects different regulations, the thesis will focus on the effects on liquidity, capital, and bonuses regulations as it is too comprehensive to consider every regulation. The thesis will also showcase the differences in regulatory approaches to moral hazard by comparing the US and the EU.

Regarding liquidity and capital regulations, it aims to ensure that banks maintain sufficient liquid assets and capital to withstand periods of financial stress. It plays a crucial part in

restraining banks so they manage their risk profiles effectively. The findings in this analysis explore how a risk-based versus a non-risk-based approach affects moral hazard. Another crucial area of focus in the thesis is the bonus cap regulations and how effective they are or even if they are effective in mitigating moral hazard. The key findings section will then review the potential adverse effects of bonus cap regulation as increased risk-taking or worse financial results. The analysis will also include the opposite side, the possible positive outcomes.

The comprehensive analysis of these regulatory approaches and their implications for moral hazard gives valuable insight into the complex market dynamics between risk-taking behavior and the correlation to financial stability. Overall, the findings emphasize the need for ongoing evaluation and adaptation of the regulatory frameworks to effectively address moral hazard risks within the banking system.

1.2 Problem Discussion

Moral hazard arises when one party takes extensive risks knowing he is protected against any risk as the other party will incur the consequences of his actions. The moral hazard problem has been widely discussed and studied in both academic literature and real-world context. Some of the existing literature included in the thesis is Holmström studies of the foundations of moral hazard (Holmström, 1979), the empirical research by Colonnello, Koetter, and Wagner if bonus caps help mitigate moral hazard (Colonnello et al., 2018), and Sousa's research "Too Big to Fail: Moral Hazard and Unfair Competition?" (Soussa, 2013) all this highlights critical issues and challenges related to moral hazard and its impact on the banking sector. However, the literature on moral hazard tends to concentrate primarily on specific areas or surrounding particular circumstances related to moral hazard. Nevertheless, what is missing in the literature is whether today's regulation is enough to mitigate moral hazard risks.

In Holmström's studies "Moral hazard and observability" and "Moral hazard in teams" he focused on the concept of moral hazard and provided a theoretical foundation for understanding the risks associated with asymmetric information.

The empirical study by Colonnello, Koetter, and Wagner focuses on the effectiveness and inefficiencies of compensation regulation concerning moral hazard. The problem addressed is that specific regulatory measurements may have unintended consequences.

The research "Too Big to Fail: Moral Hazard and Unfair Competition?" by Soussa primarily focuses on what happens if a business becomes too big or integrated into the financial system that its failure would be disastrous to the overall economic system and how it leads to moral hazard.

From all the studies shown throughout this report, it is clear that regulatory approaches to risk-taking behavior affect the occurrence of moral hazard within the banking industry. Nevertheless, no empirical papers have been published about whether the regulatory methods used in today's society are sufficient to mitigate the risk of moral hazard and explained how effective the different regulatory strategies within the US and Europe are in mitigating moral hazard.

1.3 Purpose

This thesis investigates and analyzes how moral hazard can undermine regulations and which regulatory approach is better suited to prevent moral hazard. The thesis will base this analysis on the regulations of bonus caps, risk-based capital, and liquidity regulations in the US and Europe.

Overall, by capturing the essence of moral hazard within the banking sector, the thesis seeks to contribute to the existing literature and provide insights on how to mitigate moral hazard to create stability in the banking industry. Hence, the research questions (RQs) are formulated to address the purposes of this study.

RQ1: What are the underlying mechanisms of moral hazard in the banking sector, and how do they interact with regulatory approaches?

RQ2: Are the regulatory approaches used in today's society working to mitigate the risk with moral hazard, or are they counteracting?

2. Theoretical framework

This chapter explains the theoretical background on which the study lies and serves as the basis for the analysis within the thesis. The chapter includes the aspects of the banking sector, regulatory differences between Europe and the US, a case study of SVB, and moral hazards' effect on banking.

2.1 An introduction to the Banking Sector and Regulatory Approaches

The banking sector is a crucial factor in the global economy and provides different financial intermediation services, such as the possibility to loan money or help with savings and investments. These different services allow our economies to grow and help us facilitate development in the world (Hartmann et al., 2018). However, because the financial sector and the global economy rely so heavily on banks, the financial system is vulnerable to different risks. Therefore it is essential to try and mitigate the various risks within the banking sector, like credit, liquidity, market, and operational risks, that can significantly impact financial stability and the broader economy. The result of mitigating these risks is implementing various regulations to promote safety within the banking sector, all implemented by governments and financial regulators worldwide (Financial Stability Board., 2019).

Basel Committee, international banking regulations, and supervisory practice go back to 1974. The Committee was established to enhance financial stability by improving the quality of banking supervision worldwide. Since its inception, the Basel Committee has expanded and strengthened both framework-wise and regarding membership. Today the Committee consists of 45 institutions from 28 jurisdictions; the US and the European Union are members of the Basel Committee.

The Basel regulations are considered the most comprehensive international banking system regulations. The Basel Accords can be broken down into Basel I, Basel II, Basel III, and Basel IV. According to the article "Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems" (2011) the Basel Accords were formed to create an international regulatory framework for managing credit and market risks. Their key function is to ensure that banks hold enough cash reserves to meet their financial obligations and survive in financial and economic distress. They also aim to strengthen corporate governance, risk management, and transparency.

Compared to the simple leverage ratio regulations, which existed in several national regulations in the 1980s, the Basel I standard was already risk-based. According to Basel I, banks had to apply four risk buckets for weighing their assets and determining their regulatory capital requirements. A simple explanation of a risk-based approach in contrast to a non-risk-based approach is that capital requirements are based on the bank's risks rather than fixed based on total assets. The risk-based approach evolved over the years, and Basel II allowed banks with high-level risk management to use their internal models for capital requirement calculations.

The main characteristic of pre-crisis banking regulation was its increasing reliance on banks' internal risk-management models. This was based on the assumption that banks are much more familiar with and can more accurately measure the risks they are taking on than regulators. However, it was first in 2008, when the global financial crisis occurred, that highlighted the importance of regulatory oversight in the banking sector. The result was new ideas for regulatory approaches worldwide. A shift towards more strict capital and liquidity regulations and a non-risk-based approach was agreed upon through Basel III. Restrictions and floor caps on internal models and leverage ratios were introduced (Duignan, 2023).

Despite Basel international standards, banking industry regulations vary depending on the country and jurisdiction the bank is under, including governance regulations, liquidity and capital requirements, stress testing, and bonus cap regulations. These regulations all aim to ensure that the bank has sufficient corporate governance, solvency/liquidity, manages its risks effectively, and avoids excessive risk-taking and spillover effects on governments or its taxpayers (Basel Committee on Banking Supervision, 2011).

Furthermore, there are also differences between rules-based and principles-based regulation. Rule-based regulations are more direct and use specific statements to define the requirements needed. They are generally focused on one specific area and will use quantitative terms. They are also more used in emerging markets because they are easier to enforce and provide more apparent guides on what is allowed. Principles-based regulation uses a general statement that captures the spirit of the regulation rather than exactly explaining it in quantitative terms. Therefore, the statement often contains both explanations of the intent behind the principle and qualitative rather than quantitative terms. Principles are designed to be applicable across a wide range of circumstances and, therefore, more appropriate for advanced financial markets as in today's society, where the landscapes change constantly (Black et al., 2023).

This thesis will uncover rules-based and principles-based regulation and a risk-based capital approach versus a non-risk-based capital approach. By examining these regulatory approaches and their impact on outcomes in the banking sector, this thesis aims to provide insights into how regulatory frameworks can be looked upon from a moral hazard point of view (Duignan, 2023).

2.2 The Concept of Moral Hazard in the Banking Sector

The concept of moral hazard in the banking sector is a constant issue and has often been a significant part of the system's financial instability. When referring to moral hazards within the financial industry, it refers to the fact that one party has the opportunity to take excessive risks because they are protected from the consequences of those risks by another party. Moreover, they are encouraged to take these risks in many scenarios to yield higher returns for the banks and, therefore, receive bigger bonuses (Holmström, 1979). Therefore, the question is, why do moral hazards occur, and why are those who take these significant risks protected? The easy response is that moral hazard arises when the regulations are not robust enough, and there is no consequential thinking within the banks' management team and steering committees. In the past, governments have saved banks in distress because the sector is such a vital part of the financial system, and if they were to go under, it would impact the entire financial system. The bank's knowledge that the government will cover them might also encourage the banks to take up excessive risks.

The concept and implications of moral hazard have been studied thoroughly in economics and finance literature. One of the most prominent examples that create moral hazard is the theory of "too big to fail," which was introduced by the United States Comptroller of the Currency Stewart McKinney, in 1984 in the article "Inquiry into Continental Illinois Corp. and Continental Illinois National Bank,". The article explained that the failure of certain big banks in the US would have massive adverse effects on the financial system and that these impacts would be too considerable for the authorities. The result is the guarantee by the authorities to support specific major banks should they approach insolvency due to excessive risk-taking. The result of "too big to fail" has been criticized on many occasions as it creates a basis for moral hazard, as the banks do not see a significant downside. The risk is not present for the bank, so they will try to capture the highest return possible even if the risk is significantly more considerable (Soussa, 2000).

The concept of moral hazard will also be considered when referring to bank bonus structures. If employees receive large bonuses when increasing earnings without being held

accountable for losses, the bonuses most likely incentivize the employees to take on excessive risks. The higher risk taken within the bank can lead to a misalignment of incentives between its stakeholders and customers. The management team now prioritizes its interests over the bank's long-term interests and its customers (Murphy, 1999; Holmström, 1982).

As this thesis depicts, moral hazard can significantly impact the banking sector. Financial regulators have implemented a range of regulatory measures to mitigate these risks, like stricter risk-based capital requirements, bonus caps, personal responsibility for the board members, and the removal of government guarantees for certain types of risk-taking (Basel Committee on Banking Supervision, 2011). Nevertheless, the question remains whether these measurements are enough, especially in retrospect to the recent crises with SVB and the banking sector.

Therefore, this thesis aims to provide a better understanding of regulatory oversight in promoting financial stability and preventing future crises from the financial theory of moral hazards.

2.3 Liquidity and Capital Regulations

2.3.1 International standards

Basel I introduced regulations for how much capital banks must keep based on the risk level of their assets. Risk-weighted assets refer to an asset classification system used to determine the minimum capital banks should keep as a reserve to reduce the risk of insolvency. Banks face the risk of loan defaulting or investments flatlining, and maintaining a minimum amount of capital helps mitigate the risks. Basel II shifted to an even more risk-based approach by refining the definition of risk-weighted assets and introducing credit scoring to calculate whether a bank meets its capital requirements. Risk weighting is intended to discourage banks from taking on excessive amounts of risk regarding the assets they hold. Basel II led to using internal models based on the bank's own statistics to measure risk.

In the aftermath of the financial crisis in 2008, the need for a fundamental strengthening of the Basel framework became apparent, and Basel III evolved. Too much leverage, inadequate liquidity buffers, and poor governance and risk management resulted in new international standards in 2010. Banks now have to comply with three types of capital requirements; risk-based capital requirements using internal models, capital requirements

under the new floor caps for risk-weighted assets, and non-risk-based leverage ratio requirements. These three capital requirements act as three parallel requirements meaning that banks must have more capital than the larger of the three gives at hand (OECD, 2021; Basel Committee on Banking Supervision, 2023).

As mentioned, the standards are constantly changing, and Basel IV applies from 1 January 2022 but is expected to take five years to fully implement (Basel Committee on Banking Supervision, 2023). Policy decisions by the Basel Committee are published mainly in the form of; standards, guidelines, and sound practices. Standards are the minimum requirement for member jurisdictions. Even though European countries and the US have the same international standards, the national regulations may differ (Basel Committee on Banking Supervision, 2023).

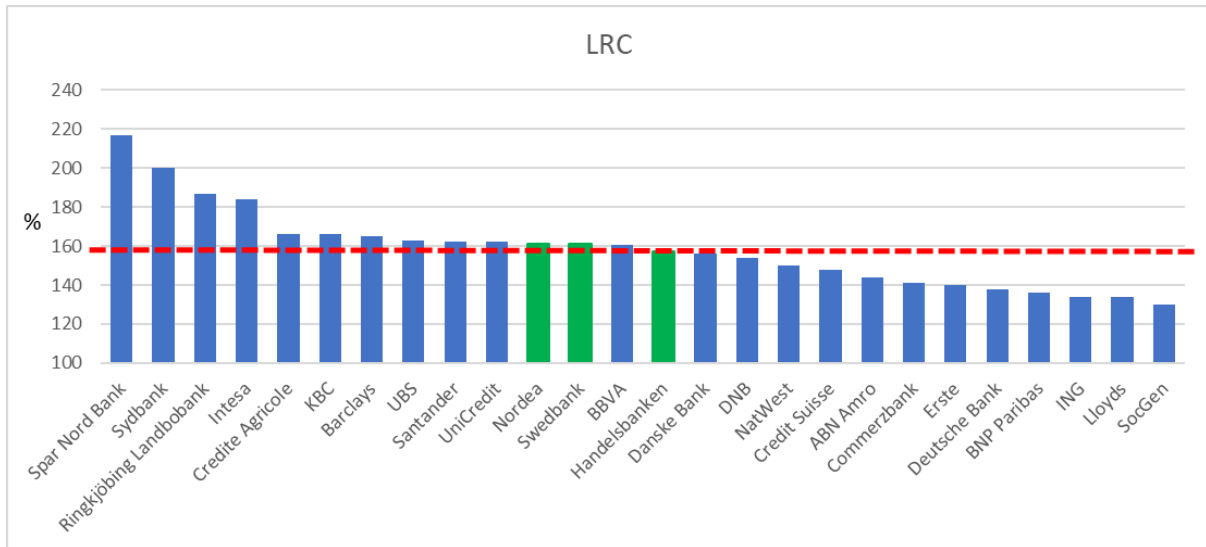
2.3.2 Liquidity and Capital Regulations in Europe

First and foremost, it is essential to note that despite the same regulations within the European Union, European countries have implemented different national regulations; therefore, this is not a precise reflection of European bank regulations. However, to best reflect the sector within Europe, this paper will first focus on the European Banking Authority (EBA) and what other regulations Sweden has above the EBA standards and guidelines (European Banking Authority, 2016).

The EBA plays a key role in implementing the Basel framework in the EU. They have implemented various binding technical standards (BTS), guidelines, and reports within the banking sector to try and preserve safety and stability within the European banking sector. In these regulations there are various liquidity regulations to ensure that the banks maintain adequate liquidity buffers and capital to withstand any financial stress (European Banking Authority, 2016).

One of the key liquidity regulations is the liquidity coverage ratio (LCR). The LCR ratio ensures that credit institutions can maintain a sufficient liquidity buffer when suffering a net liquidity outflow under a high-stress period of 30 days. This means that the banks need high-quality liquid assets that can be easily converted into cash to cover their net outflows. The regulation ensures that banks have sufficient liquidity during bank stress or possibly a bank run (European Banking Authority, 2017). The graph below demonstrates the average LCR for European banks and highlights the Swedish banks, which are collectively around the average.

Graph 1: LCR for European banks



Source: Company reports (2022)

In addition to the LCR, the EBA has also implemented the net stable funding ratio (NSFR). The NSFR aims to promote resilience over a longer time by incentivizing banks to fund their activities with more stable sources instead of relying on short-term funding sources. Maintaining a stable funding structure is essential for the long prosperity of banks (Bank for International Settlements, 2023).

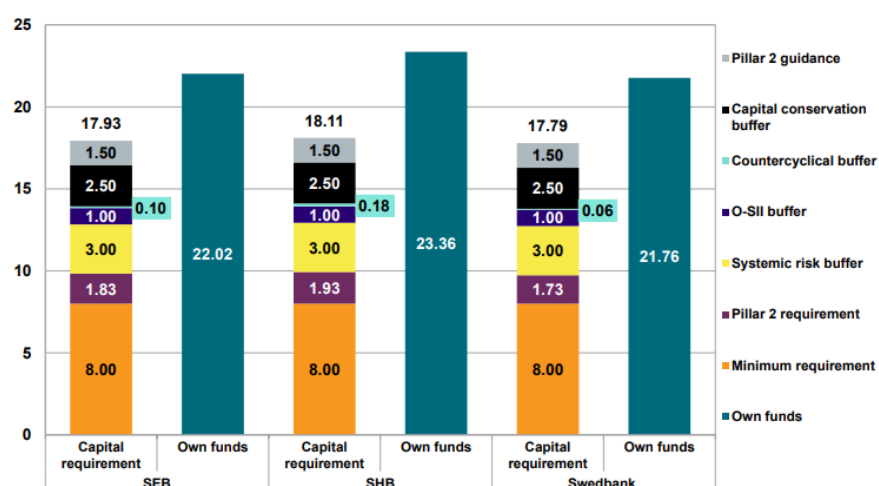
The capital requirements regulation (CRR) is set in place to ensure that the bank's holdings are not increasing the risk of default and that the bank has substantial capital to sustain operating losses. In the EU, the minimum capital requirement for banks lies at 8% of risk-weighted assets, with a common equity tier 1 (CET1) capital ratio of at least 4.5%. The (CET1) capital ratio of at least 4.5% is taken from the Basel Committee framework, which is implemented globally. In addition, the Basel III framework also introduced an additional buffer, the capital conservation buffer, which requires banks to hold an additional 2.5% of CET1 capital. Therefore the total minimum CET1 capital ratio is 7% in Europe and the US. However, there are additional buffer requirements in Europe depending on the banks' size, systemic importance, and risk profile (European Banking Authority, 2012).

In addition to CRR, the European Union has established a framework for recovering and resolving failing banks, bank recovery, and resolution directive (BRRD). The directive sets out rules and procedures to ensure the orderly resolution of banks, mitigate the impact of bank failures on financial stability, and reduce the impact on taxpayers. The United States also has a set of laws and regulations for the same purpose. There are similarities in the

objectives and principles underlying the BRRD and US regulations that are important for financial stability and the impact of moral hazards, although this essay will not focus on these sets of regulations (European Banking Authority, 2012).

To better understand the additional regulations in each country within the EU, this essay will look closer at Sweden. In Sweden, the bank regulations are supervised by Finansinspektionen. They ensure financial stability and try to prevent financial crises. For example, the banks must comply with the CRR and CRD and additional liquidity regulations set by the Finansinspektionen regarding capital requirements. The additional liquidity regulations are comprehensive for the big banks as they require a minimum capital of almost 18 %. This 18 % consists of minimum requirements, capital conservation buffer, systemic risk buffer, capital buffer for systemically important banks, and more, as seen in graph 2. The capital conservation buffer is an additional layer of capital for the bank at 2.5 % that should enable the bank to cover losses without breaching the minimum capital requirements. Then there is also the systemic risk buffer, which only the most prominent banks have to follow; therefore, SEB, SHB, and Swedbank are currently subject to the requirement and must hold a systemic risk buffer of 3 %. In figure 2, these different regulatory capital requirements are demonstrated in a graph to understand the overall requirements better. It also shows how none of the banks are near its capital requirement limit and maintain a higher standard of capital/liquidity (Finansinspektionen, 2023).

Graph 2: Own funds and capital requirements, three major banks (percent of REA)



(Finansinspektionen second quarter 2022,)

2.3.3 Liquidity and Capital Regulations in the USA

The liquidity regulations within the banking sector in the US are controlled by several different federal agencies, including the Federal Reserve System, the federal deposit insurance corporation (FDIC), and the office of the comptroller of the currency (OCC). These agencies work together to try and uphold the financial system, and they are doing this by implementing different regulations (Federal Reserve Publication., 2021).

One of the regulations that are key for upholding sufficient liquidity of assets in the US is the LCR. The LCR was introduced in the US after the financial crisis in 2008 to ensure that banks in the future have enough liquid assets to cover unexpected cash demands. The LCR is similar to the one in Europe; however, there are differences between the two regulations, even though the main objective is to test the bank's durability by simulating cash outflows through a 30-day stress period, with a minimum requirement of 100% (Federal Reserve Publication., 2021).

The main difference between the US and Europe is which banks must implement the LCR rule. The Federal Reserve has decided that only the largest banks must follow the lowest LCR of 100% in the US. In 2018 the Federal Reserve raised the minimum of what is considered a large bank to \$250 billion in assets. These big banks must also comply with additional liquidity regulations set by the comprehensive liquidity analysis and review (CLAR) (Yankov, 2020).

In Europe, not only do the big banks have to follow the LCR requirement set by the EBA, it has to be followed by all banks. Moreover, many countries within the EBA have also set higher requirements in addition to the LCR. There is also a difference in how the LCR is calculated; for instance, European banks are allowed a more extensive range of assets like certain types of covered bonds and securitizations. In the US, this asset class is not liquid enough and, therefore, can not be calculated within the LCR.

Another essential regulation within the US to keep the banks liquid is the net stable funding ratio (NSFR). This regulation is the same as within the EBA and requires banks to maintain a stable funding source over a period of one year. Again, this is to make sure that the bank relies on something other than short-term funding (Yankov, 2020).

The capital requirements in the US and Europe are set to ensure that the bank has sufficient capital relative to the risks they are taking. Therefore the capital requirement is based on a

risk-weighted asset (RWA) framework. The Federal Reserve sets the framework in the US, and the restrictions depend on factors like the size, complexity of the bank and how they manage their risks (Begenau et al., 2015; Rahman et al., 2023). In Europe, the requirement is to a higher extent based on fixed percentages on RWA, and company size is not a factor.

The Federal Reserve has implemented the "systemically important" regulation, meaning that all large banks are subject to higher capital requirements and a supplementary leverage ratio (SLR). This regulation stipulates that they have to maintain a minimum of 3% of SLR, which focuses on the total leverage exposure. Then they also have to maintain a minimum ratio of Tier 1 capital as all banks at 4.5%; the Tier 1 capital ratio instead focuses on risk-weighted assets. However, it is important to note that most banks maintain higher ratios than the minimum (Begenau et al., 2015; Rahman et al., 2023).

2.3.4 Implications of Liquidity and Capital from a Moral Hazard Perspective

Liquidity and capital regulations are critical to maintaining a stable financial system; however, it is easy to create moral hazard issues when leaning too much in one direction. For instance, if governments focus solely on higher capital regulation and banks need higher capital reserves to minimize the risks of potential bank runs. Risk-weighted assets will be less crucial in a new regulatory environment. Usually, leading to less risky investments as properties are considered lesser risky investments. Therefore, that bank has the possibility to lend out a greater percentage of its capital compared to a bank that focuses on higher-risk investments such as company loans. This can create moral hazard problems because banks now have no particular reason to invest in lesser risky investments because they can now lend out almost as much to risky investments where there are more profits to gain (Das. & Amadou. 2012).

There are two main consequences if banks decide to go the other way and focus more on risk-weighted assets. The first is risk aversion, where banks might become more conservative in lending practices, reducing credit availability for riskier ventures or borrowers, possibly resulting in limited access to capital for startups and small businesses. This will result in a more conservative bank sector where the sector does not help fund potentially high-growth yet riskier ventures, which might lead to slower overall economic growth. The second imaginable consequence is the potential overvaluation of "safe" assets. If all banks start to chase "safe" assets, the same type of assets may have a very high demand. These outcomes could lead to an overvaluation of these assets and create asset bubbles in perceived safe asset classes (Das. & Amadou. 2012).

2.4 Bonus Cap Regulations

The bonus cap regulations limit the amount of variable pay in the banking sector by cutting bonuses that can be awarded to bankers and traders. These regulations are imposed so the workers do not feel the need to take excessive risks and limit the problem of moral hazard in the banking sector (Kokkinis, 2019). In addition, it aims to contribute to financial stability by aligning incentives and discouraging excessive risk-taking.

2.4.1 Bonus Cap Regulations in Europe

Following the 2008 financial crisis, European regulators perceived a need to impose stricter bonus system controls. Therefore the capital requirements directive IV (CRD IV) was introduced and its directive was to limit the amount of variable pay within the banking sector. According to the "CRD4" reform package, the bonuses cap will be set at 100% of fixed pay, with the possibility of allowing 200% if approved by a shareholder vote (Kokkinis, 2019; Allen & Overy, 2023).

2.4.2 Bonus Cap Regulations in the US

In the US, unlike in Europe, federal regulation does not exist that explicitly targets bonus payments in the financial sector. However, other regulations require public companies to disclose information on compensation plans and bonuses. The regulations are all implemented and imposed by the Securities and Exchange Commission (SEC) (Ryan, 2016).

2.4.3 Implications of Bonuses from a Moral Hazard Perspective

The different bonus caps regulations in Europe and the US create different implications on moral hazard. If bankers or traders, for example, receive large bonuses for taking on more considerable risks and not bearing the consequences of those actions, it has implications on moral hazard. The bankers now have the incentive to engage in higher risk-taking because the bank rewards short-term gains, and the banker personally does not have to bear full accountability for the loss (Holmström, 1979).

Bonuses can, therefore, create a misalignment of incentives between bankers and the long-term interests of the bank. In theory, the result is that bonuses can undermine financial stability and increase the likelihood of future crises because of the banks' significant role in

the financial sector. If this is true, it is essential to look at bonus systems from a moral hazard point of view and consider the impact of bonus structures.

2.4.4 Does the bonus cap work?

In certain research studies, however, the regulation of the bonus caps shows another picture than the one just described. It can suggest that the new regulations within Europe have not effectively reduced risks and have instead impacted the efficiency within the sector.

"Effectiveness and (in)efficiencies of compensation regulation: Evidence from the EU banker bonus cap" the authors explain how the implementation of bonus caps in the European Union did not create a more resilient financial system and reduce risk-taking from the banks as promised when implementing the regulation. Instead, the regulation created new problems within the sector, as the observation showed that poorly performing banks experienced higher CEO turnover rates. This suggests that many banks have underperformed since introducing the bonus cap. The research also shows that there is no compelling evidence that the risk profile of EU banks has lowered; instead, empirical results indicate that the risk has increased. The question, therefore, has to be raised if bonus cap regulation effectively helps promote financial stability and helps minimize the moral hazard aspect in banking (Colonnello et al., 2018).

2.5 Case Study: SVB Failure and Regulatory Responses

2.5.1 Timeline

First of all SVB acquired billions of dollars worth of bonds over the past couple of years, utilizing clients' deposits as part of standard banking operations. This strategy is usually perceived as a reasonable investment approach. Nevertheless, the value of those investments fell because of the extreme scenario that materialized during 2022, with inflation going up and the Fed rate rising by 4.5pp from 0-0.25% to 4.5-4.75% (Barr, 2023).

Secondly, Silicon Valley's client base was primarily start-ups and other tech-centric companies. These clients started to encounter difficulties, leading to a withdrawal of deposits from the bank. As a result, the bank had to start selling its assets to meet customer withdrawal requests, and because the clientele of Silicon Valley is mainly wealthy individuals and enterprises, the fear of a bank collapse was more pronounced since their deposits exceeded the federal limit of \$250,000 for deposit insurance (Barr, 2023).

These factors required SVB to sell typically safe bonds at a loss, and those losses added up to the point that Silicon Valley Bank became effectively insolvent. The bank tried to raise additional capital through outside investors but could not find them. This scenario ultimately reflected a run on the bank and led to the collapse of Silicon Valley.

Thirdly the banks' regulators had no choice but to seize Silicon Valley Bank's assets to protect the remaining assets and deposits at the bank. Its failure has already caused more than \$150 billion in deposits to be locked up in receivership, which means start-ups and other businesses may be unable to get to their money for a long time (Demos, 2023).

In response to this problem, the government reimbursed all individual and corporate account holders in the bank. However, when it came to the stockholders, they were forced to bore the financial burden of the bank's failure without any compensation.

The bank failed on Friday, March 10, 2023, and already on Sunday, March 12, 2023, the government committed to reimburse the depositors fully. The decision mitigated the panic within the market, and because the event transpired over a weekend, the stock market had no chance to react before the problem was solved. Nevertheless, the event substantially impacted the financial market, but not to the extent it would have if they were not so fast (Demos, 2023).

This incident raises questions regarding the underlying causes and if there are vulnerabilities in the foundation of the banking sector in the U.S. and Europe?

2.5.2 SVB: Interest Rate Risk

During the low-rate environment of the last ten years, banks built up books of loans and bonds that pay a low, fixed rate of interest for some time. This is "asset duration," and it generates the risk that if interest rates rise, the value of the assets fall, and the banks lose money. The way to manage duration risk is to fund the assets with liabilities of similar duration.

The scope of banking activities is vast; however, it typically does not involve deliberate acceptance of substantial interest rate risk without hedging the possibility of considerable losses. SVB, on the other hand, did not abide by the practice of conventional banking practices and undertook a noteworthy degree of duration risk. They funded a portfolio of high-quality, long-duration government bonds with corporate deposits of short duration. The

result was that we once again saw the importance of hedges to manage rate risks on both sides of the balance sheet. SVB's deposit base grew rapidly; however, its loan book grew much slower, and the bank had a loan-to-deposit ratio of just 35% at the end of end-2021, compared with the euro area aggregate of 102% (Barr, 2023; Silicon Valley Bank ,2021).

So it chose to invest its surplus in fixed-income securities. At the end-2021 its fixed income securities portfolio had a weighted-average duration of 4.0 years before hedges and 3.6 years after. Twelve months later, these durations had risen to 5.7 and 5.6 years, respectively. During 2022 the bank reduced the size of its long-dated MBS and CMBS holdings, although they still represented over 75% of the held-to-maturity portfolio at year-end. So, it seems likely that the overall increase in duration was driven by the effect of rising rates on these holdings, although it is possible that the bank bought even longer-dated assets(Barr, 2023; Silicon Valley Bank, 2021).

The absence of effective hedging means that if the need to sell arose, the asset would be selling at a loss; because there would not be offsetting hedge gain. This appears to be precisely what has happened in SVB. Banks do not typically disclose much about their hedging strategies, so it is something of a black box from the outside. One example where exposures and hedges are disclosed in Europe is Intesa, which has long done so for its Italian government bond portfolio: at end-22, the duration was 6.1 years, but after hedging, it was only 0.4 years. This shows a clear difference in risk management (Intesa Sanpaolo, 2022).

According to SVB's 10-K report for the fiscal year 2021, on pages 95-97 and 154, they also mention that interest rate risk is the primary market risk for the company, and because of the world situation, there is a high risk that inflation will occur. This will, therefore, trigger inflation in the US, and the only solution the federal reserve has to stop inflation is to increase the interest rate. SVB, therefore, acknowledges explicitly the importance of hedges to balance the high amount of mortgage back securities they bought. However, the result after this report shows something different, as reflected before. Instead, they increased the mortgage-backed securities and minimized the hedges, increasing the risk. The executives within the company have thus chosen to avoid following its risk management strategies and instead increased the risk-taking and their one possible variable pay (Silicon Valley Bank, 2021).

2.5.3 Liquidity risks SVB

When studying SVB, findings indicate that liquidity risks played a significant role in SVB's downfall. Feldberg (2023) calculated that SVB LCR would have been 75% at the end of 2022. This would have been substantially below the threshold if not for the Trump Administration 2019 changed the regulation of LCR and its definition of big banks. The new rule change is a key part of the failure at SVB (Feldberg, 2023).

If the new rule had not been in effect, they would also be required to publicize more data surrounding their liquidity risks. Making the general market knowledgeable about their liquidity circumstances and possibly pointing the management towards the significant risk they were facing. If the rule were still in effect, the bank would also need \$18 billion more in liquid assets to obey the rule of 100% LCR. However, to follow the general big banks in the US, they would need \$36 billion more, following an average LCR of 125% (Feldberg, 2023).

However, compliance with the LCR regulation alone would not have saved SVB's management from its mistakes. For one fact, the bank relied heavily on customer deposits to fund its investments in bonds, but when customers started withdrawing their deposits due to the financial difficulties faced by start-ups and tech-centric companies, SVB was forced to sell its assets to meet the withdrawal requests. This resulted in even more liquidity pressures (Feldberg, 2023).

The case of SVB underscores the importance of maintaining adequate liquidity buffers and managing liquidity risks effectively to withstand unforeseen events and deposit outflows.

2.5.4 Bonus implications on SVB

Analyzing the bonuses at Silicon Valley Bank (SVB) reveals that there has been a change in the bonus structure and payouts over the years. Looking into their security filings shows that executives' pay at SVB soared as the bank strategy shifted towards enhancing their profitability by investing in riskier assets. The chief executive officer (CEO) Greg Becker and chief financial officer (CFO) Daniel Beck bonuses were correlated to the bank's return on equity (RoE), a key measure of profitability (Gara et al., 2023).

The article shows how Becker's cash bonus reached \$3 million in 2021, more than double the amount received four years earlier. Beck earned a \$1.4 million bonus in 2021, over four times the amount received in 2017 after joining the company (Gara et al., 2023).

With the bonuses rising consecutively over the past four years, there is a correlation to higher risk-taking within the bank. The risk-taking started with SVB purchasing more long-term assets, particularly mortgage bonds, which generated higher yields and higher earnings. However, as mentioned earlier, this strategy backfired when interest rates rose and the value of the bonds decreased (Gara et al., 2023).

The case of SVB provides valuable insights into the potential moral hazard associated with bonus structures. The case gives a picture of high executives incentivized by large multiyear bonuses, trying to increase the banks' profits, and, to accomplish this, they implement new strategies with excessive risk-taking.

2.5.5 Treatment of loans and bonds

One of the crucial aspects shown as a weakness in the case of SVB was the ability to conceal losses through different accounting treatments for investment securities. For example, banks can invest in securities that are labeled as 'hold-to-maturity' (HTM) and 'Available-for-Sale' (AFS); these two classifications allow the banks to choose how different changes in the market should impact their securities value and, therefore, their balance sheets and profit-and-loss accounts. These losses or gains related to the banks' AFS portfolios can become crucial, as they could impact the bank's financial health. This was one of the aspects of the failure of SVB, where the public could not see how significant their potential losses were, which created speculations and panic (U.S Securities and Exchange Commission, 2020).

SVB had 14% of its assets invested in its AFS portfolio, while its total investments as a share of total assets were 57%. In the EU, banks have 6% of total assets invested in AFS portfolios, while their total investments are only 18% of their total balance sheet. This should make them less prone to sharp valuation changes (Barr, 2023; Silicon Valley Bank, 2021).

Table 1: Official treatment of loans and bond

Unrealised Losses:	Treatment	IFRS/Basel Banks	US Large Banks	US Regional Banks
Available for sale / FV through OCI	Accounting	Impact on book equity		
	Reg Cap	Impact on CET1 capital	AOCI Opt-out to not impact CET1, otherwise impacts CET	
Hold to maturity / Amortised cost	Accounting	No impact on book equity (FV reported in footnotes)		
	Reg Cap	No impact on CET1 capital		

2.6 The Interaction of Regulatory Approaches and Moral Hazard

First and foremost, it is vital to research how different regulatory frameworks and policies can either mitigate or increase the moral hazard problem within the banking sector. Therefore this section of the thesis will analyze the impact of regulatory approaches on moral hazard.

2.6.1 Regulatory Approaches and Moral Hazard

The regulations implemented by the regulatory institutions play a vital role in shaping the behavior of banks and can steer them in a suitable risk-managing profile. As discussed earlier, the institutions can then impose a more rules-based or principles-based approach and a non-risk-based or risk-based approach to the regulations, which has different effects on moral hazard within the banking sector.

2.6.2 Rules-Based Regulation and Moral Hazard

As described earlier, rule-based regulations are characterized by more precise rules and clear guidelines that aim to make it easy to follow financial institutions. This approach can make it challenging for banks to be discreet and problematic to get around even through different interpretations.

It can be very effective regarding the aspect of moral hazard. For example, when rules-based regulations are implemented, like minimum capital requirements, liquidity ratios, and bonus caps, banks have little incentive to take risks. If we remove incentives like bonuses, one crucial part of the moral hazard to exist is gone. Then the other part is to stop shielding or making the banks/employees believe they are unsafe if they take extreme risks.

Rule-based regulations can also fix the second part of moral hazard (Burgemeestre et al., 2019).

2.6.3 Principles-Based Regulation and Moral Hazard

The principles-based regulation shows principles and standards that the financial sector should live up to and does not have as clear guidelines as the rule-based regulation. Therefore it could be said that it prefers to point the subject in the right direction. This allows for more flexibility and possibility for decision-making, but because the different choices increase, it may also increase the potential for moral hazard.

When implementing the principle-based framework, the institutions rely on the banks to practice professional judgment and, therefore, act by the intent of the regulations. In addition, this approach relies on market discipline and the reputation of banks to ensure responsible behavior. It may increase the potential for moral hazard, as the banks can exploit the lack of specific rules to take on excessive risk (Burgemeestre et al., 2019).

2.6.4 Risk-based approach and Moral Hazard

Risk-based regulations prioritize assessing potential threats within the financial sector. The approach acknowledges that not all financial products have the same risk level, which leads to a better assessment of each asset's characteristics and ensures that financial institutions hold capital proportional to the risks they undertake. The aim of such an approach is that each regulatory response is tailored to a specific risk and therefore creating a regulatory system that is more efficient and resilient to potential crises (OECD. 2021).

2.6.5 Non risk based approach and Moral Hazard

The non-risk-based approach sets universal requirements for all companies in a sector, ensuring simplicity and comprehensive coverage. The regulations are easier to understand and can significantly reduce the administrative cost for small businesses, helping them enter high barrier market and creating a competitive sector. It also creates a lower probability of missing treacherous activity because the rules apply to everyone equally.

However, the potential downside is the possibility of allocating resources specifically towards more risky assets as it usually generates more profit, creating an imbalance in the system with underlying systematic risks. This aspect also affects moral hazard, as it creates a

dilemma for the executives at the banks. The executives now sense a more favorable risk-reward balance, which might draw them to shift assets to riskier asset classes. Even though they are aware this could destabilize the financial system.

2.6.5 Challenges and Implications

The interaction between regulatory approaches and moral hazard is complex as several factors affect it as it tries to stay in perfect balance. The balance consists of providing clear guidelines to prevent excessive risk-taking and allowing flexibility for innovation and market efficiency. Nevertheless, making the market as efficient as possible while addressing moral hazard will depend on several factors, like the level of transparency and supervision (Black et al., 2007).

Moreover, regulatory approaches alone may not fully mitigate moral hazard in the banking sector as other factors can play a significant role. For example, factors like risk culture and market dynamics also play crucial roles in influencing banks' behavior and risk-taking incentives. Therefore, understanding that many other factors influence risk and moral hazard is essential when institutions design effective regulatory frameworks that promote financial stability and incentivize innovation.

3. Methodology

This chapter presents the methodology used in this thesis. I collect data from literature review and study banking regulation and bank behavior through the lens of the theory of moral hazard.

3.1 Research Design

The research design of this study is a comparative study, which involves research of a specific case within the banking sector. The thesis seeks to understand the complexities associated between regulatory approaches and applies the findings to a real worked case. However, when examining the case study, it is challenging to know if the variables have significant correlations and if no hidden variables affect the outcome.

This study compares US and EU regulations through the lens of moral hazard. A comparative method was used to capture this study best, enriching the research by offering a comprehensive view of the analyzed subjects with multiple vanish points. By comparing multiple entities, it is also less likely to make absolute claims about one subject, promoting a

more balanced perspective. It also brings depth and a more diverse analysis as it requires considering different viewpoints.

3.2 Literature Review

All the data collected for this study will be taken from two main approaches: reviews of literature and analysis of secondary sources and case studies, as mentioned in the research design.

The review of the literature and analysis of secondary sources will be a comprehensive review of existing literature that includes academic reports, government reports, and news articles. These sources will provide information surrounding moral hazard, different regulations, and theories connected to the banking sector. All these pieces of information will provide a solid foundation of knowledge for the thesis. Analysis of secondary sources will also reveal information and findings from previous studies that can be crucial in analyzing the case study.

The comparative study will analyze the regulatory framework's effects on moral hazard within the banking sector. The case study will investigate the failure of SVB bank and if moral hazard played a role in its downfall. The data collected for the case study are gathered through various sources, such as financial statements, media coverage, and other relevant documents.

When combining these two approaches, we can provide a comprehensive understanding of the interaction between regulatory approaches and moral hazard.

3.3 Literature Analysis

The data collected for the study will follow a thematic analysis and comparative analysis to identify key themes and patterns related to regulatory approaches and moral hazard in the banking sector.

Comparative analysis is a good practice when having several different sources of information and wanting to extract the most from them. The analysis examines the similarities and differences between the two data sources, aiming to understand the research better.

4. Key findings

This chapter presents the key findings within the banking sector in Europe and the USA, bonus cap regulations, the case study analysis of SVB bank's failure, and the interaction between regulatory approaches and moral hazard.

4.1 Liquidity and capital regulations

Since the regulatory framework Basel was introduced, it has shifted towards a more risk-based approach that has been essential for moral hazards and financial stability. Introducing a risk-based capital approach has led to the sector investing a great deal of time and capital in designing systems and processes to evaluate, measure and monitor credit and risks. Furthermore, a risk-based regulatory approach incentivizes the banking sector to use its capital with respect to credit risks when it comes to pricing. This has contributed to a highly improved risk management and risk awareness crucial to mitigate moral hazard and reduce financial instability.

Although after the global financial crisis, there has been a shift in the regulatory approach. The most important aspect of this shift is the emergence of macroprudential regulations. In addition to that, regulators have incorporated several limitations to the risk-based internal models introducing floor caps and back to focus on leverage ratio. As long as a healthy balance between a risk-based and non-risk-based approach and leverage ratio is used as a complement, it is no problem. However, non-risk-based capital regulations lead to the risk of short-term incentives for banks lending out money to more risky businesses with higher returns and bigger bonuses. During Donald Trump's governance, the US shifted towards differentiating regulations depending on company size, resulting in less focus on credit risk and higher incentives for moral hazard and aiming for higher returns.

If the same regulations, as in Europe, were still in effect in the US, SVB would have been obliged to hold a much higher LCR. In order to have an LCR of 100 %, they would have needed \$18 billion more in liquid assets. To follow the general big banks in the US, they would need \$36 billion more, following an average LCR of 125 %. In retrospect, even one of the largest banks in Sweden, Swedbank, would not be obliged to follow the LCR rules of 100 % in the US.

4.2 Bonus Cap Regulations

4.2.1 Negative effects bonus cap

In the Empirical Findings of Bonus Cap Regulations, there are three main parts to look closer at. The first is the research suggesting that bonus cap regulations negatively affect the financial systems. Several studies have examined the effectiveness of bonus cap regulations, specifically in Europe, because of their lack in the US. These reports indicate that the regulations may not be as effective as initially thought.

In the study titled "Effectiveness and (in)efficiencies of compensation regulation: Evidence from the EU banker bonus cap" the research shows the impact of bonus caps in the European Union (EU). The findings they present based on the data collected is that bonus cap regulations are not helping financial systems to become more resilient and decrease risk-taking by banks. Actually, the opposite, it revealed that poorly performing banks experienced higher CEO turnover rates, implying that many banks underperformed after implementing the bonus cap. This concerns how performance and compensation are connected within the company. For example, empirical research has found that reduced variable pay may lead to decreased motivation and retention of talented employees, potentially impacting the institution's overall performance (Colonnello et al., 2018).

The study by Colonnello, S. Koetter, M. Wagner, K. (2018) also found compelling evidence that EU banks' risk profile increased and not decreased as intended after the bonus cap regulation. In addition, other studies like Andreas Kokkinis (2019) "Exploring the effects of the 'bonus cap' rule: the impact of remuneration structure on risk-taking by bank managers" have also suggested that bonus caps may lead to unintended consequences, such as increased risk-taking. In these different reports, the authors argue that bankers may be more inclined to take on higher risks to compensate for the reduced incentive when bonuses are limited. The result is called the "bonus cap effect" on risk-taking (Colonnello et al., 2018).

In the study by Andreas Kokkinis (2019) the report refers to the fact that banks have found the possibility of regulatory arbitrage by seeking alternative compensation structures to bypass the bonus cap regulations. For example, many banks had introduced fixed-pay allowances, which are paid as shares on an agreed-upon time and create new additional risk-taking incentives, which can be even higher than before the new bonus cap regulation was introduced (European Banking Authority, 2016).

These different findings raise questions about the effectiveness of bonus cap regulations in promoting financial stability and if the bonus cap has improved incentives or is just misplaced.

4.2.2 Positive effects bonus cap

Then there are the empirical findings that imply that bonus cap regulations have positive effects and mitigate moral hazard risks. For instance, in the study by Angeli and Gitay (2015) "Bonus regulation: aligning reward with risk in the banking sector," one of the conclusions is that bonus cap regulations can contribute to financial stability by aligning incentives and discouraging excessive risk-taking (Angeli et al., 2015).

Here we can draw parallels to the case study where the jurisdiction had no explicit bonus cap regulations, and the absence of such regulations could have affected the excessive risk-taking and the implications of moral hazard. According to some research, this should not be a possible scenario in Europe because of the existing bonus regulations. However, as mentioned earlier, other contradicting resources show that the current bonus cap is not viable either and that many factors affect extensive risk-taking.

Other papers that also indicated the positive effect were Kokkinis paper "Exploring the effects of the 'bonus cap' rule: the impact of remuneration structure on risk-taking by bank managers" and Angeli and Gitay (2015) "Bonus regulation: aligning reward with risk in the banking sector ". Both this study found that bonus caps led to a reduction in risk-taking behavior, supporting the effect of bonus caps on mitigating moral hazard risk (Kokkinis. 2019; Angeli et al., 2015).

4.3 Case Study Analysis: SVB Failure and Regulatory Responses

4.3.1 Treatment of Loans and Bonds

Three main empirical findings within the case of SVB that raise moral hazard concerns are the treatment of loans and bonds, the impact of interest rate risk, and bonus incentives. The first is the treatment of loans and bonds in the US: the case of Silicon Valley Bank (SVB) shows us how regulations have overlooked transparency within the bank sector. In both the US and Europe, the regulators have had a principle-based framework where banks could classify securities as 'hold-to-maturity' (HTM) or 'available-for-sale' (AFS), which allows

banks to have flexibility in determining how changes in market value impact their financial statements.

The booking of securities made it possible for SVB to conceal losses by moving the bonds from 'available-for-sale' to 'hold-to-maturity' where the bank could decide the "fair" value of the bonds. HTM securities are held at amortized cost, and there is no impact on bank capital from movements in price. The change will also be presented in the P&L or only in the balance sheet. The fair value changes can also be filtered out of the calculation of regulatory capital. This makes it hard for investors to see the unrealized losses on HTM securities.

The conclusions raise fundamental questions about the effectiveness and transparency of regulations governing the classification and valuation of investment securities. Moreover, the lack of transparency can create moral hazards by allowing banks to mask their financial situation.

4.3.2 Disregard for risk management

One important aspect is the overall disregard for risk management within the company. For example, SVB did not only raise the risk by buying more mortgage back security bonds; they also stated in their 2021 10k report that there is a high risk that rates will go up. The management had, therefore, knowledge of the existing risk and was not just ignorant regarding the market situation of the world, which makes things worse and more complicated because we know that they knowingly raised the risk but were not afraid of the consequences. This directly correlates to moral hazard and its implication on the banking sector.

The case of SVB highlights the need for banks to carefully manage interest rate risk carefully, ensuring appropriate hedging strategies and duration matching to mitigate potential losses after the company's risk analysis.

4.3.3 Bonus incentives

The findings within the case indicated that the bonus was an incentive for executives at SVB to take higher risks, reflecting a potential moral hazard problem. The analysis showed that executive bonus payouts were related to how well the banks' return on equity (RoE) was doing. This correlation may have encouraged excessive risk-taking behavior, as executives prioritized short-term profitability over long-term financial stability. The bonus structure in the US showcases, in this case, the importance of aligning incentive structures with risk

management objectives to prevent moral hazard. It also indicates that the bonus structure regulations in the US are insufficient to oversee the banking sector's moral hazard implications.

4.4 Analysis of the Interaction between Regulatory Approaches and Moral Hazard

When analyzing the interaction between regulatory approaches and moral hazard discussion, the study found fascinating findings within rule-based, principally based regulations and how these different regulatory approaches affect Europe and the US.

4.4.1 Regulatory framework in Europe and US

The regulatory framework in Europe tends to be more principles-based, relying on professional judgment and market discipline, and the US is more rule-based (Begenau, Piazzesi, & Schneider, 2015). As explained, when looking at it from a theoretical standpoint, moral hazard would occur more in the EU because of their more principle-based regulations; however, the situation is more complex. Because when implementing principle-based regulations it requires a lot of legal knowledge and expertise about the domain, often resulting in a more complex and broad regulatory framework. On the other hand, rules-based require less interpretation to be implemented (Burgemeestre. Hulstijn. & Tan. 2019).

The empirical finding shows that it is easier to mitigate moral hazard when implementing a rule-based framework if the regulators are not that well-read and need an easy framework to follow. However, they constantly need to be adjusted as they can lead to gaps, inconsistencies and are prone to "creative compliance". The problem, however, is created because creating new rules to fix gaps in the framework often leads to new gaps. On the other hand, if the regulators are strict and well-read, the principal-based framework is broader and can better mitigate risks and cover different gaps in the framework. For the set of rules to work within a principal-based approach, there must be a distinction between minimum standards and best practices and a proliferation of guidance (Black. Hopper. & Band. 2007). However, this empirical evidence requires further investigation to ensure the effectiveness of mitigating moral hazard as the result varies.

5. Analysis

This chapter presents the analysis of how the banking sector in Europe and the USA works from the lens of moral hazard. It starts by answering the research question described in the purpose section and then answers the implications for policy and practice.

5.1 Research questions

5.1.1 Research questions 1

RQ1: What are the underlying mechanisms of moral hazard in the banking sector, and how do they interact with regulatory approaches?

Several factors influence the mechanisms of moral hazard in the banking sector and its interaction with regulatory approaches. First, as concluded in the key findings, moral hazard is created when a person or a group of people is incentivized to take an extensive risk and have no or minimal consequences of their actions. The incentive is created because banks give out oversized compensation packages that heavily rely on short-term profitability, which makes bankers prioritize immediate gains, by taking higher risks, over long-term stability. The second fact is that banks are such a crucial part of the financial system that, for the most part, the government has to minimize their mistakes not to inflict harm on the entire financial system and stability, "too big to fail".

When looking at the underlying parts of moral hazard within the banking sector, it's clear that there will always be a question of "risk and reward" put in perspective. Therefore, the regulators have tried to minimize the rewards, so taking significant risks would be less lucrative. However, the problem is that the rewards are more than just monetary gains; it could be glory by being the best in the sector or promotion possibilities making it nearly impossible to eradicate them. In Europe, we saw an attempt to minimize the rewards by putting a ceiling on bonus structures. However, it was hard to see a direct correlation to the risk decreasing after the new regulation. The multiple incentives for risk could be a factor in that outcome or the possibility that the sector has found a gap in the regulation that still makes it possible to use money as an incentive for risk. As a result, it is near impossible to take away the aspect of incentives in moral hazard risk because there will always be people who have something to gain by taking a risk.

The other way to mitigate the risk of moral hazard is by increasing risk awareness and risk assessment among stakeholders, management and customers. A country that adapts a

more risk-based regulatory approach when creating a regulatory framework is clearly better prepared to handle the challenges of moral hazard. Take risk based capital requirements as an example; if the asset's value is not calculated according to the risks they entail, it's highly likely for financial institutions to maintain a larger share of high-risk assets. However, if the assets are adjusted for risk, it is more profitable to hold low-risk assets as well, so the banks can reach the capital requirements set with less invested capital. This issue was evident in the United States, where SVB was capable of leading money almost exclusively to high-risk borrowers while still meeting the capital requirements. In this instance, the regulatory approach altered the categorization of 'large banks' and steered the regulations more toward a non-risk-based strategy. Instead of going for a risk-based approach for capital requirements and mandating that a certain proportion of a bank's capital be 'safely' invested based on risk assessment, the regulators set different capital requirements for small banks compared to big banks.

There is also the aspect of transparency within the mechanism of moral hazard and taking risks on behalf of someone else. For example, it is not seen as a problem if a company takes extensive risks on behalf of its investors if the investors know of the risk. However, if the investors do not know about the risks and cannot evaluate the implications, there is a problem. Here, gaps in the regulations create a problem because if companies can manipulate classifications and valuations of assets, hiding potential losses or misrepresenting their financial health, they can mislead their investors. The underlying part of risk-taking within moral hazard is that both parties must be aware of the risks and the different outcomes. However, it is more complicated within the banking sector as the risk affects not only the bank; it can also have implications on the customer and, in the worst case, the financial sector's stability. If the regulations are risk-based, the clients and investors are less likely to be misled by how the bank presents its assets and risks. In the case of SVB, they changed the classification on some of their assets/liabilities, making it hard to grasp their financial situation. By introducing a risk-based approach, even though many people would still not understand how to read all the financial data, they would know that an x percentage is financially safe because it is proportional to the risk.

5.1.2 Research questions 2

RQ2: Are the regulatory approaches used in today's society working to mitigate the risk with moral hazard, or are they counteracting?

Overall, how effective different regulatory approaches are to mitigating moral hazard is a topic of ongoing debate. However, they are still implemented with the goal of mitigating the risks of moral hazard in the banking sector.

First of all, whether it is principle-based or rule-based, the effectiveness of regulatory approaches depends significantly on their enforcement and adaptability. A regulatory framework, whether it is in the EU or the US, needs to be continually evaluated and adjusted to address emerging risks and changing market dynamics. As described earlier, the importance is because regulatory gaps or inconsistencies can undermine the effectiveness of measures intended to mitigate moral hazard. This is one of the problems within the US, as some institutions forget or underestimate the risks of not continually evaluating and adjusting to emerging risks. The US instead thought they saw less risk in the system and decided to give more freedom within the sector by removing regulation from some banks depending on size. Here, it is possible to argue for both sides regarding regulations' effect on moral hazard. Before adjusting the regulations, one could argue the regulatory approaches were effective at mitigating moral hazard. The regulation before the change imposed constraints on risky behavior, promoting responsible behavior and reducing the likelihood of moral hazard. However, on the other hand, it is also possible to consider that a multitude of factors beyond the impacts of regulatory approaches influenced the outcome. Therefore, the result could have remained the same even if the old regulation existed. If regulations are implemented to mitigate moral hazard, they can also have unintended consequences.

Secondly, is whether the regulations are principle-based or rule-based. As explained earlier, there are positives and negatives with them both. However, the analysis concludes that a rule-based approach can be counteracting as the regulators assume they have created a flawless system with specific rules. Therefore they do not find the need to constantly adapt to the ever-changing environment as principle-based regulations are based on. In this case, the system can be taken advantage of as the sector is highly competitive, and everyone is always looking for an edge. If this edge is found within the regulatory framework, it does not matter, as the financial sector's essential task is maximizing profits. Therefore, rule-based regulations can create an unintentionally dangerous situation when just trying to mitigate moral hazard. However, principle-based regulations are not that specific and are more abstract, making the regulation harder to go around if implemented correctly. It is said that

the advantages of principles are then depicted as the disadvantages of rules and vice versa. Therefore, both create opportunities to reduce morale hazards and potentially dangerous situations with moral hazards.

Thirdly, if regulations follow a risk-based approach rather than a non-risk-based approach the risks of moral hazard are likely to be reduced. By examining cases when a more risk-based structure is implemented, like Swedens' capital and liquidity regulations, it is possible to understand how they interact. When looking at Sweden's capital regulations, we can see that they have different percentages depending on the bank's importance and strict asset valuations depending on risk. These regulations show us that Sweden and the EU, for that matter, are not creating regulations depending on the size of the bank like the US; they are rather basing regulations on risk. These implementations minimize the risks of moral hazard by making it less favorable to lead or invest in risky assets and making investing more favorable in low-risk asset classes.

Finally, it is crucial to understand that introducing new regulatory frameworks to address moral hazard does not guarantee success; some measures might even be counterproductive. Consider the bonus cap regulations, for instance, that were introduced to minimize moral hazard risks in banking through primarily controlling excessive risk-taking; however, their effectiveness remains a topic of debate. The bonus caps were supposed to guide executives toward behaviors that prioritize a bank's long-term stability over short-term profits. However, to achieve this, they minimized the incentives for executives to avoid moral hazard temptations making the risk versus reward less favorable. Nevertheless, some research showed that the risk increased, creating an imbalance between risk versus reward. This result showcases that regulations can unintentionally push bankers to focus solely on short-term gains and neglect the bank's long-term health. If imbalanced, this may increase the likelihood of future financial crises and undermine financial stability. The real impact of these bonus cap regulations remains contested, with various studies offering differing conclusions. To answer the question, while regulators aim to mitigate the risks associated with moral hazard, their actual effectiveness can vary, and some might even be counterproductive.

5.2 Implications for Policy and Practice

To create a comprehensive system that covers the systematic risks within the banking sector, the regulatory framework has to adapt to an ever-changing environment. As concluded in the report, the authorities have been unsuccessful in upholding a continuous stable regulatory framework. However, it is important to note that personal incentives make it impossible to eliminate the risk of moral hazard. Nevertheless this thesis has tried to pinpoint the most systematically essential parts to create a regulatory framework that is not affected by moral hazard to the extent as of today.

One of those aspects is to create a more balanced regulatory framework. More specifically, this involves integrating rule-based and principle-based regulations into one framework, resulting in a more comprehensive and practical framework. The rule-based regulations can provide clear guidelines that create a strong foundation for the regulatory framework and discourage excessive risk-taking. In contrast to rule-based regulation, principle-based regulations offer flexibility and adaptability to address unique situations. Therefore, it is often more complex and adaptable to a broader regulatory framework; however, it relies more on professional judgment and the reputation of banks to ensure responsible behavior. Hence, the crucial factor lies in finding a compelling blend of them both such that the framework expands the coverage and provides explicit guidelines to mitigate moral hazard risks.

Another way to create more resilient regulations against moral hazard is to enforce a risk-based approach that adapts to the new market challenges created daily. The institution should continuously focus on these aspects, thereby equipping itself to address the ever-changing market dynamics and emerging risks. As explained briefly in paragraphs earlier, a risk-based approach is essential when creating an effective regulatory framework. When regulators take that approach, they create guidelines for the risk a company is exposed to rather than for example the size of the company. In doing so, they are contributing to better risk awareness through the practice of improved risk management within the banks. By reducing the advantages of investing in risky assets, the risk versus reward ratio becomes less favorable, creating less incentive for moral hazard and reducing financial instability. It is also important that while regulators set a risk-based approach, they must regularly review the regulations with necessary adjustments. A deep understanding of the financial markets can prevent exploitations of regulatory loopholes and bolster the measures designed to counter moral hazard.

However, when looking at the implications of the SVB crash, there will be considerable changes in the regulatory framework. For instance, there are many rules following financial accounting and reporting. However, an underlying risk is that in many cases like SVB, customers and investors find it difficult to "see the woods because of all the trees". What that means is that risks within SVB were pretty obvious when looking back upon it, but based on the annual report it was not as easy to form an opinion. Therefore creating simpler and more comprehensible financial reporting regulations is a prerequisite for minimizing moral hazard. If the company's management, board, shareholders, bondholders, and customers understand and can make insightful decisions based on the company's risks, there are good chances of minimizing moral hazards.

Overall, why are these aspects not implemented in the regulatory system, and why do we not have super-tight regulations to create a more stable financial system? This is a valid question and depends partially on the profit motives in the sector that create lobbyism to keep it as is. It also depends largely on the fact that some believe we must allow for innovation in the financial system to create financial growth. However, it is this thesis perspective that when it comes to finding a balance between innovation and strict regulations to prevent moral hazard. It is more important to create a financial system that is resilient to financial shocks, even if it may cost a little extra for the banks or the growth. Otherwise, the consumer always pays the final price for the banks' greed.

In conclusion, the government should adopt a more comprehensive and ever-changing approach to moral hazard. The more comprehensive framework should focus on maintaining a balanced regulatory framework, scrutinizing the effectiveness of bonus caps, promoting transparency, and adapting to changing circumstances.

6. Discussion

This chapter presents the discussion part of the thesis, which includes analyzing the complexities of the banking sector and understanding moral hazard and regulatory effects on economic stability. Thereupon, address the challenges emerging from diverse incentives within the industry.

6.1 Summary of findings

The banking sector has a crucial role in keeping the financial market and macroeconomy stabilized. However, due to its complex nature, addressing moral hazard and regulatory oversight has proven challenging.

Moral hazard revolves around the potential misalignment of individual incentives and governments taking the fall for the bank sector collapsing. Generally, this occurs when banks are steered by short-term profits rather than by the long-term health of the financial ecosystem. Usually, the incentive is created by the monetary aspect; however, in some cases, it can also be recognition, fame, promotion, or market dominance. With all these different varieties of rewards, it is nearly impossible to implement regulations to reduce the rewards leading to minimizing moral hazard. The result of this was the bonus cap that tried to eliminate the reward from the moral hazard calculation. However, the result was largely discussed, with some research pointing to its success and some pointing to its failure.

Liquidity and capital regulations are central instruments to ensure a robust financial market. They are designed to ensure that banks maintain adequate buffers against unforeseen financial shocks and to promote safer lending. While the government aims to strengthen financial institutions and create resilience toward systemic shocks, the new regulations can also create unintended side effects. For instance, higher capital requirements might constrain a bank's lending ability and potentially damage economic growth. This might push banks towards riskier funding models to achieve better performance. In Sweden, we saw the same effect when the regulations started to implement a more risk-based approach, creating unforeseen outcomes. The new regulatory approach resulted in a high RWA for lending capital to companies, and because they also needed considerable amounts of capital, the banks could not supply enough capital. The companies, therefore, started to look elsewhere, and many real estate companies found the bond market to finance their endeavors.

Regarding bonuses regulations they play a multifaceted role in the financial framework. Created to limit excessive risk-taking by short-term profitability motives, bonus caps aim to align the interests of bank executives with the long-term health and stability of their institutions. However, while the idea is to minimize risk-taking behavior through budget caps, the reality is that the impacts of such regulations are highly debatable. There is concern that rigid bonus structures might drive banking professionals to seek other potentially riskier alternatives, explore alternative compensation methods to maintain the incentive, or exploit regulatory gaps.

Regulatory approaches have been the primary tools for mitigating the risks with moral hazards. This thesis has made it clear that there is no one-size-fits-all regulatory framework. Instead, the conclusion is that a flexible approach is preferred, combining principle-based regulations with a risk-based approach. When implementing a principle-based approach, the regulators allow for a more flexible framework and, if correctly managed, more comprehensive. If the regulators also take a risk-based approach, the regulatory framework will be consistent when managing the risk. Thereby also minimizing the risk of moral hazard by making the risk versus reward less favorable.

The new framework should focus on restricting risky behaviors by promoting transparency and aligning individual incentives with long-term systemic health. Promoting transparency is also an aspect of creating a more robust financial system. Suppose the banks have to follow regulations mandating greater transparency; the banks will be precluded from obscuring potential losses or misrepresenting their financial health. This, in turn, cultivates a more trustworthy banking environment where the consumer possesses comprehensive information to make their own decision. However, for the regulatory framework to stay relevant and prevent systemic risks, evolving in step with the financial landscape is crucial.

To summarize, the challenge lies in fostering an ecosystem where banks and their executives are incentivized to act in the best interest of the entire financial system and not only in the banks'/executives' interest. To create this optimal environment, there will have to be continuous evaluation, international collaboration, and a balance between facilitating innovation and ensuring stability.

References

Allen & Overy. (2023). Green light for EU bonus cap proposals. *Allen & Overy*. Available at: [Green light for EU bonus cap proposals - Allen & Overy \(allenoverly.com\)](https://www.allenoverly.com) [Accessed on 2023/05/10].

Angeli, M. & Gitay, S. (2015) Bonus regulation: aligning reward with risk in the banking sector. *Bank's Cross-Sectoral Policy Division*. Quarterly Bulletin Q4. pp 322-333 Available at: [Bank of England Quarterly Bulletin 2015 Q4 \(ssrn.com\)](https://www.ssrn.com) [Accessed on 2023/05/26]

Barr, M. (2023). Review of the Federal Reserve's Supervision and Regulation of Silicon Valley Bank. *Federal Reserv*, pp 1-97. Available at: [Review of the Federal Reserve's Supervision and Regulation of Silicon Valley Bank](https://www.federalreserve.gov) [Accessed on 2023/05/11]

Basel Committee on Banking Supervision. (2011). Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems. *Bank for International Settlements*. Available at : [Basel III: A global regulatory framework for more resilient banks and banking systems - post BCBS meeting - revised version June 2011 \(bis.org\)](https://www.bis.org) [Accessed on 2023/04/25]

Basel Committee on Banking Supervision. (2023). History of the Basel Committee. *Bank for International Settlements*. Available at: [History of the Basel Committee \(bis.org\)](https://www.bis.org) [Accessed on 2023/05/04]

Bank for International Settlements. (2023). Net Stable Funding Ratio (NSFR) – Executive Summary. *Bank for International Settlements*, Available at: [Net Stable Funding Ratio \(NSFR\) – Executive Summary \(bis.org\)](https://www.bis.org) [Accessed on 2023/05/08]

Begenau, J. Piazzesi, M. & Schneider, M. (2015). Banks Risk Exposures. *National Bureau of Economic Research*, No. 28771. pp 1-43 Available at: [banks30.dvi \(nber.org\)](https://www.nber.org) [Accessed on 2023/05/11]

Black, J. Hopper, M. & Band, C. (2007). Making a success of Principles-based regulation. *Taylor and Francis*, Law and financial markets review. vol 1. no 3. pp 191-206 Available at: [black5 \(lse.ac.uk\)](https://www.lse.ac.uk) [Accessed on 2023/05/26]

Black, J. Hopper, M. & Band, C. (2023). Rules Versus Principles Based Regulation. *CFA society united kingdom*. Available at : [Rules Versus Principles Based Regulation \(cfauk.org\)](#) [Accessed on 2023/05/01]

Burgemeestre, B. Hulstijn, J. & Tan, Y. (2019). Rule-based versus Principle-based Regulatory Compliance. *Guido Governatori*, Vol 205, pp 37-46

Colonnello, S. Koetter, M. Wagner, K. (2018). Journal of Accounting and Economics. *The Leibniz Association*, No 7, pp 3-7. Available at: [Effectiveness and \(in\)efficiencies of compensation regulation: Evidence from the EU banker bonus cap \(econstor.eu\)](#) [Accessed on 2023/05/10]

Committee on Banking, Finance and Urban Affairs House of Representatives. (1984). Inquiry into Continental Illinois Corp. and Continental Illinois National Bank. *Federal Reserve Bank*, pp 300. Available at: [Inquiry into Continental Illinois Corp. and Continental Illinois National Bank \(stlouisfed.org\)](#) [Accessed on 2023/08/02]

Das, S. & Amadou N. R. Sy (2012). How Risky Are Banks' Risk Weighted Assets? Evidence From the Financial Crisis. *OECD Publishing*, pp 3-19. Available at: [How Risky Are Banks' Risk Weighted Assets? Evidence From the Financial Crisis - Mr.Sonali Das, Mr.Amadou N. R. Sy - Google Böcker](#) [Accessed on 2023/07/14]

Demos, T. (2023). What Happened With Silicon Valley Bank?. *Wall street journal*, Available at: [What Happened With Silicon Valley Bank? - WSJ](#) [Accessed on 2023/05/11]

Duignan, B. (2023). Great Recession. *Britannica*, Available at : [Great Recession | Causes, Effects, Statistics, & Facts | Britannica](#) [Accessed on 2023/04/25]

European Banking Authority. (2012). New Bank Liquidity Rules: Dangers Ahead. *European Banking Authority*, Available at: [New Bank Liquidity Rules: Dangers Ahead \(europa.eu\)](#) [Accessed on 2023/05/09]

European Banking Authority. (2016). The European Banking Authority at a Glance. *European Banking Authority*, Available at: [EBA AT A GLANCE.pdf \(europa.eu\)](#) [Accessed on 2023/05/04]

European Banking Authority. (2017). Guidelines on LCR disclosure to complement the disclosure of liquidity risk management. *European Banking Authority*, Available at: [Guidelines on LCR disclosure to complement the disclosure of liquidity risk management \(EBA-GL-2017-01\).pdf \(europa.eu\)](#) [Accessed on 2023/05/04]

Federal Reserve Publication. (2021). The Fed Explained. *Public education & outreach*, Vol 11, pp 2-84 Available at: [The Fed Explained: What the Central Bank Does \(federalreserve.gov\)](#) [Accessed on 2023/05/08]

Feldberg, G (2023). Lessons from Applying the Liquidity Coverage Ratio to Silicon Valley Bank. *Yale school of management*, Available at: [Lessons from Applying the Liquidity Coverage Ratio to Silicon Valley Bank | Yale School of Management](#) [Accessed on 2023/05/17]

Financial Stability Board. (2019). Implementation and Effects of the G20 Financial Regulatory Reforms. *Financial Stability Board*, Available at : [Implementation and Effects of the G20 Financial Regulatory Reforms: 5th Annual Report \(fsb.org\)](#) [Accessed on 2023/04/25]

Finansinspektionen. (2023). Capital requirements for Swedish banks. *Finansinspektionen*, Available at: [Capital requirements for Swedish banks | Finansinspektionen](#) [Accessed on 2023/05/08]

Gara, A. Temple-West, P. Kinder, T (2023) Executive pay at Silicon Valley Bank soared after big bet on riskier assets. *Financial Times*, Available at: [Executive pay at Silicon Valley Bank soared after big bet on riskier assets | Financial Times](#) [Accessed on 2023/05/17]

Hartmann, P. Huang, H., & Schoenmaker, D. (2018). The Changing Fortunes of Central Banking. *Cambridge University Press*, pp. 1-18, Available at : [The Changing Fortunes of Central Banking \(cambridge.org\)](#) [Accessed on 2023/04/25]

Holmström, B. (1979). Moral hazard and observability. *The Bell Journal of Economics*, vol.10, no.1, 74-91. Available at : [Moral Hazard and Observability on JSTOR](#) [Accessed on 2023/04/27]

Holmström, B. (1982). Moral hazard in teams. *RAND Corporation*, Vol. 13, No. 2, pp 324-340. Available at: [Moral Hazard in Teams \(jstor.org\)](#) [Accessed on 2023/04/27]

Intesa Sanpaolo. (2022). Form 10-K: Annual report. *Intesa Sanpaolo*. Available at: [2022_Annual_report.pdf \(intesasanpaolo.com\)](#) [Accessed on 2023/05/11]

Kokkinis, A. (2019). Exploring the effects of the 'bonus cap' rule: the impact of remuneration structure on risk-taking by bank managers. *Taylor & Francis, Journal of Corporate Law Studies*. vol 19.no 1. pp 167-195 Available at: [Full article: Exploring the effects of the 'bonus cap' rule: the impact of remuneration structure on risk-taking by bank managers \(tandfonline.com\)](#) [Accessed on 2023/05/10]

Murphy, K. J. (1999). Executive compensation. In O. Ashenfelter & D. Card (Eds.), *Handbook of labor economics*, Vol. 3, pp. 2486-2556. Available at [Chapter 38 Executive compensation - ScienceDirect](#) [Accessed on 2023/05/11]

OECD. (2021). OECD Regulatory Policy Outlook 2021. *Organisation for Economic Co-operation and Development*, Available at: [6. Risk-based regulation | OECD Regulatory Policy Outlook 2021 | OECD iLibrary \(oecd-ilibrary.org\)](#) [Accessed on 2023/08/02]

Rahman. A. & Warusawitharana, M. (2023). Impact of Leverage Ratio Relief Announcement and Expiry on Bank Stock Prices. *Federal reserve*, Available at: [The Fed - Impact of Leverage Ratio Relief Announcement and Expiry on Bank Stock Prices \(federalreserve.gov\)](#) [Accessed on 2023/05/11]

Ryan, D. (2016). US Regulators' Bonus Compensation Proposal. *Harvard Law School Forum on Corporate Governance*, Available at: [US Regulators' Bonus Compensation Proposal \(harvard.edu\)](#) [Accessed on 2023/05/10].

Silicon Valley Bank. (2021). Form 10-K: Annual report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934. *Silicon Valley Bank*, Available at: [*0000719739-21-000023 \(d18rn0p25nwr6d.cloudfront.net\)](#) [Accessed on 2023/05/11]

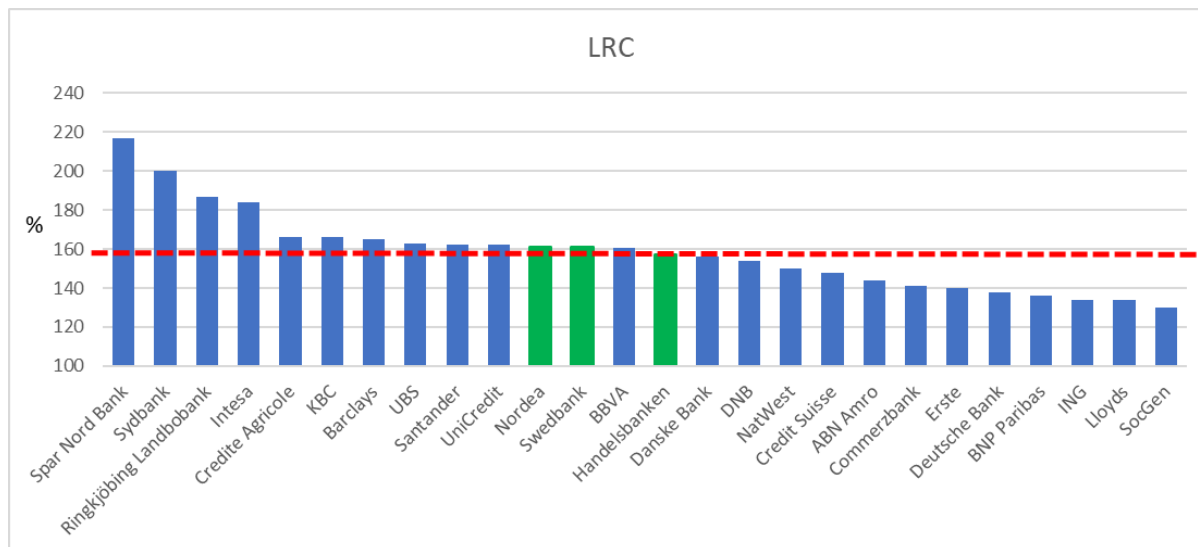
Soussa, F. (2000). Too Big to Fail: Moral Hazard and Unfair Competition? *Bank of England*, pp. 5-32 Available at : [document \(psu.edu\)](#) [Accessed on 2023/04/27]

U.S Securities and Exchange Commision. (2020). Investment Securities. *U.S Securities and Exchange Commision*, Available at: <https://www.sec.gov/Archives/edgar/data/109380/000010938020000212/R12.htm> [Accessed on 2023/05/17]

Yankov, V. (2020). The Liquidity Coverage Ratio and Corporate Liquidity Management. *Federal reserve*, Available at: [The Fed - The Liquidity Coverage Ratio and Corporate Liquidity Management \(federalreserve.gov\)](#) [Accessed on 2023/05/12]

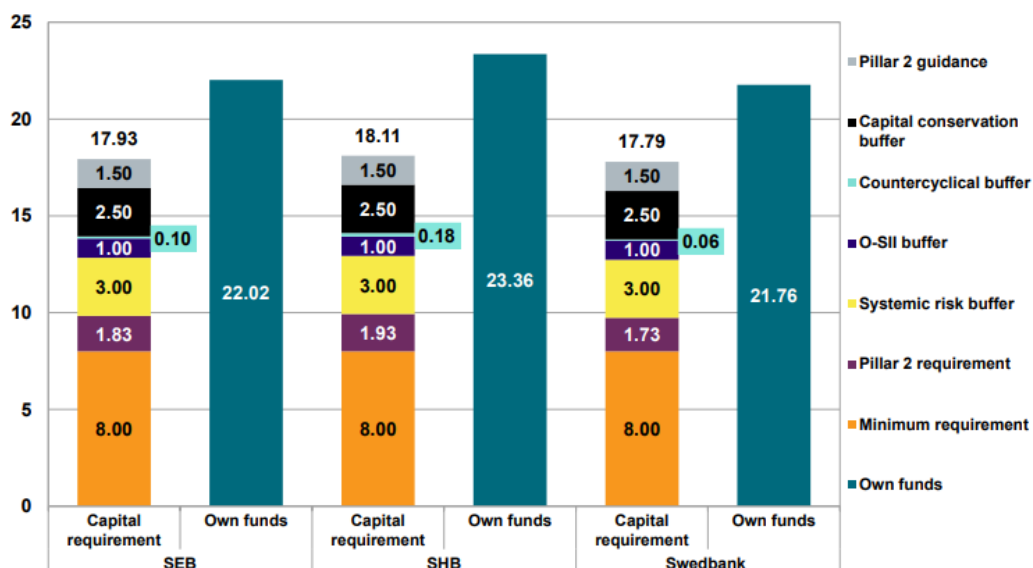
Tables

Graph 1: LCR for European banks



Source: Company reports (2022)

Graph 2: Own funds and capital requirements (percent of REA)



Source: Finansinspektionen second quarter 2022

Appendix

Table 1: Official treatment of loans and bond

Unrealised Losses:	Treatment	IFRS/Basel Banks	US Large Banks	US Regional Banks
Available for sale / FV through OCI	Accounting	Impact on book equity		
	Reg Cap	Impact on CET1 capital	AOCI Opt-out to not impact CET1, otherwise impacts CET	
Hold to maturity / Amortised cost	Accounting	No impact on book equity (FV reported in footnotes)		
	Reg Cap	No impact on CET1 capital		