LUND UNIVERSITY

SCHOOL OF ECONOMICS AND MANAGEMENT

Risk management in the banking sector

Group 5:
Gonzalo Vallejo Serrano
Yixuan Wang

Express gratitude

In the completion of this thesis, first of all, we would like to thank supervisor Elin Funck for her help with our thesis, and for her quick and helpful response to us when we determined the topic of our thesis and during the research process. In addition, we would like to thank the Chinese bank staff for participating in the interview.

Lund Univerity

2023 May 28th

Abstract

Seminar date: June 1st

Course: LUND UNIVERSITY. Business Administration: Degree Project in Accounting And Finance

Authors: Gonzalo Vallejo Serrano and Yixuan Wang

Supervisor/examiner: Elin Funck / Johan Dergård

Topic: Risk management in the banking sector

Background:

The banking industry plays an important role in the economic market. Therefore, the efficiency of the banking industry not only affects the development of its own industry, but also has a huge impact on the development of the country's macro economy. Since 2023, the collapse of Silicon Valley Bank and Credit Suisse Bank has once again sounded the alarm for the global financial market. Affected by the COVID-19 epidemic and the Ukrainian-Russian War, the inflation rate in Europe has reached a new high. In comparison, the inflation rate in China is relatively stable.

Purpose:

This article aims to compare China (empirically) with theory and with earlier research (Basel and early European Bank findings). To discover differences in the implementation of different regulatory frameworks in China and the EU. How effective is the regulatory framework and guidelines developed by the BCBS in promoting sound risk management practices in banks?

Methodology:

In order to answer the research purpose, we choose Chinese banks to conduct interviews to obtain primary data. At the same time, we will further collect relevant data disclosed by the Chinese government and the banking industry for research. After European Bank refused to be interviewed, we chose to collect public information on the official website to collect data on European Bank.

Theoretical perspective:

The paper chooses the Basel framework and different risk types as the theoretical basis, and describes the empirical part. Risk management has aroused widespread concern in the financial world since it was proposed in the last century. With the development of the economy, the

banking industry is facing more and more risks, including credit risk, operational risk, market risk and liquidity risk. During this process, the Basel framework was gradually established, setting capital requirements and risk measurement standards for global banks.

Empirical foundation:

Through interviews with Chinese bank staff and review of second-hand materials publicly released by the Chinese government. We found that the risks faced by Chinese banks are different from those of European banks. Chinese commercial banks are under the jurisdiction of the People's Bank of China, while European banks are more risk-adjusted according to the Basel framework.

Conclusion:

Due to the different ideologies and social systems in China and Europe, these regions face the different risks in the banking system. In China, banks face specific risks related to the country's economic structure and development, namely country risks. However, European countries face risks associated with the economic stability of individual EU member states.China's highly centralised social system is in sharp contrast to the European autonomous social system, which makes the implementation of the Basel agreement in China have certain resistance.

Key word: Risk management, Basel accords, Basel Committee on Banking Supervision, State-owned bank, banking industry.

Table of contents

1. Introduction

Throughout history, the banking industry has played a crucial role in the worldwide economy. As a result, policymakers, regulators, and financial institutions have always considered managing risks within this industry to be a crucial matter. Over the past few decades, numerous financial crises, such as the global financial crisis in 2008, have demonstrated the significance of efficient risk management in the banking industry. These crises have led to the establishment of diverse regulations and frameworks intended to maintain the stability of the banking industry (Supervision & Settlements, 2010).

The establishment of the Basel I, II, III and IV regulatory frameworks by the Basel Committee on Banking Supervision (BCBS) has been crucial in shaping the regulatory landscape for the banking sector. These accords have been designed to tackle distinct aspects of banking risk, such as credit risk, market risk, and operational risk. However, the implementation of these regulations has not been without challenges. Concerns have been raised about their effectiveness and the expenses associated with complying with them (Awojobi et al., 2011).

In addition to the BCBS, different banking and risk regulators such as Financial Stability Oversight Council (FSOC) in the U.S. and the European Systemic Risk Board (ESRB) in the E.U have also played a role in shaping risk management practices within the banking sector (Awojobi et al., 2011). These regulators have implemented various rules and guidelines aimed at promoting risk management, transparency, and accountability within financial institutions.

As mentioned by Rastogi et al. (2022), a bank's performance is a compensation between non-performing assets (NPAs), regulations and profitability, which is noted as a triad, that can be the solution to the bank's concerns of performance and risk management. Furthermore, the 2008 world financial crisis may have been caused by a disproportion between these factors, as there were fewer regulations, increasing competition which lead to reduced profitability and increased the incentives of the banking management to take risks increasing their risk appetite. Reduced competition may increase the profitability of banks but in the long run, it leads to either the progress or collapse of banks, that is what is happening nowadays with the regional banks, where the failure of different regional banks (First Republic Bank and Silicon Valley Bank) is switching the capital of customers from regional banks to bigger banks, increasing the risks of bankruptcy

of smaller regional banks. The combination of adaptable and well-articulated regulations, along with reduced competition, enhances the value of a bank's performance (Rastogi et al., 2022).

There are two contrasting perspectives regarding the impact of regulation on profitability. The first viewpoint suggests that regulation has no influence on profitability. Conversely, the second viewpoint posits that regulation plays a crucial role in enhancing banks' profitability and overall performance indicators (Rastogi et al., 2022).

The regulatory framework governing banks in every country must effectively address several key issues. These include maintaining a sufficient capital adequacy ratio, implementing prudent provisioning practices, managing concentration risk in banking activities, ensuring appropriate ownership structures of banks, promoting market discipline, employing robust regulatory mechanisms, considering the presence of foreign capital, fostering healthy bank competition, establishing strong official supervisory powers, maintaining the independence of supervisory bodies, facilitating private monitoring, and effectively managing NPAs (Rastogi et al., 2022).

Capital regulation is an adequate tool for mitigating banks' risk-taking behaviour. While it may result in some cost escalation, the benefits of capital regulation outweigh these costs. Jin et al. (2013) found evidence of a negative association between regulation and banks' risk-taking, indicating that capital obligations empower regulators to effectively manage risk. Furthermore, competition in the banking industry plays a significant role in reducing banks' risk-taking. It is important to note that the impact of capital regulation on banks' risk-taking is limited, suggesting that additional measures may be necessary to comprehensively address risk in the banking sector.

Maji and De (2015) put forth the argument that human capital plays a more impactful role in effectively managing credit risks within banks. Besanko and Kanatas (1996) emphasized that regulations pertaining to capital obligations may not necessarily mitigate risks in all situations, particularly when recapitalization measures are imposed. Additionally, Klomp and De Haan (2012) proposed that the implementation of capital requirements and enhanced supervision significantly reduce risks faced by banks.

The inclusion of a third-party audit can enhance the overall legitimacy of the banking system. The lack of third-party intervention is noticeable and may raise concerns about the reliability and

effectiveness of regulatory measures in addressing banks' risk-taking behaviour. By incorporating third-party audits, there is a greater assurance of transparency and credibility in assessing the impact of regulations on banks' risk management practices. This external validation can help strengthen confidence in the regulatory framework and foster trust in the banking sector (Rastogi et al., 2022).

The impact of regulations on banks has long been a subject of debate. Barth et al. (2008) conducted a study revealing that countries with a central bank as the only regulatory body tend to have high non-performing assets (NPAs). On the other hand, countries with multiple regulatory bodies face higher liquidity risks but have lower capital obligations. Barth et al. (2008) proposed several steps to rationalize the existing regulatory framework for banks, including 1. mandatory information disclosure, 2. empowered bank management, and 3. increased incentives for third-party agents to exercise corporate control. Their research also indicates an inverse relationship between profitability and banks' risk-taking, suggesting that standard regulatory practices such as capital obligations may not always be favourable. However, smaller domestic banks can benefit from certain capital regulations.

1.1 Background and problem discussion

The banking sector plays a critical position in the economy as it facilitates the flow of capital and financial transactions. However, it is also inherently risky due to its exposure to various financial risks, such as credit risk, market risk, and operational risk. The financial crises of the past decades, like the dot-com bubble of 2000, the global financial crisis of 2008, and the COVID-19 pandemic have highlighted the importance of effective risk management in the banking sector.

Regulatory bodies, such as the BCBS, have responded to these crises by implementing stricter regulatory frameworks and guidelines to promote more robust risk management practices in banks. The Basel Committee has issued four sets of regulations, known as Basel I (1988), Basel II (2004), Basel III (2010), and Basel IV (2023) which aim to increase the resilience of the banking industry to financial constrains (Awojobi et al., 2011).

Despite the efforts made, the banking sector still confronts various risks and obstacles, particularly considering the recent COVID-19 pandemic and the macroeconomic changes it

involved as the massive impression of new currencies and lower interest rates. Therefore, it is crucial to investigate the diverse outlooks and challenges in risk management in the banking sector, particularly in consideration of the multiple financial crises experienced over the past few decades. This master thesis aims to deliver an all-encompassing analysis of risk management regulations in the banking sector, with a focus on the Chinese industry by analysing the risk management frameworks and their performance in responding to risks. The research will scrutinise the regulatory frameworks and guidelines established by the BCBS and provide valuable insights and recommendations for enhancing risk management practices in banks.

Furthermore, there are also challenges in implementing effective risk management practices in banks, such as the need for better risk data management, improved risk culture, and the use of innovative technologies to better monitor and manage risks.

Overall, this thesis seeks to contribute to the ongoing discussion and debate on effective risk management in the banking industry and provide insights and recommendations for banks and regulators to improve their risk management practices.

1.2 Research purpose:

The objective of this master thesis is to provide a comprehensive analysis of risk management practices in the banking sector, with a focus on the different perspectives and challenges presented by the various financial crises that have occurred in the past decades. The thesis aims to examine the regulatory frameworks and guidelines set forth by the BCBS and to provide insights for improving risk management practices in banks.

1.3 Research Questions:

The research questions for this master thesis are:

Differences in the implementation of the different regulatory frameworks between China and the UE (We will use the interview done to get the Chinese industry information, and different papers that explain the difficulties when implementing it in Europe).

How effective have the regulatory frameworks and guidelines set forth by the BCBS been in promoting robust risk management practices in banks?

1.4 Delimitation

This master thesis will focus on risk management practices in the banking sector, with a particular emphasis on the different perspectives and challenges presented by various financial crises. The thesis will examine the regulatory frameworks and guidelines set forth by the BCBS, as well as the different banking and risk regulators in the US and EU.

The thesis will not cover risk management practices in other financial sectors, such as insurance and investment banking. It will also not deep into the technical details of the regulatory frameworks and guidelines, but instead provide a high-level overview of their key principles and objectives.

Furthermore, the thesis will not provide a comprehensive analysis of specific current banks or financial institutions, but instead provide a general analysis of risk management practices in the banking industry as a whole, anyways this thesis will study the possible errors that took place during the main bank collapses and which alternatives could have been taken to evade these collapses.

2. literature review

As an essential part of the national economy, the bank sector reflects the economic level and the development trend in the country's future, which plays an important position in the stability of the financial market (Risk Optics, 2022). Meanwhile, the level of effective management is related to the stability of the banking industry and the long-term development of the financial market (Gündüz, V. 2020). Therefore, the banking industry is strictly regulated, and risk management has become a core function of banks and financial institutions (Bessis, J. 2015). This section will be divided into four parts: theoretical framework, international banking supervision framework, banking risk types and economic status.

2.1 Theoretical framework

Originating in academic finance, risk management has a long and controversial history (McShane, 2018). The concept of risk management was first proposed by Hubener in 1930 and has been widely used in various enterprises. After a century of development, the role of RM within finance is no longer simply risk identification but involves complex econometrics and financial models with uncertainty (Alexander, 2005). The Basel Committee (2001) redefines financial risk management as four processes and continues to refine their use in the banking industry.

In the following years, banks, as an industry highly related to risk, introduced the concept of risk management into their operations. And redefine it as dealing with potential losses and making reasonable plans and executions (Dionne, 2019). Until the 1980s, the banking industry strengthened the management of market risk and credit risk, and introduced operational risk and liquidity risk in the 1990s (Dionne, 2013). At the same time, the Basel Committee has formulated a series of frames for the banking industry.

2.2 The international regulatory framework for banks

Generally speaking, the risks faced by banks are dynamic, which requires a strong and flexible risk management plan to be at the "helm" of the banking industry (Risk Optics, 2022). The current supervisory guidelines for the world's dominant banking sector were determined by a group of supervisors convened at the Bank for International Settlements (BIS) in Basel, hence the name Basel Accords (Bessis, J. 2015). The emergence of the Basel Accords provides international banks with a more uniform set of guidelines as a reference to manage and monitor business processes in the banking industry (AdvisoryHQ, n, d). In the early 1980s, the impact of oil on Europe led to bankruptcies in the United States and some European banks (Dimic, M., & Sprajc, P. 2018). To mitigate the losses of the banking industry, Basel I was launched in 1988 and officially implemented in 1992 (Županović, l. 2014).

Basel I, as the first international banking regulatory framework, aims to boost the stability of the financial system by setting minimum reserve obligations (Elsembawy, A. 2021). At the same time, the main target of Basel I is on the credit risk of banks, and it is pointed out that capital is

the only stable source of banks (Županović, l. 2014). It provided a standardized approach for banks to determine their capital need based on the credit risk of their assets (BCBS, 1988). Under Basel I, banks were requested to maintain a minimum capital adequacy ratio (CAR) of 8 per cent, with at least 4 per cent allocated to Tier 1 capital (shareholders' equity and retained earnings) (BCBS, 1988). This capital requirement was focused to make sure that banks had enough buffer to absorb probable losses and preserve stakeholder confidence (BCBS, 1988). Therefore the significance of Basel I is to have an impact on risk management practices in the banking industry by introducing a standardized framework for capital adequacy requirements.

In addition, the implementation of Basel I led banks to shift their focus towards measuring and managing credit risk in a more structured and systematic manner (Hull, 2019). The establishment of the risk-based capital requirements in Basel I incentivized banks to boost their risk management practices. Banks started developing internal systems and models to evaluate credit risk more accurately and to allocate capital accordingly (Hull, 2019). This resulted in the emergence of more sophisticated credit risk management practices, such as credit scoring models, portfolio diversification strategies, and risk-based pricing (Ho, 2019).

In the following years, Basel I was guiding the regulatory measures and risk management of the banking industry until Basel II was launched in 2004. In the early 21st century, the rapid development of the financial market led to the emergence of various new financial products. The financial structure has undergone major changes, and mergers and acquisitions frequently appear in the public eye (Dimic, M., & Sprajc, P. 2018). The main objective of Basel II is therefore to promote the stability and security of banks (Županović, l. 2014). As an extension of Basel I, Basel II established a more comprehensive risk management framework and mandated minimum capital requirements (Elsembawy, A. 2021). At the same time, the calculation method of the minimum capital is defined in detail (Dimic, M., & Sprajc, P. 2018). Basel II pointed out that when assessing credit risk, companies should pay more attention to market value rather than book value (Elsembawy, A. 2021). There are 3 kinds of pillars in the Basel II. The first standard allows banks to use inner models to assess credit, market, and operational risks more accurately, aligning capital requirements with actual risks faced by banks (BCBS, 2004). The second pillar emphasizes supervisory review to evaluate the adequacy of capital, risk management practices, and governance frameworks (BCBS, 2004). The third pillar promotes transparency and

disclosure, enabling market participants to make informed decisions (BCBS, 2004). Under Basel II, banks were required to assess credit, market, and operational risks in a more granular and sophisticated manner (Hull, 2019). Banks had to develop internal models or use standardized approaches to measure and manage these risks more accurately (Hull, 2019).

However, after ten years of using the agreement, in 2008, a global financial crisis emerged, and the capitalist countries headed by the United States fell into financial difficulties again. The financial crisis was characterized by a liquidity crunch, a period in which regulators recognised that banks were not sufficiently resilient to maintain liquidity and funding stress (Bessis, 2015). That's why Basel III was created. Basel III was an international regulatory framework defined by the BCBS to reinforce the stability and resilience of the banking industry (BCBS, 2010). One of the key changes introduced by Basel III was the implementation of higher capital adequacy requirements for banks (Dermine & De Leusse, 2017)As the most advanced bank risk management framework, Basel III forced all banks to more than triple their capital to increase the stability of the entire system (Chornous et al., 2013). Basel III brought significant changes to risk management in the banking sector by introducing stricter capital requirements, enhanced liquidity standards, and improved risk measurement and management practices (Dermine & De Leusse, 2017).

Meanwhile, Basel III aims to strengthen the share of government bonds in bank capital and solve their liquidity problems (Elsembawy, A. 2021). Basel Committee (2010) proposed that capital and liquidity standards will continuously increase the level of high-quality capital in the banking sector, boost liquidity buffers and reduce unstable financing structures. Although Basel III was proposed earlier, the plan was not implemented for various reasons.

In December 2017, the BCBS published several revised reforms to Basel III, introducing fundamental changes to the methodology for determining capital requirements (Feridun and Özün, 2020). Bodellini (2019) said. Although the new measure is only a modification of Basel III, it has had an important impact on the development of the banking sector and is therefore known in the industry as Basel IV. The implementation of Basel IV builds upon the previous Basel frameworks, particularly Basel III, and is meant to address the remaining problems and weaknesses in the regulatory framework (Mancini et al., 2020).

The key objectives of Basel IV include strengthening the risk sensitivity of capital requirements, addressing regulatory arbitrage and capital optimization practices, and improving the comparability and transparency of banks' risk-weighted assets (RWAs) (BCBS, 2019). The reforms introduce revisions to the uniform approach for credit risk, operational risk, and the measurement of market risk (Hüser & Schüler, 2019). Additionally, Basel IV introduces the standardized output floor, which limits the range to which banks can decrease their capital needs through inner models (McGovern et al., 2020).

Basel IV regulates the calculation of risk-weighted assets, so the new frame has an impact on capital management, portfolio composition, product structure, and operational adjustments (Bakare, 2018). The Basel IV reforms originally had an implementation date of 2022, but in order to reduce the impact of COVID-19 on the global banking system, the BCBS has decided to postpone the Basel IV implementation timetable by one year to January 1, 2023 (Feridun and Özün, 2020).

2.3 Type of risks in the banking sector

Globally, all banks are under dual pressure to improve performance and risk management practices (Rastogi et al., 2022). According to the Risk Optics (2022) report, the main types of risks faced by the banking sector are credit risk, market risk, operational analysis, reputation risk and third-party risks that must be considered and are related to the bank's overall risk level. But at the same time, Imbierowicz and Rauch (2014) mentioned that credit risk and liquidity risk are two important factors for the survival of banks.

The first point is credit risk. It is undeniable that among all risks, credit risk is the biggest risk faced by banks, and it is an unavoidable risk in the process of dealing with customers (Vyas & Singh, 2010). The reason for most bank failures is inseparable from credit risk, so the management of credit risk is related to the long-term stable development of enterprises (Županović, l. 2014). Vyas & Singh (2010) stated that banks usually use cost differences to quantify risks or link enterprise return management systems with external prices to reduce related risks.

The second point is market risk. According to the Basel Agreement, market risk represents “the risk of losses on the balance sheet and off-balance sheet items due to changes in market prices” (BCBS, 2004). At the same time, market risk has a strong endogenous nature, which is caused by some specific investment or financial activities, including stock prices, interest rates, foreign exchange, etc. (Chornous et al., 2013). Mirkovic et al. (2013) pointed out that in the process of managing market risks, scenario analysis and stress testing are required, and financial institutions need to select models based on historical data.

The third point is operational risk. Operational risk is considered to be a regional risk in addition to credit risk and market risk (Li and Moosa, 2015). The 2008 financial crisis is seen as the worst crisis in history from an operational perspective (Jongh et al, 2012). At the same time, Vasiliev et al (2018) stated that good operational risk management can minimize the bank's liability risk and help increase the bank's stability.

The fourth point is liquidity risk. Financial liquidity risk is usually defined as the possibility that a bank will not be able to pay its obligations immediately within a specified period (Drehmann and Nikolaou, 2013). According to Lee (2011), mobility is related to the geographical, economic and political environments of different countries. He also stated that liquidity risk generally exists in all countries, including emerging markets in developing countries and mature financial markets in developed countries. For most banks, distrust of banks is largely influenced by the large amount of credit risk in their portfolios (Imbierowicz and Rauch, 2014). Therefore, liquidity risk is nearly related to credit risk.

Overall, risk identification and categorization are critical when developing a risk management program (Risk Optics, 2022). It is worth noting that the core concept of risk regulation is the "capital adequacy" principle, and the main purpose of the banking sector is to prevent the occurrence of systemic risks (Bessis, n, d).

2.4 The practice of the Basel regulations in banks

After the Basel Accords were established, researchers found that countries with different economic developments differed in their ability to implement the agreement. By examining the effect of Basel II on the cost efficiency of commercial banks, it is found that higher capital

requirements tend to improve cost efficiency, but stronger regulators can adversely affect the efficiency of banks (Manlagnit, 2015). Meanwhile, Ferri, Liu and Majnoni (2001) stated that the Basel proposal would increase the volatility of capital requirements of NHIC banks and banks in high-income countries. It is also mentioned that banks in high-income countries will reduce capital requirements due to prudent lending behaviour (Ferri, Liu and Majnoni, 2001). In addition, it has been proved that the main constraint of Basel III is not its comprehensiveness and complexity, but the stricter level of capital requirements and higher capital quality requirements (Gottschalk, Castro and Xu, 2021).

3. Method

3.1 Research approach

The research approach for this master thesis on risk management in the banking industry and regulation changes will employ a qualitative methodology. This approach will entail a combination of an interview with a Chinese bank manager, an analysis of various cases, journals, research studies, annual reports of different banks and data provided by regulatory bodies to offer a comprehensive analysis of the subject matter investigating the different regulatory approaches and its impact in different regions. By utilizing qualitative research methods, this study aims to obtain a deeper understanding of the intricate dynamics between risk management practices, regulatory changes, and their impact on banks' performance.

The qualitative research component will focus on obtaining in-depth insights and comprehension of risk management practices and the ramifications of regulatory changes through interviews, case studies, and qualitative data analysis. In-depth interviews will be conducted with professionals working in the banking sector, allowing for valuable insights into the challenges they face, their strategies and practices in risk management, and their experiences dealing with regulatory changes.

The qualitative data collected through diverse research methods will be integrated and triangulated to enhance a comprehensive understanding of risk management practices and the impact of regulatory changes on banks' performance. By combining these methods, the study aims to present a holistic view of risk management practices, regulatory changes, and their consequences within the banking sector.

In conclusion, the research approach for this master thesis entails the use of qualitative research methods to delve into the complexities of risk management practices, regulatory changes, and banks' performance. Through the integration and triangulation of qualitative data, this study aims to contribute to the existing literature on risk management in the banking sector, providing valuable insights for practitioners and researchers alike.

3.2 Search of sources

The research methodology employed in this master thesis on risk management in the banking industry and regulation changes will involve an exhaustive and comprehensive approach to sourcing appropriate and credible academic materials. The primary sources for the literature review will consist of Scopus, Google Scholar, and the Lund University library. These platforms offer an extensive range of scholarly resources, including research papers, books, conference proceedings, and reports pertinent to the field of finance, risk management, and banking regulation.

To ensure the inclusion of the most recent and up-to-date research, the search will be restricted to materials published within the last decade. However, innovative works and influential publications that have significantly impacted the field will also be taken into consideration, regardless of their publication date. Furthermore, the reference lists of the identified sources will be scrutinized to identify additional pertinent articles and books, ensuring a comprehensive coverage of the research topic.

The search process will involve the utilization of specific keywords and combinations, such as risk management, banking sector, regulation, capital adequacy, liquidity risk, operational risk, Basel Accords, and regulatory compliance. These search terms will be refined and modified as the search progresses, accounting for the specific research objectives and emerging themes discovered within the literature.

Once the relevant sources have been identified, a screening process will be implemented to select the most suitable and high-quality materials. This screening process will involve assessing the relevance of the sources based on their titles, abstracts, and keywords. Full-text articles and books that meet the inclusion criteria will be diligently examined, and their reference lists will be reviewed to identify additional sources for potential inclusion.

In conclusion, the search of sources for this master thesis will rely on Scopus, Google Scholar, and the Lund University library as the primary platforms for gathering pertinent scholarly materials. By employing a comprehensive and systematic search strategy, incorporating specific keywords and filters, the objective is to identify recent and authoritative research studies, books, reports, and other relevant sources related to risk management in the banking industry and regulation changes.

3.3 Research design

The research design for this master thesis on risk management in the banking industry and regulation changes will adopt a mixed-methods approach to ensure a comprehensive and in-depth analysis of the topic. The research design encompasses various components, including the data collection methods, and data analysis techniques.

In order to illustrate the research problem, this paper chooses Chinese banks as the research object, analyzes the causes of formation in combination with various risks they face, and puts forward targeted suggestions to provide a reference for more banks when designing risk management frameworks. There are several reasons for choosing a Chinese bank. First of all, as one of the largest economies in the world, China's ability to resist risks affects the stability of the global financial market and the speed of economic development. Second, China and Europe have completely different social systems, making it easier to draw comparisons. At the same time, it is the largest developing country in the world and the largest trading nation of more than 120 countries. The third point is that while using the Basel Agreement, China has modified it and made adjustments with Chinese characteristics. Combining these three points, we believe that choosing Chinese banks as the research object has a more obvious contrast, making a comparison between the different regulatory changes implemented in China compared to

European banks, which information is found in its annual reports. In this thesis, the names of the banks in China and the names of the interviewees will not be made public. Since the staff of the Bank of China cannot accept public interviews, we will collectively refer to the Bank of China and the interviewees.

3.4 Data collection

Qualitative Data: Structured interview has been conducted with a Chinese banking professional. The interview has been guided by a set of open-ended questions that explore his experiences, and challenges related to risk management and regulatory changes. This interview has been done by sending the questions to the expert and he sent us his answers when he was able, as his time is very valuable and limited, and a real-time meeting would be very complicated to place.

3.5 Method for data analysis

Thematic analysis will be employed to analyse the qualitative data collected through the interview and literature review about different concepts, including risk management in the banking industry, changes in the regulation with the information provided by regulatory bodies such as the BCBS, FSOC and ESRB and other literature available about the discussed topics. The analysed data will be used to identify limitations and challenges found when implementing new regulations comparing it between China and Europe, changes in the risk management of banks, patterns, themes, and relationships between management in banks and the regulation changes. This analysis will provide rich descriptions and insights into risk management practices and the impact of regulatory changes.

3.6 Ethical issues

Ethical issues are a crucial aspect of research that needs to be carefully considered and addressed throughout the research process. They involve the principles and guidelines that govern the conduct of research and ensure the protection of participants' rights, privacy, and welfare. In this section, some of the key ethical issues that must be addressed when conducting a research in the field of risk management in the banking industry will be discussed.

Informed consent is a fundamental ethical principle in research. Informed consent from participants must be obtained, ensuring that they have a clear understanding of the research purpose, procedures, potential risks, and benefits and that they voluntarily agree to participate. It is important to provide participants with the opportunity to ask questions and make an informed decision about their involvement in the study.

Confidentiality and privacy are essential considerations in research. Measures to protect the confidentiality of participants' data must be taken, ensuring that information is securely stored and only accessible to authorized individuals. Anonymity can be maintained by using pseudonyms or coding systems to protect participants' identities. It is important to inform participants about how their data will be used and ensure that their privacy is respected.

Potential conflicts of interest should be identified and managed appropriately. Any financial, personal, or professional relationships that may influence the research or its outcomes should be disclosed. Transparency and integrity in disclosing conflicts of interest are essential to maintain the credibility and objectivity of the research.

Respect for participants' welfare is a core ethical principle. The well-being and safety of participants throughout the research process must be prioritised. If any adverse effects or risks are identified, steps should be taken to mitigate them promptly.

Open and transparent communication with participants is essential. Feedback or summaries of the research findings to participants should be provided, when appropriate and feasible, as a way of showing respect for their contribution and involvement in the study.

In conclusion, ethical issues are critical considerations in research on risk management in the banking industry. In the research process, it is important to adhere to ethical principles and guidelines to protect the rights, privacy, and welfare of participants. By ensuring informed consent, confidentiality, data protection, research integrity, participant welfare, and transparent communication, researchers can conduct their studies ethically and responsibly.

4. Empirical material

This chapter will analyze and summarize the collected data. In this chapter, we focus on introducing China's banking system, its structural composition and its risk management framework. Explain the European bank risk management framework (Basel Framework) through literature and other secondary sources.

4.1 Challenges when implementing the different Basel frameworks and their limitations

Respondent C said that the Basel Accords are a set of rules governing bank operations, revised based on European countries' needs for bank risk management. Therefore, the Basel Accord is more suitable for use by large international banks. In Europe, banks, regardless of their size, must adopt Basel II, and securities companies, including banks, must also adopt Basel II.

4.1.1 Basel I

The introduction of Basel I was motivated by concerns regarding the adequacy of banks' capital and the need for harmonization in capital regulation across countries to enhance financial stability (BCBS, 1988).

Under Basel I, banks were requested to allocate a minimum capital amount depending on their risk exposure. This meant that banks had to assess the creditworthiness of borrowers more rigorously, ensuring that appropriate capital was held against loans and other credit exposures (Hull, 2019). Furthermore, Basel I prompted banks to enhance their risk monitoring and reporting capabilities. Banks needed to establish systems for measuring and reporting their capital adequacy ratios, ensuring compliance with regulatory requirements (Ho, 2019). This emphasis on risk measurement and reporting paved the way for more comprehensive risk management frameworks in the banking sector.

When implementing Basel I, several challenges were encountered by banks and regulatory authorities. These challenges included the complexity of the framework, the lack of consistency in interpretation and implementation across different jurisdictions, and the limited coverage of

risk types (Lall, 2015). The complexity of Basel I caused challenges for banks to accurately measure and assess their capital requirements. The framework required banks to assign specific risk weights to various asset classes, which required a comprehensive understanding of the underlying risks associated with each asset. Additionally, the lack of consistent interpretation and implementation across jurisdictions resulted in discrepancies in capital requirements between banks operating in different countries. This inconsistency created an uneven playing field and hindered the effectiveness of the regulatory framework.

Furthermore, Basel I primarily focused on credit risk and did not adequately address another kind of risks, like operational and market risks. This limited coverage of risk types left gaps in the overall risk management framework and potentially exposed banks to unaddressed vulnerabilities.

Overall, the implementation of Basel I faced challenges related to complexity, inconsistency, and limited risk coverage. These challenges highlighted the need for further refinements and led to the development of subsequent Basel frameworks to address the identified shortcomings.

In the other hand, Basel I had several limitations within risk management. One of the key limitations was its simplistic approach to risk measurement (BCBS, 1988). Under Basel I, banks were requested to assign fixed risk weights to different asset classes, regardless of the actual risk inherent in those assets (BCBS, 1988). This approach failed to capture the true risk profile of assets and resulted in an oversimplified assessment of risk.

Another limitation of Basel I was its focus on credit risk, while generally ignoring other types of risks faced by banks, such as market risk and operational risk (BCBS, 1988). The framework primarily relied on capital adequacy ratios based on credit risk, which did not adequately account for the potential losses arising from market fluctuations or operational failures. This narrow focus on credit risk left banks exposed to other significant sources of risk, limiting the effectiveness of risk management practices.

Additionally, Basel I did not adequately address the issue of risk concentration (BCBS, 1988). The framework did not impose explicit limits on the concentration of assets or exposures within a bank's portfolio. This lack of attention to risk concentration meant that banks could have

significant exposures to a single borrower or sector, increasing the vulnerability of the banking system to systemic risks.

Furthermore, Basel I had limited provisions for the use of internal risk models and relied heavily on standardized approaches (BCBS, 1988). This approach undermined the ability of banks to tailor their risk management practices to their specific risk profiles. It also resulted in a lack of consistency in risk measurement and management across banks.

In conclusion, Basel I had several limitations within risk management (BCBS, 1988). Its simplistic risk measurement approach, limited consideration of non-credit risks, inadequate focus on risk concentration, and limited use of internal risk models hindered the effectiveness of risk management practices. These limitations highlighted the need for further developments in subsequent Basel frameworks to address these shortcomings and enhance risk management in the banking sector.

4.1.2 Basel II

Basel II, established by the BCBS, was a comprehensive framework that enhances risk management practices and capital adequacy rules in the banking sector (BCBS, 2004). It included three standards: minimum capital requirements, supervisory review, and market discipline. Basel II represents a significant advancement over Basel I, addressing limitations and providing a more risk-sensitive approach to risk management and capital adequacy regulation (BCBS, 2004). It contributes to a more robust and resilient banking system by improving risk measurement, capital needs, supervisory oversight, and market discipline.

Basel II brought significant changes to risk management in the banking industry by introducing a more comprehensive and risk-sensitive structure for capital adequacy needs. The implementation of Basel II led banks to adopt more advanced risk management practices and techniques (Hull, 2019). One of the main changes introduced by Basel II was the incorporation of credit risk reduction practices, like collateral and guarantees, in the calculation of capital requirements (Hull, 2019). This allowed banks to reflect the risk reduction achieved through these techniques in their capital calculations.

Basel II also emphasized the importance of robust risk governance and risk management frameworks within banks (Hull, 2019). Banks were required to establish comprehensive risk management policies and strategies, including risk identification, measurement, monitoring, and control processes.

Additionally, Basel II introduced the concept of economic capital, which encouraged banks to assess their capital needs based on their individual risk profiles (Hull, 2019). This helped banks align their capital requirements more closely with their specific risk exposures.

Overall, Basel II played a crucial role in enhancing risk management practices in the banking industry by promoting a more comprehensive and risk-sensitive approach to capital adequacy requirements. It encouraged banks to adopt advanced risk measurement models, implement robust risk governance frameworks, and consider the effectiveness of credit risk mitigation techniques in their capital calculations.

When implementing Basel II, banks and regulators faced several challenges. One of the main challenges was the increased complexity of the framework compared to Basel I. Basel II required banks to develop and implement advanced risk measurement models and systems, which involved significant technical and operational complexity (Smith, 2009). Another challenge was related to data quality. Accurate and reliable data is crucial for effective risk management under Basel II. However, many banks struggled to obtain high-quality data, especially for risk stipulations like the likelihood of bankruptcy, loss given default, and exposure at default. Inaccurate or incomplete data could undermine the accuracy and reliability of risk assessments (Smith, 2009).

Additionally, the model risk was a significant challenge in Basel II implementation. The framework allowed banks to use internal configurations for computing regulatory capital needs. However, these configurations were subject to potential errors and limitations, and the validation and calibration of these models posed challenges for banks and regulators (Smith, 2009).

Overall, the challenges encountered during the application of Basel II were primarily related to the complexity of the framework, data quality issues, and the management of model risk. These challenges required banks to invest in sophisticated systems, improve data management

practices, and ensure robust model validation processes to meet the requirements of Basel II (Smith, 2009).

Basel II, despite its advancements in risk management, had certain limitations that affected its effectiveness. One limitation was the complexity and sophistication of the framework, which made it challenging for smaller banks with limited resources to comply with the requirements (Cruz, 2011). The implementation of Basel II required significant investments in technology, data management, and risk modelling capabilities, which posed a barrier for smaller institutions.

Another limitation was the heavy reliance on banks' internal models for risk assessment, which introduced the potential for model risk and subjectivity (Düllmann & Kunisch, 2016). The use of inner models allowed banks to determine their own risk weights, which could lead to inconsistencies and discrepancies in risk measurement across institutions. Additionally, the reliance on historical data and assumptions in risk modelling introduced the risk of inaccurate risk estimates, particularly during periods of financial stress and market volatility.

Furthermore, the procyclicality of Basel II's risk-sensitive capital requirements was a concern (Fender & Lewrick, 2004). During economic upturns, when credit risks were perceived to be low, banks could reduce their capital reserves, potentially amplifying the impact of a subsequent downturn. This procyclical nature could exacerbate financial instability during periods of economic stress.

4.1.3 Basel III

It was introduced as a reply to the 2008 financial crisis and aimed to address the shortcomings of previous frameworks, such as Basel I and Basel II, by implementing tougher capital needs, improved risk management practices, and boosted transparency.

Banks were expected to keep higher levels of common equity Tier 1 capital, which increased their resilience to potential losses and enhanced their ability to absorb risks.

Basel III also launched the concept of the liquidity coverage ratio (LCR) and the net stable funding ratio (NSFR) to address liquidity risks (Dermine & De Leusse, 2017). The LCR requires banks to carry enough high-quality liquid assets to cover their short-term liquidity needs, while the NSFR emphasized on the stability of banks' funding sources over a longer time horizon.

Another key aspect of Basel III was the introduction of the leverage ratio, which measures a bank's capital against its total exposure (Dermine & De Leusse, 2017). This ratio provides a supplementary measure of capital adequacy and helps to prevent excessive leverage and the build-up of systemic risks.

Basel III also emphasized the significance of risk measurement and management practices, including the adoption of robust risk models and the establishment of effective risk governance frameworks (Dermine & De Leusse, 2017). Banks were required to enhance their risk assessment capabilities, stress testing procedures, and risk reporting practices to ensure a deeper comprehensive and progressive approach to risk management.

Overall, Basel III played a crucial role in strengthening risk management practices in the banking sector by introducing higher capital requirements, enhanced liquidity standards, and improved risk measurement and management practices. These changes aimed to enhance the resilience of banks, mitigate systemic risks, and promote a more stable and secure financial system.

Implementing Basel III has posed several challenges for banks and regulatory authorities worldwide. One significant challenge is the increased capital requirements imposed by Basel III. Banks have had to raise extra capital to satisfy the higher capital ratios, that can be costly and potentially impact profitability (BCBS, 2010).

Another challenge relates to liquidity risk management. Basel III introduced the LCR and the NSFR to make sure banks keep adequate liquidity buffers and stable funding sources. However, complying with these ratios can be challenging for banks, especially through phases of market pressure when accessing stable funding may become more difficult (BCBS, 2010).

The implementation of Basel III has also raised concerns about the potential impact on lending activities. Higher capital requirements and liquidity standards may restrict banks' ability to

provide loans, particularly to small and medium-sized enterprises (SMEs) and in less developed regions where access to credit is crucial for economic growth (BCBS, 2010).

Furthermore, the global nature of Basel III implementation has presented coordination challenges among different jurisdictions. Harmonizing regulatory frameworks across countries and ensuring consistent implementation and interpretation of Basel III requirements have been complex tasks for regulators (BCBS, 2010).

Basel III, as a regulatory framework designed to enhance risk management in the banking sector, is not without its limitations. These limitations are important to consider when assessing the effectiveness of Basel III in achieving its objectives.

One key limitation of Basel III is the complexity it introduces to risk management practices. The framework includes more intricate calculations for risk-weighted assets and capital requirements, which can be challenging for banks to implement and monitor effectively (Fratzscher, 2012). The complexity of the requirements may lead to difficulties in accurately assessing and managing risks, potentially hindering the effectiveness of risk management practices.

Another limitation of Basel III is the potential for procyclicality. Procyclicality refers to the tendency for banks to amplify economic cycles by reducing lending during downturns and increasing it during upswings. The capital requirements set by Basel III may exacerbate this procyclicality. During economic downturns, banks may face pressure to increase capital reserves, leading to a reduction in lending and potentially worsening the economic conditions (Hanson & Kashyap, 2010). This limitation raises concerns about the ability of Basel III to support stable and sustainable economic growth.

Furthermore, the effectiveness of Basel III may vary across different jurisdictions, such as China and Europe, due to differences in regulatory implementation and market conditions. These differences can influence the extent to which Basel III requirements are adopted and the overall impact on risk management practices in the respective regions.

In conclusion, while Basel III represents a significant step towards strengthening risk management in the banking industry, it is essential to acknowledge its limitations. The complexity of the framework and the potential for procyclicality pose challenges that need to be

carefully addressed. Additionally, variations in implementation across jurisdictions can impact the effectiveness of Basel III in different regions. Ongoing evaluation and adjustment of the regulatory framework are necessary to address these limitations and ensure the resilience and stability of the banking industry.

4.1.4 Basel IV

Basel IV is a compendium of regulatory improvements established by the BCBS to enhance the stability and resilience of the global banking system.

The implementation of Basel IV poses challenges for banks, as it requires significant adjustments to risk modelling and capital calculations. Banks need to enhance their data management capabilities, strengthen their risk governance frameworks, and allocate sufficient resources to comply with the new obligations (EBA, 2019). Moreover, the impact of Basel IV may vary across jurisdictions, depending on the specific characteristics of each banking system and the level of implementation (Dawson et al., 2020).

One of the major changes introduced by Basel IV is the revision of credit risk frameworks, including the standardized approach (SA) and internal ratings-based (IRB) approach (Altunbas et al., 2020). These revisions aim to enhance the consistency and comparability of credit risk assessments across banks and improve the accuracy of risk-weighted asset calculations.

Basel IV also introduces stricter conditions for market risk, particularly through the Fundamental Review of the Trading Book (FRTB) (Altunbas et al., 2020). The FRTB establishes a more risk-sensitive perspective to measuring market risk, emphasizing the use of inner models and enhancing the alignment of capital obligations with the actual risks faced by banks.

Furthermore, Basel IV addresses operational risk by introducing the standardized measurement approach (SMA) to take the place of the previous approaches, such as the basic indicator approach (BIA) and the advanced measurement approach (AMA) (Altunbas et al., 2020). The SMA intends to issue a more risk-sensitive framework for computing operational risk capital requirements.

Basel IV also introduces additional capital buffers, such as the output floor, which limits the range to which banks can use inner models to calculate their capital needs (Altunbas et al., 2020). This measure ensures a minimum level of capitalization and enhances the comparability of capital ratios across banks.

The implementation of Basel IV presents several challenges for banks. One of the key challenges is related to data management and infrastructure. Basel IV requires banks to have robust data management systems in order to ensure precise and appropriate reporting of risk-related data (BCBS, 2019). This entails collecting, analysing, and reporting vast amounts of data, which may require significant investments in technology and resources.

Another challenge is the need for banks to enhance their risk modelling capabilities. Basel IV introduces revisions to the normalized approach for credit risk, operational risk, and market risk, which may require banks to update their risk models and methodologies (Hüser & Schüler, 2019). This includes incorporating new risk factors, refining risk calculations, and ensuring compliance with the revised regulatory requirements.

Furthermore, Basel IV introduces the standardized output floor, which limits the scope to which banks can bring down their capital needs using inner models (McGovern et al., 2020). This may lead to an increase in capital requirements for banks that heavily rely on internal models, requiring them to adjust their capital planning and allocation strategies.

Additionally, the implementation of Basel IV may pose challenges in terms of compliance and regulatory reporting. Banks must make sure that they possess the necessary procedures and controls in order to meet the new reporting obligations and demonstrate compliance with the revised regulations (EBA, 2019). This may involve developing new policies and procedures, training staff, and conducting extensive testing and validation of systems and models.

Moreover, the impact of Basel IV may vary across jurisdictions, as each jurisdiction may have different banking systems and regulatory environments. Banks operating in multiple jurisdictions may face the challenge of navigating the differences in the implementation and interpretation of Basel IV requirements (Dawson et al., 2020).

In conclusion, the implementation of Basel IV presents challenges for banks in terms of data management, risk modelling, capital planning, compliance, and navigating jurisdictional differences. Banks need to invest in technology, enhance risk modelling capabilities, and ensure effective compliance and reporting processes to successfully implement Basel IV and meet the new regulatory requirements.

Basel IV brings several limitations and challenges for risk management in banks. One limitation is related to the complexity of the framework itself. Basel IV introduces a more intricate set of rules and calculations, making it more challenging for banks to understand and implement (Dawson et al., 2020). The increased complexity may require banks to invest significant time and resources in understanding and adapting to the new requirements.

Another limitation is the potential impact on capital requirements. Basel IV introduces changes to the computation of risk-weighted assets (RWAs), which may result in higher capital requirements for certain types of exposures (BCBS, 2019). This could put pressure on banks' capital adequacy and profitability, especially for those with significant exposure to high-risk assets.

Furthermore, Basel IV may pose challenges in terms of data availability and quality. The framework relies on extensive data inputs for risk calculations and reporting (Hüser & Schüler, 2019). Banks need to ensure they have access to accurate and reliable data sources to meet the new requirements. Data collection, aggregation, and validation processes may need to be enhanced to ensure compliance with the regulatory standards.

Moreover, the global implementation of Basel IV may face challenges related to harmonization and consistency. Each jurisdiction has its own interpretation and discretion in implementing the framework, which could lead to variations in regulatory requirements across countries (Dawson et al., 2020). This may create challenges for banks operating in multiple jurisdictions, as they need to comply with different regulatory regimes.

Additionally, the increased reliance on standardized approaches in Basel IV may limit the capacity of banks to use more advanced inner models for risk management (McGovern et al.,

2020). This could reduce the flexibility and precision of risk measurement and management practices for some banks.

In conclusion, Basel IV presents limitations and challenges for risk management in banks, including the complexity of the framework, potential impact on capital requirements, data availability and quality issues, variations in implementation across jurisdictions, and limitations on the use of internal models. Banks need to address these limitations by investing in technology and data infrastructure, adapting risk management practices, and making sure compliance with the new regulatory requisites.

4.2 Chinese banking system

China's banking system consists of four major components, namely the Financial Agency, China Banking Association (CBA), China Banking Insurance Regulatory Commission, and Central Bank.

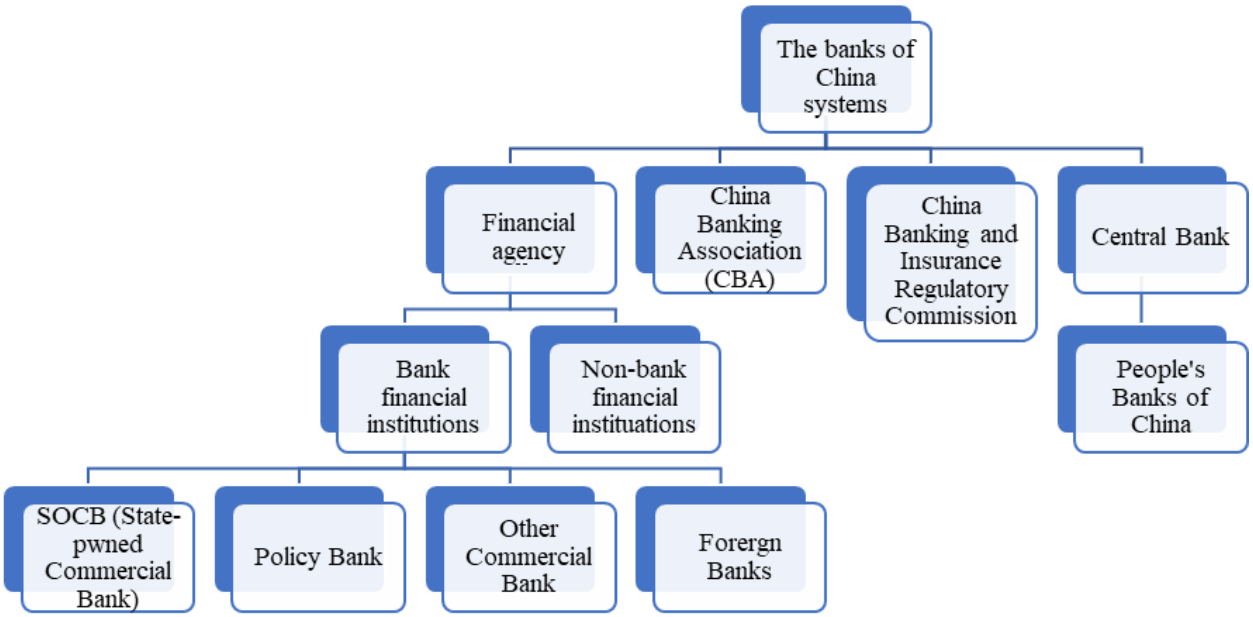

Table 1. The Chinese Banks System

The People's Bank of China, as a unified state agency under the direct leadership of the State Council, exercises the functions of a central bank. Therefore, it has no external business but focuses on coordinating major financial issues which are formulating and implementing monetary policies, establishing a bank management framework, and improving policy systems.

Other banking and financial institutions, including policy banks, state-owned commercial banks, other commercial banks and foreign-funded banks, engage in foreign business activities such as profit-making loans and deposits. In China, most banks and financial institutions belong to the state, and only a few banks belong to local governments. Since the reform and opening up, more and more foreign banks have entered China's banking market, and they all have the characteristics of high returns and high leverage. This paper will focus on the risk management mechanism of China's banking industry.

Other departments fall under the general supervisory authority. The main responsibility of the China Banking and Insurance Regulatory Commission is to participate in the formulation of important laws and regulations and provide regulatory guidelines for downstream banking institutions. And the China Banking Association is a non-profit social organization composed of commercial banks and policy banks, with the aim of promoting the common interests of its member units.

4.3 Bank Risk Management Framework in China

4.3.1 The different risks in banks

Since joining the World Economic Organization, China has actively participated in sustainable financial international cooperation. While adopting global financial principles, it has formulated a management system that is more in line with China's national conditions (Yin, 2021). In practice, Chinese banks have upgraded the Basel Accord according to their actual situation, making it more in line with China's national conditions (Li, 2023). According to the interviewees, the China Banking and Insurance Regulatory Commission divides Chinese banks into three tiers, and manages them in more detail according to Basel III. "Equivalent international regulatory rules for banks with large multinational businesses, simplified regulatory rules for banks with relatively small business models, and further simplified capital measurement

for commercial banks with a scale of less than 10 billion and guiding them to focus on the financial business of cities and counties and small businesses". At the same time, the interviewees raised several major risks faced by Chinese banks and explained them.

According to the interview results, Chinese banks identified credit risk, market risk, liquidity risk and operational risk as the main risks. And said that among all risks, credit risk plays a decisive role in the stability and development of banks.

Respondent A said that since 2019, credit risks in the banking industry have gradually accumulated. Affected by the global economic downturn and the new crown epidemic, the pressure on the operation of real enterprises has increased, and the risk of bank debt has increased. When the lender fails to repay the loan on time according to the loan contract signed with the bank, it will cause the loss of the bank's own interests. It also stated that since 2020, the total balance of bank loans has increased, and the balance of non-performing loans has increased. From the perspective of industry-wide data, the non-performing loan ratio of commercial banks rose from 1.86% in 2018 to 1.94% in the first half of 2020, the highest level in the past ten years (Financial Industry Research Team, 2020). But interviewee B mentioned that although China's bank credit risk has increased, it is still at a relatively low level compared with other countries, and has no negative impact on the development of banks.

The second is market risk. At present, the market risk faced by China's commercial banks mainly depends on the fluctuation of the commodity market or money market (namely, interest rate risk and exchange rate risk). Respondent B pointed out that the interest rate risk faced by commercial banks is far greater than the exchange rate risk, because the bank's interest rate is more affected by market fluctuations, and risks often develop with changes in the interest rate market. In recent years, with the standardized handling of bank wealth management products by the regulatory authorities, coupled with the increase in the variety of investment products in China's financial market, more and more customers have converted general deposits into interbank deposits. During the pandemic period, commercial bank loans tend to be short-term. The shortening of the average loan term reduces the return on assets of commercial banks, and the interest rate spread between deposits and loans will continue to narrow (Caijing Toutiao, 2022). Respondent B on exchange rate risk pointed out that in 2022, due to the misalignment of the monetary policies of China and the United States, the renminbi will experience a stage of rapid depreciation and then rebound, which will increase the risk of exchange rate overshooting.

According to the provisions of the China Banking and Insurance Regulatory Commission (2018) on the liquidity risk management of commercial banks, the liquidity risk management system should include four aspects, "1. Effective liquidity risk management governance structure; 2. Perfect liquidity risk management strategy; 3. effective liquidity risk identification, measurement, monitoring and control; 4. sound management information system". Respondent B mentioned that banks mainly borrow deposits to issue loans, and use “leverage” and “maturity transformation” to balance loans. Therefore, when the bank's own liquidity funds cannot meet the funds paid by users when they are due, it will lead to the loss of the bank's liquidation ability. Respondent A said that once the liquidity risk breaks out, it will cause huge damage to the stability of the entire financial market.

The last one is the operational risk. Respondent B said that a bank branch generally has tens of millions of transactions per day, and the staff handle millions of funds transfers every day, so it is difficult for the bank management to ensure that employees do not Unauthorized transactions. At the same time, there are some fraudulent risks within the bank caused by ultra vires, that is, direct or indirect losses caused by improper operation of bank internal personnel. Respondents pointed out that “in some banks, losses due to artificial risk have been significantly greater than losses due to market risk and credit risk, although this does not happen often”.

In addition, the risks faced by commercial banks also include legal risks, country risks, reputation risks and strategic risks. Most of the risks that the banking industry needs to face come from within the bank, and only a small part belongs to the social or national level. Therefore, for banks, the impact of country risk and legal risk is far greater than the bank's strategic risk. However, there are still respondents who say that for commercial banks, future strategic planning is an important factor affecting their economic benefits. If a commercial bank influences the overall development direction in the future due to its strategy, the harm it brings will be fatal to the bank.

4.3.2 Risk management processes and mechanisms in Chinese banks

Regarding the risk management process, interviewee A made it clear that due to the impact of COVID-19, the PBOC has strengthened specific regulations on risk management and imposed higher requirements on commercial banks. He pointed out that the bank's risk management system runs through all departments of the bank and different business lines of the bank from top

to bottom, and is the lifeblood of the bank's survival. According to the requirements of the China Banking and Insurance Regulatory Commission, the bank conducts a risk appetite assessment at least once a year, and at the same time makes some minor adjustments to the risk management framework.

"As a commercial banker, we pay attention to many large foreign banks, some banks with characteristics and competitiveness before and after the global financial crisis, and analyze how they manage the banks." -Bank staff

Respondent A believes that a successful bank needs to improve the risk management framework from different aspects, and draw lessons from numerous financial crises to continuously improve the bank's risk management mechanism and reduce the occurrence of various risks.

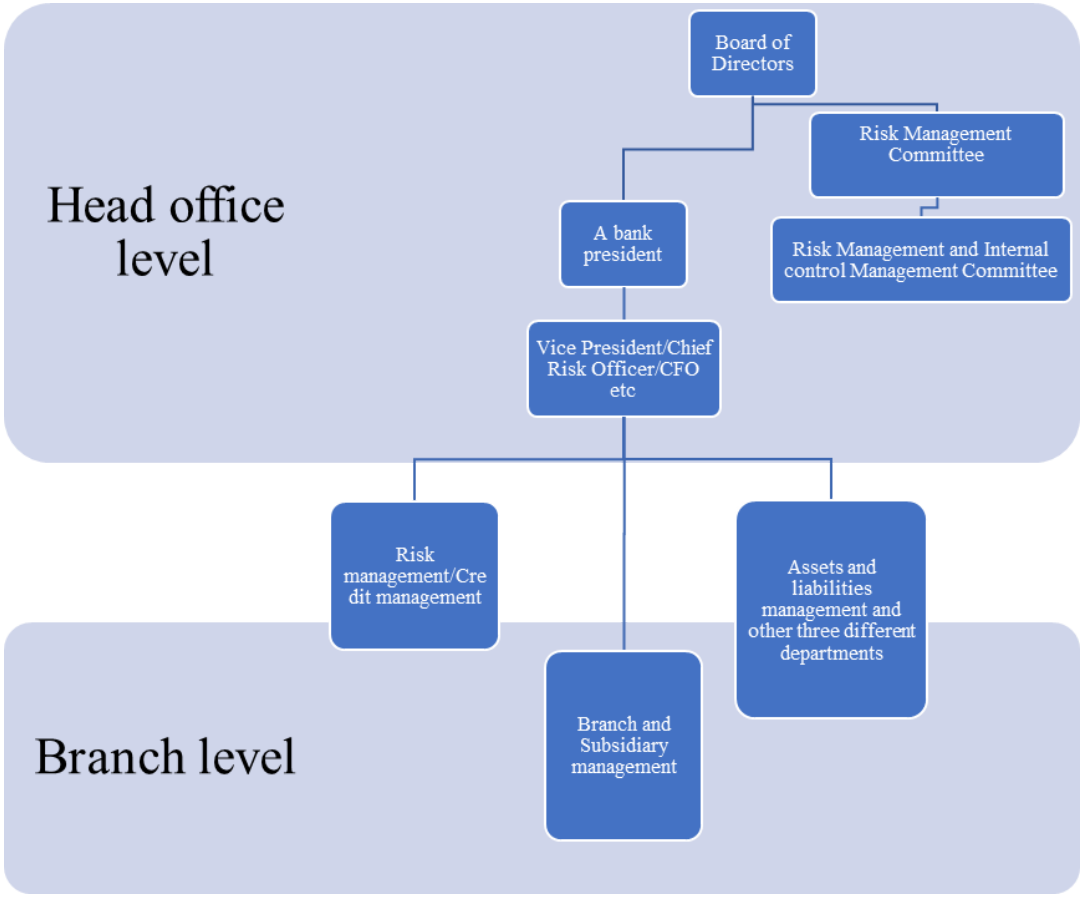

Table 2. The Chinese bank risk management system-Example for China Construction Bank

Respondent C is a staff member of a branch bank. He mentioned that compared with other banks, his bank is facing more serious risks related to bank accounting irregularities, such as accounting

risks and internal control risks. The reason is that some bank accountants are of low quality, and they have shown irregularities in their work such as inactive service and irregular operational behavior. At the same time, the establishment of accounting posts lacks due mutual restraint and containment, causing some personnel to violate regulations, violate discipline, and even embezzle and embezzle bank funds. These behaviors will lead to bank accounting accidents and economic cases. Respondent C said that the basic work of bank accounting lies in the real, complete and timely accounting of economic business organizations. Therefore, when the accounting method is incorrect, it is easy to cause false profits and real losses for banks. It can be seen that although the People's Bank of China promulgated the Basel framework for Chinese banks, it is undeniable that there are still some branch banks that have not implemented risk management for banks in accordance with regulations.

4.3.3 Current management problems in Chinese banks and description of the process

China's banking system is a framework composed of the People's Bank of China as the core, state-owned commercial banks as the main body, and various types of institutions to compete fairly and develop in a coordinated manner. According to the China Development Forum, Chinese banks need to strengthen their risk management capabilities, promote high-quality development of the financial industry with high-quality risk control, and improve emergency management capabilities (Financial Times, 2021). When interviewing Chinese banks, interviewee A explained the management problems of Chinese banks from 7 angles.

He said that China's banking industry, especially commercial banks, has no clear goals for their own strategic development. Most banks did not really implement this strategy after formulating the plan but used it as a means of publicity. In other words, very few banks have raised their risk management strategies to a very high level to affect the sustainable development of banks. At the same time, affected by China's social system, China's commercial banks generally abide by the relevant provisions formulated by the People's Bank of China, but do not formulate corresponding strategies based on their own conditions and development. Respondent A emphasized that the current corporate governance and property rights make it difficult for many commercial banks to formulate their development strategies from a mid-to-long behaviours perspective. To formulate a good strategy, the first thing is to solve the management of venture

capital and the management of risk areas, that is, the risk preference at the level of bank governance.

Secondly, the development of the Bank of China is still relatively backward among all commercial banks in the world. Interviewee A mentioned that China's current management system still follows the management system and customer service system under the planned economic development model, that is, the head office, branches and grassroots service organizations, and divides the bank's operation and management into three or four levels. The task of the head office level bank is to formulate policies for branch banks, and branch banks are profit centres, and almost all grassroots business is handled by the bank in charge. But it is obvious that this structure does not meet the requirements of a comprehensive risk management at all, because the profit centre is a branch, and many commercial banks are a system composed of multiple profit centres as a quasi-legal person management model, which is a very efficient Low, poorly standardized organizational system.

At the same time, as China's banking structure is the model of the head office plus branch banks, rather than the business department management system of a customer-centred process bank. Therefore, the customer process is long and the efficiency is low. In other words, the overall service capability of Chinese banks is weak, and the service speed and response speed are relatively slow.

The fourth policy issue. The special structure and process management of Chinese banks makes the entire commercial bank operation and management policy to be formulated by the profit centre to implement some specific implementation rules. Therefore, the head office of each bank has policies aimed at the overall situation, but the implementation details of specific branch banks may completely subvert the overall management policy system of the head office. Therefore, this kind of policy is not based on the adjustment of asset portfolio and business structure development based on the consideration of a commercial bank as a legal person but is formulated based on the perspective of maximizing the interests of branch banks in each region and each profit centre. Respondent A said that because China's commercial banks developed with the People's Bank of China as the centre, banks have a high degree of imitation in terms of products, market positioning, and development strategies. Therefore, when the relevant policies are implemented, it will lead to a serious tendency of homogeneity in the operation of commercial banks.

Respondent A said that based on experience, banks will choose to put money in the hands of large customers and large enterprises with the lowest risk assessment, because indirect financing of enterprises in China still dominates, and the proportion of direct financing capital market and bond issuance is still the same. tiny. Therefore, China's commercial banks have not formed differences in management and operation models, but implement the rules and regulations based on the Basel Accord formulated by the People's Bank of China. However, if the entire market is opened up, that is, after full marketization, China's banking industry will face a big problem, that is the problem of similarity and homogenization. So this means that the development and competition in China's banking industry itself is also very fierce. However, there are still a large number of customers who do not enjoy some financial services of modern commercial banks. Under the price protection of banks, everyone becomes a big customer and does profitable business. Once the interest rate price is fully liberalized, there may be many banks that eat interest rate differences. All become losses, so this policy system needs to be based on the gradual development of China's future financial reforms, and requires long-term thinking.

Then interviewee A mentioned that after entering the 21st century, the development of commercial banks is closely related to technology. Different from the simple bank development model in the past, modern banks need to formulate a comprehensive digital transformation strategy to promote the development of financial institutions. In China's financial market, the banking industry is still relatively monopolized and there is insufficient competition. Basically, all commercial banks can make money. If Chinese banks are compared with other commercial banks in the world on the same standard line, the entire IT technology and management technology of Chinese banks, including the stress testing just mentioned and the use of other technologies, may still be at a very low level. primary stage. The innovation of this technology and the application of IT technology now also make China still have a long way to go.

Although China's financial industry is full of talent, it is undeniable that when many innovative fields are not open, China only has some experts in the traditional commercial banking business. There is still a shortage of qualified personnel for banks.

Finally, interviewee A said that Chinese banks still have insufficient incentive mechanisms for managers. Now the incentives of commercial banks may control that there is no difference in income between the managers of commercial banks with assets of several trillion or ten trillion and the managers of small commercial banks in a region and small commercial banks in

prefecture-level cities. That is to say, for a manager who needs to take high risks, his risk-taking cannot be fully proportional to his income. In addition, China's banks do not have incentives for medium- and long-term development, but the risks of commercial banks will not appear until the medium- and long-term. The interviewees explained that, to a certain extent, system makers encourage short-term high returns, while ignoring long-term high risks. Such short-term actions are not conducive to long-term risk control and financial stability. This also explains why some banks in China have financial crises and even bankruptcy and reorganization.

4.3.4 What China's Banks Are Doing in Response to COVID-19?

Xinhua News Agency (2022) mentioned in a report on ChinaGovernment.com that in the early days of the COVID-19 epidemic, the People's Bank of China and relevant departments issued 30 financial measures in a timely manner in 2020 to provide support for the prevention and control of the epidemic and the recovery and development of the real economy. strong support. He also said that due to the more complex international situation, the People's Bank of China will once again introduce 23 financial measures in 2022, which include the continuation of previous powerful policies and new measures for current difficulties and problems. Conditional policies have been adjusted.

According to KPMG (2020), the impact of the COVID-19 pandemic on financial markets will exceed that of the 2008 financial crisis. The forced adjustment of the international economic and financial environment from relative stability is called continuous dynamics, and it is difficult to stabilize in a short period of time. Therefore, the banking industry needs to make policy changes in such a complex financial environment to deal with sudden risks.

Respondent B pointed out that banks should continuously strengthen compliance and risk control to avoid the outbreak of credit risks. Banks should not only strengthen the supervision of capital flows, strictly prevent capital idling, ensure that rescue policies are fully implemented, and accurately support enterprises, especially small and micro enterprises, to tide over difficulties. In addition, it is necessary to support commercial banks, especially small and medium-sized banks, to supplement capital through multiple channels, increase efforts to dispose of non-performing loans and focus on solving the sustainable problem of the financial system supporting the real economy. The second is to establish the concept of a "bank-enterprise community" and adjust short-term business strategies in a timely manner. The quality of bank credit assets and the

operating conditions of market entities and economic growth are interdependent and affect each other. The third is to strengthen asset quality management. Accelerate the risk exposure of non-performing assets, increase disposal efforts, effectively resolve government debts, make full use of epidemic response policies, and minimize the impact of the epidemic. Commercial banks should vigorously develop inclusive finance, pay attention to key areas such as information communication, high-end manufacturing, and new facilities, and increase support for manufacturing and medium-sized customers. By adjusting the structure, prevent and resolve financial risks from a strategic perspective.

Regarding the series of negative impacts brought about by COVID-19, interviewee B explained that banks need to use financial technology to establish a long-term mechanism for risk prevention and control. During the epidemic prevention and control period, the offline business channels of commercial banks were almost at a standstill, and the online business channels were effectively expanded. The supporting effect of financial technology on the banking system was fully demonstrated in this epidemic. Chinese banks need to transform from the previous offline business philosophy to a digital business, strengthen their understanding of digital concepts, and enhance the digital experience. First of all, we must insist on fully participating in digital operations and carrying out an overall transformation of the banking business. Upgrade in all aspects from customer acquisition, marketing, products, risk control, operations, cross-selling, etc. At the same time, the Bank accelerated the promotion of smart services and online services, focusing on promoting the use of online tools such as personal mobile banking and corporate mobile banking, as well as some online credit products, so as to improve customers' online operating experience. The second is channelization to promote digital marketing, sharing offline resources with online resources, and realizing omnichannel customer digital experience. The third is to establish a precise customer model, study customer preferences through big data, accurately obtain customer information, and recommend the best products to customers online to achieve the best online experience for customers. Finally, banks need to optimize their digital business processes to achieve full digital coverage. Changed from the original offline outlet business model to online outlet construction, and changed from the original offline service of outlet staff to online service of outlet staff. Equipped with advanced online outlets and professional online service talents to realize the whole process of digital operation. Focus on

relying on scientific and technological strength, strengthen the construction of background data, and increase the risk monitoring of online outlets.

4.3.5 What are the problems that Chinese banks have encountered in applying Basel

Since the release of Basel 3 in 2017, the China Banking and Insurance Regulatory Commission has started to design and revise the operation plan for Bank of China ("Commercial Bank Capital Management Measures"). After three rounds of quantitative calculations, it is expected that by 2023 The new regulations will be implemented from January 1 (China Management Consulting Network, 2021). For Chinese banks, the credit risk weighting method in the new regulations has been greatly adjusted compared with the current law, and the implementation complexity will be higher.

Respondents said that the agreement is considered to be the largest reform of banking supervision in recent decades, and it plays a vital role in promoting banks to reduce high-risk businesses.

In addition, the new Basel Accord has been recognized by most countries and regions, representing the direction and trend of international banking supervision. After joining the WTO, Chinese commercial banks are facing huge pressure from international competition. Commercial banks will inevitably follow the unified rules of international banking management gradually, and accept the principles, standards and methods of international banking supervision based on the new Basel Accord.

The interviewees explained that the Basel Accord committee has advanced and rich experience in banking supervision, but the governance structure, supervision system, market access and exit mechanism of Chinese banks are not yet perfect. Many banks have used one system for many years or changed it day and night. Such changes are a huge challenge to the development of Chinese banks. Therefore, the complete regulatory system provided by the Basel Accords has great reference value for the establishment of the risk management framework of the Bank of China and helps to improve the stability of China's financial system.

"The new regulations on capital supervision have little impact on the overall capital level of my country's banking industry, which is also in line with the Basel Committee's basic expectation of "not substantially increasing the overall capital requirements of the banking industry." However, the revised credit risk weighting method is more risk-sensitive. High, with a stronger ability to distinguish between businesses. Due to differences in business structure and customer base,

different banks may be affected by the new regulations to a certain extent, which needs to be analyzed in detail based on the calculation results.” - China Management Consulting Network (2021),

According to China Management Consulting Network (2021), Basel IV will not have a significant impact on Chinese Bank, but will pay more attention to the management of credit risk, market risk and operational risk and the disclosure of capital measurement.

Respondents indicated that banks in China face serious challenges when implementing Basel III. first. The capital of the Bank of China is insufficient in quantity, unreasonable in composition and unstable in source, which will weaken the basis for the capital function of the bank and slow down the progress of the real-time Basel agreement. Secondly, the quality of bank assets is too low, the stock of loans is not active, the number of bad loans is too large, and the scale of credit is growing rigidly, making it difficult for banks to shrink the scale of loans to adjust the ratio of capital to assets. The third point is that the backwardness of the central bank's management methods and the unsatisfactory financing relationship between finances will also slow down the implementation of the Basel Accord.

4.3.6 Other regulations

Respondent A highlighted that banks are increasingly regulated, especially in the wake of COVID-19, where risk management and regulations have become more stringent. According to the public data of the Bank of China, "Bank of China follows a "moderate" risk appetite, and handles the relationship between risks and returns in accordance with the principles of "rationality, prudence, and prudence." And the goal of the Bank of China's risk management is to meet the regulatory requirements. Under the premise of meeting the requirements of departments, depositors and other stakeholders for the sound operation of the bank, and within the acceptable risk range, maximize the interests of shareholders.” -(Risk Management and Internal Control of Bank of China)

In addition, the People's Bank of China Order No. 1 of 2023 on the "Commercial Bank Financial Asset Risk Classification Measures" has made the latest regulations on Chinese banks. Commercial banks need to improve the classification system and refine the classification methods according to the actual situation. Commercial banks should improve the governance structure of risk classification management of financial assets, etc. (Website of China Banking and Insurance Regulatory Commission, 2023).

Respondent B said that after the epidemic is brought under control, China's banking industry will focus on reducing the negative impact of the epidemic on the market and economic development, and provide favourable conditions for reshaping China's financial market.

5. Analysis

The risks faced by banks in China and Europe can exhibit notable differences due to various factors such as the economic environment, regulatory frameworks, and banking sector characteristics.

In China, banks may face specific risks associated with the country's economic structure and development. For instance, there may be a higher exposure to credit risk due to the significant presence of state-owned enterprises and the financing needs of infrastructure projects (Gao et al., 2021). Additionally, Chinese banks may face liquidity risks stemming from the rapid development of shadow banking activities and interconnectedness within the financial system (Liu et al., 2020).

On the other hand, European banks operate in a different economic and regulatory landscape. They may face risks related to the economic stability of individual European Union member states, as well as sovereign debt risks in the euro area (Altunbas et al., 2016). Market risks, such as fluctuations in interest rates and exchange rates, can also impact European banks operating across multiple jurisdictions (Amel-Zadeh & Meeks, 2013).

It is crucial to consider that both China and Europe are exposed to common risks faced by banks globally, such as credit risk, market risk, and operational risk. However, the specific manifestations and magnitudes of these risks can differ based on regional factors and the specific characteristics of each banking system.

The risk management practices in China and Europe exhibit certain differences, influenced by various factors such as regulatory frameworks, cultural aspects, and economic systems.

In China, risk management practices are heavily influenced by the regulatory framework set by the China Banking Regulatory Commission (CBRC). Chinese banks prioritize credit risk management, given the prominence of lending activities in the country. Risk assessment in Chinese banks often relies on collateral-based lending and relationship-based lending, with less emphasis on sophisticated risk modelling and portfolio diversification (Luo & Qin, 2017).

Conversely, European banks operate within a more established regulatory framework guided by the Basel Accords. European risk management practices are more comprehensive, incorporating advanced risk assessment models, stress testing, and robust risk governance structures. European banks typically place greater emphasis on market risk and operational risk management (Tabak et al., 2012).

Cultural factors also play a role in shaping risk management practices. Chinese banks prioritize long-term relationships with borrowers, which can influence risk assessment and decision-making processes. On the other hand, European banks often emphasize standardized risk management practices and quantitative analysis (Fan & Wong, 2005).

It is important to note that risk management practices can vary among individual banks within each region, and there is an ongoing effort to align global risk management practices through international standards like the Basel framework.

When implementing Basel I, there were notable differences between China and Europe. These differences stemmed from variations in the financial systems, regulatory environments, and economic characteristics of the two regions (Liu, 2012).

In China, the implementation of Basel I faced challenges due to the unique characteristics of the Chinese banking sector. The Chinese banking system was characterized by a high concentration of state-owned banks, which operated differently from their European counterparts. The state-owned banks in China had significant government support and were less exposed to market forces, which influenced their risk profiles and capital requirements.

Additionally, China had a different regulatory environment compared to Europe. The regulatory framework and supervisory practices in China were evolving and undergoing reforms during the implementation of Basel I. This led to differences in the interpretation and application of the

Basel I framework in China, as regulators needed to align the requirements with the specific circumstances of the Chinese banking sector.

Furthermore, the economic conditions and market structures in China differed from those in Europe. China experienced rapid economic growth and structural changes during the development of Basel I. These factors influenced the risk profiles of Chinese banks and necessitated adjustments in the application of Basel I to address the specific risks and challenges that are confronted by the Chinese banking sector.

Overall, the implementation of Basel I in China differed from Europe due to variations in the banking sector, regulatory environment, and economic characteristics. These differences required China to tailor the implementation of Basel I to its unique circumstances while aiming to achieve the objectives of the framework.

When implementing Basel II, there were particular differences between China and Europe too. In China, the assumption and execution of Basel II faced unique challenges and considerations compared to European countries (Li & Xu, 2008). These differences can be attributed to variations in the regulatory environment, banking systems, and economic conditions between the two regions.

Chinese banks encountered difficulties in implementing Basel II due to the characteristics of their banking system, which included a large number of state-owned banks, non-performing loans, and a lack of sophisticated risk management systems (Li & Xu, 2008). Moreover, the Chinese banking sector had limited experience in measuring and managing risks, which posed challenges during the implementation process.

Furthermore, cultural and organizational factors also influenced the implementation of Basel II in China. The hierarchical structure and decision-making processes within Chinese banks differed from those in European banks, leading to variations in the interpretation and implementation of Basel II requirements (Li & Xu, 2008). Additionally, differences in language, communication, and regulatory practices added further complexity to the implementation process.

In contrast, European countries generally had more developed banking systems and regulatory frameworks, which facilitated the adoption and implementation of Basel II (Müller, 2010).

European banks already had more advanced risk management practices and systems in place, allowing for a smoother transition to the new regulatory framework.

Overall, the implementation of Basel II in China and Europe differed due to variations in the regulatory environment, banking systems, economic conditions, cultural factors, and organizational structures. These differences influenced the challenges faced and the approaches taken in implementing Basel II in each region.

When Basel III was implemented, there are remarkable differences that can be found between China and Europe. In China, one key difference is the pace and timing of implementation. While the Basel III framework was introduced globally, China has taken a phased approach to its implementation, allowing for a longer transition period for banks to comply with the recently developed requirements (Wu & Luo, 2017).

Another difference is the specific regulatory measures and standards adopted by China. The CBRC has implemented additional regulations and guidelines to address the unique characteristics of the Chinese banking industry and its financial landscape. These include measures to strengthen capital adequacy, enhance risk management, and address systemic risks (Wu & Luo, 2017).

Furthermore, the role of state-owned banks in China is a distinguishing factor. State-owned banks play an important role in the Chinese banking sector, and their operations and risk management practices are closely linked to government policies and objectives. This can influence the implementation and interpretation of Basel III requirements in China (Wu & Luo, 2017).

In Europe, the implementation of Basel III is guided by the European Union (EU) directives and regulations. The EU has established its own regulatory framework, known as the Capital Requirements Directive (CRD) and Capital Requirements Regulation (CRR), which incorporate the Basel III standards into EU law. European banks are required to comply with both the Basel III standards and the EU-specific regulations (European Banking Authority, n.d.).

The implementation of Basel IV, the latest regulatory framework introduced by the BCBS, may exhibit differences between China and Europe. In China, the implementation of Basel IV is

expected to have an important impact on the banking sector due to the country's unique characteristics and regulatory environment (Zhang et al., 2020).

One key difference is related to the existing regulatory framework and practices in each region. China has its own set of regulatory requirements and guidelines for banks, which may differ from those outlined in Basel IV (Zhang et al., 2020). The implementation of Basel IV in China would require aligning the existing regulations with the new requirements, which may involve significant adjustments and adaptations.

Another difference lies in the structure and composition of the banking systems in China and Europe. Chinese banks are often characterized by their large state-owned banks, which dominate the sector, while European banks are generally more diversified in terms of ownership and size (Buch et al., 2016). The implementation of Basel IV may impact different types of banks in each region differently, depending on their business models, risk profiles, and capital positions.

Furthermore, the economic and market conditions in China and Europe may vary, leading to differences in the challenges and implications of Basel IV implementation. Factors such as economic growth, financial stability, and market structure can influence the effectiveness and feasibility of implementing the new regulatory requirements (Zhang et al., 2020).

It is worth noting that while both China and Europe are part of the global financial system and have committed to adopting Basel standards, the specific timelines and approaches to implementing Basel IV may differ between the two regions. Each jurisdiction has the flexibility to interpret and adjust the framework based on its specific circumstances and priorities.

Overall, the implementation of Basel IV in China compared to Europe may vary due to differences in the existing regulatory framework, banking system structure, economic conditions, and specific approaches taken by each jurisdiction. These factors will shape the implementation process and the impact of Basel IV on the banking sectors in China and Europe.

When it comes to facing risks, Chinese banks and European banks exhibit certain differences due to variations in their regulatory frameworks and market conditions. The implementation of Basel frameworks in each region also reflects these disparities.

Chinese banks, characterized by their state-owned nature and government influence, often prioritize policy goals such as supporting economic growth and social stability. Consequently, risk management practices in Chinese banks may be influenced by these broader objectives. Chinese banks tend to have a higher exposure to state-owned enterprises and government-related entities, which introduces unique risk dynamics (Chen et al., 2015). The regulatory framework in China has undergone several iterations, including the implementation of Basel II and subsequent adjustments to align with domestic conditions.

European banks, on the other hand, operate in a more market-driven environment with a focus on shareholder value and profitability. Risk management procedures in European banks are influenced by market forces, competition, and compliance with regulatory requirements. The Basel framework implementation in Europe has progressed through Basel I, Basel II, and Basel III, with the aim of enhancing risk sensitivity, capital adequacy, and liquidity management (Arner et al., 2013).

The Basel framework implementation in China and Europe differs in terms of timing and level of adherence. Chinese banks have adopted the Basel frameworks but with certain modifications and exemptions to address local circumstances (Yu et al., 2016). European banks, on the other hand, have implemented the Basel frameworks more closely aligned with the international standards set by the Basel Committee.

In summary, Chinese banks and European banks differ in their risk management practices and the implementation of Basel frameworks. Chinese banks often prioritize policy objectives, while European banks operate in a market-driven environment. The implementation of Basel frameworks in China and Europe reflects these differences, with adaptations and variations to address local market conditions and regulatory requirements.

6. Final discussion

In this section, the conclusions of this paper will be presented to answer the research questions mentioned in the introduction.

“Differences in the implementation of the different regulatory frameworks between China and the UE. And how effective have the regulatory frameworks and guidelines set forth by the BCBS been in promoting robust risk management practices in banks?”

The findings indicate that there are institutional differences in risk management between China and the EU. China's risk management regulations are largely influenced by the new CBRC regulations, while European banks use more of the original Basel regulations. In addition, because the political, economic, and cultural conditions of each economy are different, the historical and realistic foundations of financial development are not unified, and there is a big difference in the choice of regulatory models for banks in China and the European Union. The EU financial system is relatively complex and diverse, and the management relationship between the central and local governments is relatively loose. China, on the other hand, implements a "central bank + dual-institution" regulatory model, under the unified leadership of the central government, and with consistent national and regional interests.

According to interviews, China pays more attention to the implementation speed and time when implementing the Basel plan and takes a longer transitional time to meet the implementation of the bank's risk management practices. In addition, the People's Bank of China will propose higher risk management standards beyond the requirements of the Basel Accords to improve the financial market's ability to fight financial crises. On the other hand, European banks have already been required by the regulations of the European Commission at the beginning of the establishment of Basel III. European banks are therefore more directly compliant with Basel III standards and EU-specific regulations.

In recent years, with the outbreak of the novel coronavirus and the impact of the Ukrainian-Russian War, it has been difficult for the economy and society to recover from the ongoing conflict (Collins et al., 2023). Therefore, the inflation rate in Europe cannot go down. In contrast to China’s economic market, although the pandemic has temporarily shut down the economy, China’s inflation rate in 2022 is much lower than that of European and American countries, and China’s economic aggregate will hit a new high in 2023 (KPMG China, 2023) .

References:

AdvisoryHQ, B. (n.d.). *Basel I, II, III, IV | Guide | Everything You Need to Know About Basel 1, 2, 2.5, 3 and 4 – AdvisoryHQ*. https://www.advisoryhq.com/articles/basel-i-ii-iii-iv/

Alexander, C. (2005). The Present and Future of Financial Risk Management. *Journal of Financial Econometrics*, *3*(1), 3–25. https://doi.org/10.1093/jjfinec/nbi003

Altunbas, Y., Gambacorta, L., & Marques-Ibanez, D. (2010). Does Monetary Policy Affect Bank Risk-Taking? *Social Science Research Network*. https://doi.org/10.2139/ssrn.1577075

Altunbas, Y., Gambacorta, L., & Marques-Ibanez, D. (2020). Basel IV: Frequently asked questions. *Journal of Banking Regulation*, *21*(2), 83–95.

Amel-Zadeh, A., & Meeks, G. (2013). Bank Failure, Mark-to-market and the Financial Crisis. *Abacus*, *49*(3), 308–339. https://doi.org/10.1111/abac.12011

Arner, D. W., Park, C., & Lejot, P. (2013). Post-crisis banking sector regulation and supervision: An assessment of the Basel framework. *Journal of Financial Stability*, *9*(4), 759–777.

Awojobi, O. (2011, July 17). *Analysing Risk Management in Banks: Evidence of Bank Efficiency and Macroeconomic Impact*. https://econpapers.repec.org/RePEc:pra:mprapa:33590

Bakare, S. (2019). BASEL IV AND ITS IMPACTS ON BANKS. *International Journal of Social Science and Economic Research*, *03*(01), 11.

Barth, J. R., Caprio, G., & Levine, R. L. (2008). Bank Regulations are Changing: For Better or Worse? *Comparative Economic Studies*, *50*(4), 537–563. https://doi.org/10.1057/ces.2008.33

Basel Committee on Banking Supervision. (1988). *International Convergence of Capital Measurement and Capital Standards*. https://www.bis.org/publ/bcbs04.htm

Basel Committee on Banking Supervision. (2004). *International convergence of capital measurement and capital standards: A revised framework*. Bank for International Settlements. https://www.bis.org/basel_framework/

Basel Committee on Banking Supervision (BCBS). (2019). *Basel Framework*. Bank for International Settlements. https://www.bis.org/basel_framework/

Besanko, D., & Kanatas, G. (1996). The Regulation of Bank Capital: Do Capital Standards Promote Bank Safety? *Journal of Financial Intermediation*, *5*(2), 160–183. https://doi.org/10.1006/jfin.1996.0009

Bessis, J. (2015). *Risk Management in Banking*. John Wiley & Sons.

Bodellini, M. (2019). The long 'journey' of banks from Basel I to Basel IV: has the banking system become more sound and resilient than it used to be? *ERA Forum*, *20*(1), 81–97. https://doi.org/10.1007/s12027-019-00557-x

Buch, C. M., & Goldberg, L. S. (2016). *Cross-Border Prudential Policy Spillovers: How Much? How Important? Evidence from the International Banking Research Network*. https://doi.org/10.3386/w22874

Caijing Toutiao. (2022). *Research on Interest Rate Risk of Commercial Banks in my country under the New Situation*. Retrieved May 23, 2023, from https://cj.sina.com.cn/articles/view/6314832590/17864b2ce001014os5?finpagefr=p_103

Chen, X., Gao, S., & Wan, L. (2015). The risk-taking channel of monetary policy in China. *Journal of Banking & Finance*, *61*, S132–S148.

China Banking and Insurance Regulatory Commission. (2018). *China Banking and Insurance Regulatory Commission issued "Commercial Bank Liquidity Risk Management Measures"_Department Government Affairs_China Government Network*. www.gov.cn.

Retrieved May 24, 2023, from https://www.gov.cn/xinwen/2018-05/26/content_5293835.htm

China Management Consulting Network. (2021). *PricewaterhouseCoopers: Interpretation of the implementation of Basel III in China||consulting company's views and plans*. chnmc.com. Retrieved May 26, 2023, from http://chnmc.com/wisdom/insights/2021-10-29/16791.html

Chornous, G., & Ursulenko, G. (2013). RISK MANAGEMENT IN BANKS: NEW APPROACHES TO RISK ASSESSMENT AND INFORMATION SUPPORT. *Ekonomika*, *92*(1), 120–132. https://doi.org/10.15388/ekon.2013.0.1131

Collins, A., Karunska, K., & Zahidi, S. (2023). Chief Economists Outlook. *World Economic Forum*, 31.

Cruz, M. G. (2011). *Basel II and III: Overview and critical analysis*. Nova Science Publishers.

Dawson, P., Fitoussi, J. P., & Pichelmann, K. (2020). Basel IV: Next steps for banks. *McKinsey & Company*.

Dermine, J., & De Leusse, Y. (2016). *Bank regulations: The Basel III framework. Risk management in banking* (2nd ed.). Wiley.

Dimic, M., & Sprajc, P. (2017). Risk Management in the Banking Sector-Stress Resistance Tests. *Int'l J. Econ. & L.*, *24*, 8–33.

Dionne, G. (2013). Risk Management: History, Definition and Critique. *Social Science Research Network*. https://doi.org/10.2139/ssrn.2231635

Dionne, G. (2019). Risk Management: History, Definition, and Critique. *Risk Management and Insurance Review*, *16*(2), 147–166. https://doi.org/10.1111/rmir.12016

Drehmann, M., & Nikolaou, K. (2013). Funding liquidity risk: Definition and measurement. *Journal of Banking and Finance*, *37*(7), 2173–2182. https://doi.org/10.1016/j.jbankfin.2012.01.002

Düllmann, K., & Kunisch, M. (2016). Model risk of internal ratings systems: Evidence from a stress testing exercise. *Journal of Risk*, *18*(4), 1–31.

Elsembawy, A. (2020). BASEL I, II, III. *Research Gate*.

European Banking Authority. (n.d.). *Basel III and CRD IV/CRR - Frequently Asked Questions*. European Banking Authority. https://www.eba.europa.eu/regulation-and-policy/capital-measures/basel-iii-and-crd-ivcrr

European Banking Authority (EBA). (2019). Basel III implementation: Challenges and impact on banks' reporting. *EBA Report*.

Fan, J. P. H., & Wong, T. Y. (2005). Do External Auditors Perform a Corporate Governance Role in Emerging Markets? Evidence from East Asia. *Journal of Accounting Research*, *43*(1), 35–72. https://doi.org/10.1111/j.1475-679x.2004.00162.x

Fender, I., & Lewrick, U. (2004). The procyclicality of Basel II: Can we treat the disease without killing the patient? *International Monetary Fund*.

Feridun, M., & Ozun, A. (2020). Basel IV implementation: a review of the case of the European Union. *Journal of Capital Markets Studies*, *4*(1), 7–24. https://doi.org/10.1108/jcms-04-2020-0006

Ferri, G., Liu, L., & Majnoni, G. (2001a). The role of rating agency assessments in less developed countries: Impact of the proposed Basel guidelines. *Journal of Banking and Finance*, *25*(1), 115–148. https://doi.org/10.1016/s0378-4266(00)00119-9

Ferri, G., Liu, L., & Majnoni, G. (2001b). The role of rating agency assessments in less developed countries: Impact of the proposed Basel guidelines. *Journal of Banking and Finance*, *25*(1), 115–148. https://doi.org/10.1016/s0378-4266(00)00119-9

Financial Industry Research Team. (2020). *What credit risks does the current banking industry face?* www.thepaper.cn. Retrieved May 22, 2023, from https://www.thepaper.cn/newsDetail_forward_9748013

Financial Times. (2021). *How do you view the current development of banks and the risks they face? The executives of the state-owned banks say so*. finance.sina.com.cn. Retrieved May 27, 2023, from https://finance.sina.com.cn/wm/2021-03-21/doc-ikknscsi9158933.shtml

Fratzscher, M. (2012). Capital flows, push versus pull factors and the global financial crisis. *Journal of International Economics*, *88*(2), 341–356. https://doi.org/10.1016/j.jinteco.2012.05.003

Gao, P., Zhou, Y., & Han, L. (2021). Shadow banking in China: Risks and regulatory responses. *Journal of Risk Finance*, *22*(1), 27–44.

Gottschalk, R., Castro, L. B., & Xu, J. (2021). Should National Development Banks be Subject to Basel III? *Review of Political Economy*, *34*(2), 249–267. https://doi.org/10.1080/09538259.2021.1977541

Güdüz, V. (2020). Risk Management in Banking Sector. *Research Gate*.

Hason, S. G., & Kashyap, A. K. (2010). Bank behavior, aggregate liquidity, and the macroeconomy: Evidence from Japan. *American Economic Review*, *100*(1), 589–631.

Ho, J. C. (2019). he development of bank risk management: A review of previous studies. *Journal of Risk and Financial Management*, *12*(3).

Hull, J. (2019). *Options, futures, and other derivatives*. Pearson.

Hüser, A. C., & Schüler, Y. S. (2018). The new market risk standard: Basel IV and its implications. *Journal of Risk Management in Financial Institutions*, *12*(1), 55–74.

Imbierowicz, B., & Rauch, C. (2014). The relationship between liquidity risk and credit risk in banks. *Journal of Banking and Finance*, *40*, 242–256. https://doi.org/10.1016/j.jbankfin.2013.11.030

Ivanov, S. I. (2017). A Study of Perfect Hedges. *International Journal of Financial Studies*, *5*(4), 28. https://doi.org/10.3390/ijfs5040028

Jin, J. Y., Kanagaretnam, K., Lobo, G. J., & Mathieu, R. D. (2013). Impact of FDICIA internal controls on bank risk taking. *Journal of Banking and Finance*, *37*(2), 614–624. https://doi.org/10.1016/j.jbankfin.2012.09.013

Jongh, E., De Jongh, D. C., De Jongh, R., & Van Vuuren, G. (2013). A review of operational risk in banks and its role in the financial crisis. *South African Journal of Economic and Management Sciences*, *16*(4), 364–382. https://doi.org/10.4102/sajems.v16i4.440

Klomp, J., & De Haan, J. (2012). Banking risk and regulation: Does one size fit all? *Journal of Banking and Finance*, *36*(12), 3197–3212. https://doi.org/10.1016/j.jbankfin.2011.10.006

KPMG. (2020). *Reflections on how commercial banks should respond to the epidemic- KPMG China*. Retrieved May 27, 2023, from https://kpmg.com/cn/zh/home/insights/2020/05/how-commercial-banks-respond-to-epidemic.html

KPMG China. (2022). *China Economic Monitor 2023 Q1*. Retrieved May 17, 2023, from https://kpmg.com/cn/zh/home/insights/2018/02/china-economic-monitor.html

Lall, S. (2015). Corporate governance in banks – A view through the LIBOR lens. *Journal of Banking Regulation*, *16*(2), 95–108. https://doi.org/10.1057/jbr.2014.9

Lee, K. (2011). The world price of liquidity risk. *Journal of Financial Economics*, *99*(1), 136–161. https://doi.org/10.1016/j.jfineco.2010.08.003

Li, L. (2023). China's version of 'Basic III' promotes risk management upgrade, and small and medium-sized banks urgently need to accelerate underlying data governance. *21st Century Business Herald*, 3.

Li, L. K., & Moosa, I. A. (2015). Operational risk, the legal system and governance indicators: a country-level analysis. *Applied Economics*, *47*(20), 2053–2072. https://doi.org/10.1080/00036846.2014.1000533

Li, L., & Moosa, I. (2015). Operational risk, the legal system and governance indicators: a country-level analysis. *Applied Economics*, *47*(20), 2053–2072.

Li, X., & Xu, H. (2009). Basel II implementation in China: Challenges and recommendations. *Journal of Credit Risk*, *4*(3), 95–118.

Liu, C. (2012). The implementation of Basel II and III in China. *Journal of Applied Finance and Banking*, *2*(1), 157–170. https://www.researchgate.net/publication/257166772_The_Implementation_of_Basel_II_and_III_in_China

Liu, X., Ma, L., & Shang, Y. (2020). Bank systemic risk and shadow banking: The role of interconnectedness. *Journal of Financial Stability*, *51*(100812).

Luo, Y., & Qin, B. (2017). An empirical analysis of Chinese banks' credit risk management based on principal component analysis. *Eurasian Journal of Business and Economics*, *10*(19), 67–84.

Maji, S. G., & De, U. K. (2015). Regulatory capital and risk of Indian banks: a simultaneous equation approach. *Journal of Financial Economic Policy*, *7*(2), 140–156. https://doi.org/10.1108/jfep-06-2014-0038

Mancini, L., Ranaldo, A., & Wrampelmeyer, J. (2020). Unfinished business: The impact of Basel III on the European banking sector. *Journal of Financial Stability*, *48*(100754).

Manlagnit, M. C. V. (2015). Basel regulations and banks' efficiency: The case of the Philippines. *Journal of Asian Economics*, *39*, 72–85. https://doi.org/10.1016/j.asieco.2015.06.001

McGovern, C., Larkin, P., & Martin, S. (2020). Basel IV and European banks' business models. *Journal of Banking Regulation*, *21*(4), 334–347.

McShane, M. J. (2018). Enterprise risk management: history and a design science proposal. *The Journal of Risk Finance*, *19*(2), 137–153. https://doi.org/10.1108/jrf-03-2017-0048

Mirkovic, Vladimir & Dasic, & Boban & Silijkovic, B. (2011). MARKET RISK MANAGEMENT IN BANKS. *Research Gate*.

Müller, H. (2009). *Basel II implementation: A guide to developing and validating a compliant, internal risk rating system*. Risk Books.

Rastogi, S., Sharma, A., Pinto, G., & Bhimavarapu, V. M. (2022). A literature review of risk, regulation, and profitability of banks using a scientometric study. *Future Business Journal*, *8*(1). https://doi.org/10.1186/s43093-022-00146-4

Risk Optics. (2022). *'A Guide to Risk Management in Banking'*. https://reciprocity.com/resource-center/guide-to-risk-management-in-banking

Smith, J. (2009). Challenges of implementing Basel II. *Journal of Risk Management in Financial Institutions*, *2*(3), 278–291.

Supervision, B. C. O. B., & Settlements, B. F. I. (2010). Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems. *Supervision, B. C. O. B., & Settlements*.

Supervision, B. C. O. B., & Settlements, B. F. I. (2010). *Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems*.

Tabak, B. M., Fazio, D. M., & Cajueiro, D. O. (2011). The relationship between banking market competition and risk-taking: Do size and capitalization matter? *Journal of Banking and Finance*, *36*(12), 3366–3381. https://doi.org/10.1016/j.jbankfin.2012.07.022

Vasiliev, I. I., Smelov, P. A., Klimovskih, N. V., Shevashkevich, M. G., & Donskaya, E. N. (2018). Operational Risk Management in A Commercial Bank. *International Journal of Engineering & Technology*, *7*(4.36), 524. https://doi.org/10.14419/ijet.v7i4.36.24130

Vyas, M., & Singh, S. (2011). Risk Management in Banking Sector. *BVIMR Management Edge*, *4*(1), 15–24.

Website of the China Banking and Insurance Regulatory Commission. (2023). *Measures for the Risk Classification of Financial Assets of Commercial Banks_China Banking and Insurance Regulatory Commission_China Government Network*. www.gov.cn. Retrieved May 27, 2023, from https://www.gov.cn/zhengce/ 2023-02/11/content_5750184.htm

Xinhua News Agency. (2022). *financial measures introduced to support the real economy and strengthened_rolling news_Chinese government website*. www.gov.cn. Retrieved May 24, 2023, from https://www.gov.cn/xinwen/2022 -04/19/content_5685925.htm

Yin Hong. (2021). *"China Finance"｜Comparison and Practice of Global Sustainable Finance Principles_Tencent News.* new.qq.com. Retrieved May 26, 2023, from https://new.qq.com/rain/a/20210914A04GF400

Yu, T. Y., Chen, C. R., & Shih, J. L. (2016). The asymmetric relationship between the banking industry and economic growth: Evidence from China. Journal of International Financial Markets. *Institutions and Money*, *42*, 1–13.

Zhang, L., Cao, J., & Wan, C. (2020). Basel IV and its implications for China's banking sector. Journal of Banking Regulation. *Journal of Banking & Finance*, *21*(3), 209–224.

Županović, I. (2014). Sustainable Risk Management in the Banking Sector. *Journal of Central Banking Theory and Practice*, *3*(1), 81–100. https://doi.org/10.2478/jcbtp-2014-0006

Appendix 1 Interview Guide

Risk-related questions:

1. Which are the main risks your bank face and which is the most important?
2. How would you describe the risk management process and mechanisms in your bank?
3. How does the bank face unexpected risks? (such as covid 19)
4. How often does the bank adjust its risk exposure and measures?
5. Do you think your bank faces different risks than other banks?
6. Now that covid 19 pandemic is almost gone, which changes have suffered the bank since it started?

Regulation-related questions:

1. How has risk management changed after stricter regulations (like Basel committees)
2. Which troubles did the bank face when applying those regulations? Do you find these changes useful?
3. How do the regulators impact the risk management in your bank?

Control-related questions:

1. How does the bank evaluate risks?
2. How do you monitor and evaluate the risk-taking of the employees?

Current situation questions

1. Do you perceive new risks in the current banking crisis?