T-814-INNO

Final Report

Mortgage Backed Securities and Collateralized Debt Obligation

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April 2, 2023

Contents

1 Introduction

This report will summarize the technical, market and finacial report for for Collateralized Debt Obligation (CDO) for the Icelandic market.
Initially both Mortgage Backed Securities (MBS) and Collateralized Debt Obligation (CDO) were investigated and considered. But after the market report, it was clear that there was only an interest for CDOs.
In chapter 2 the solution and need will be described along with an overview of the Canvas Business Models. Chapter 3 goes over the next steps with the business plan along with net present value (NPV) of the project. In chapter 4 we go over the team and the structure of the company along with investors role in the company. Chapter 5 is summary of the 3 main reports that came before, market report, technical report and financial report.

2 Description of the solution and need

The original solution and need had Mortage backed securities (MBO), Collateralized Debt Obligations (CDO) and derivatives. After going through the market report, it was decided to only focus on Collateralized Debt Obligations (CDO)

2.1 Solution

2.1.1 Mortgage Backed Securities-MBS

Mortgage backed securities are pools of loans sold as one bond to an investor. These pools consist exclusively of mortgages. This benefits the bank in two ways. First it allows the bank to lock in profit quickly by selling the MBS for more than it costs to put it together and frees up cash for reinvestment which can even be the same product again. Second benefit is the fact that this transfers risk from the bank to the investor which can be very beneficial to comply with risk management requirements within the bank.

2.1.2 Collateralized Debt Obligation-CDO

A CDO (Collateralized Debt Obligation) is a type of structured financial product that is similar to a standard MBS (Mortgage-Backed Security) in that it is backed by a pool of underlying assets, such as mortgages or other types of loans. However, there are some key differences between a CDO and a standard MBS. One of the biggest differences is that a CDO can be backed by a variety of different types of debt, not just mortgages. For example, a CDO might be backed by a mix of mortgage loans, auto loans, and credit card debt. Another key difference is the way that the underlying assets are structured. The underlying debt is often structured into multiple layers or tranches, each with a different level of risk and return. This creates several very different investments that can be sold to different customers all over the market. When a buyer buys a tranche he is really buying a right to a part of the cash flow, so pricing of tranches is similar to option pricing. The lowest rated tranche with the highest yield takes on all defaults until it is wiped out and then the next tranche can be affected by defaults and so on. The tranche with the least risk is most appealing to institutional investors and the lower tranches would be an exciting product for investment funds both Icelandic and foreign. If the underlying loans are good, which in Iceland they most often are, then the risk of these products is very low while still outperforming most other low risk investments. Therefore you have a low risk and high performance product.

2.2 Need

2.2.1 MBS and CDO's

Pension funds and large investors are constantly looking for good investments that meet their standards for yield and risk. Securitized loans can be a good option for these investors for a few different reasons but mainly the following three.

1. **Diversification:** Buyers can gain exposure to a large pool of loans, which can help diversify their portfolio and reduce overall risk.

2. **Yield:** Buyers can receive higher yields compared to traditional fixed-income investments like bonds, due to the higher risk associated with securitized loans.

3. **Liquidity:** Securities backed by loans are generally more liquid than the loans themselves, which can provide buyers with greater flexibility to manage their investments.

2.3 Canvas business model

The Canvas buisness model answers most of the questions that may arise involving the creation, sales and management of Collateralized Debt Obligations (CDO). The model goes over key components such as who the customers are how they are contacted resources and the value of the proposition. For a more detailed explanation of the canvas model, see section 2.3 of the Market Report in Appendix A.

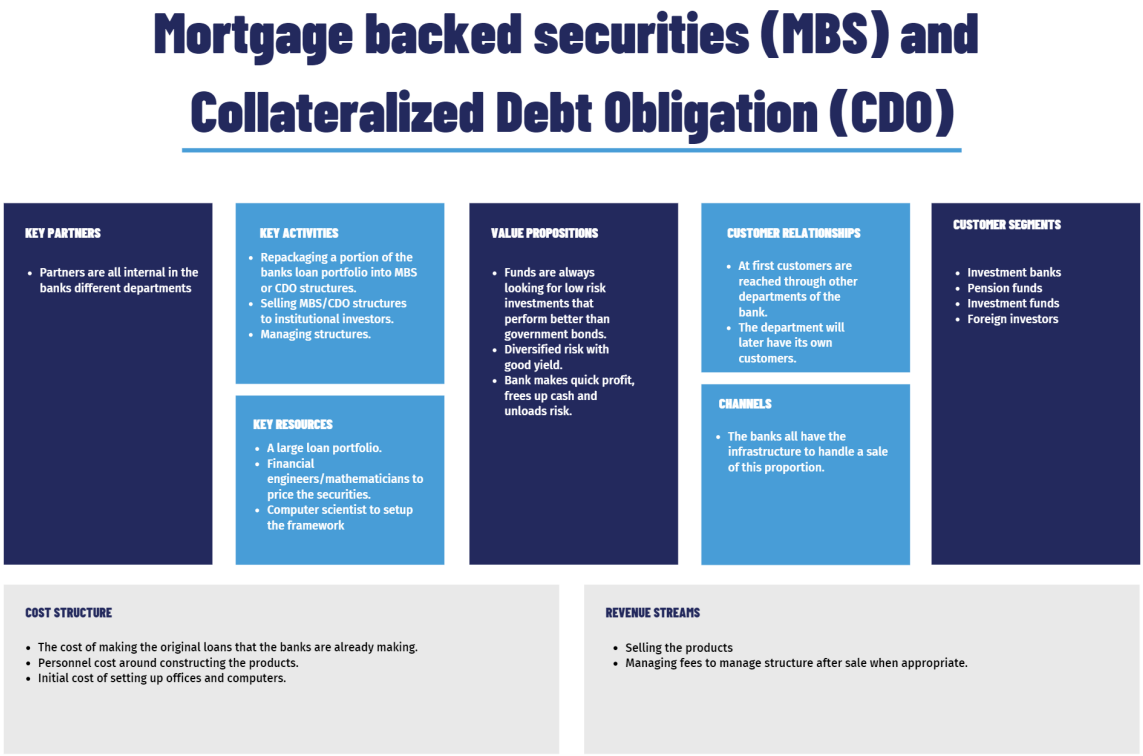

Figure 1: Canva buisness model

3 Next steps

The team has seen a solution that is not on the market in Iceland. The capital needed to start up the company, spent during the first 6 months of preparation before starting operation and sales is 103.322 KISK for full ownership of project, at the price for paying for occurred costs in creation of business plan. The next steps for the project will be to offer the business plan to one of the banks for execution. The bank will need to hire the team for the project and the project should be up and running in 6 months time. The most important aspect of the project will be to create business relationships with the pension funds and large investors as these relationships will be vital to build up the customer group required to sell the CDOs.

3.1 Net Present Value

The net present value (NPV) of the company at the 5 year of sales is estimated at 795.465 thousand ISK (KISK) and a capital need of 103.322 thousand ISK (KISK) from the future project owner. The project is therefore very profitable and with NPV - Project cost more then 692.143

4 The team and structure of company

4.1 The team

To begin with the team consists of one project manager which would be a financial engineer, one financial engineer and a lawyer. As more CDO's are sold, more management of assets is required, in year 3 after starting operation we add one finance engineer and one lawyer, and then 1 lawyer after that per year ending with a team of 7 in the 5th year.

4.2 Organizational chart

The project manager oversees operation and is assumed to know enough about financial and legal operations to manage both the lawyers and the financial engineers to begin with. As time passes the most experienced lawyer is presumed to become head of legal while the project manager remains head of finance and operations.

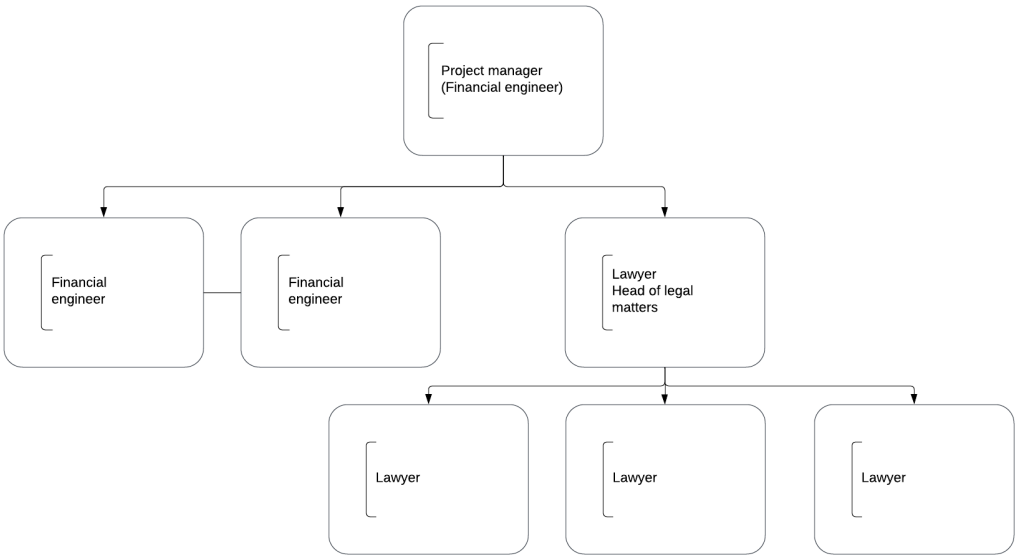

Figure 2: Organization chart

4.3 Role of investors in the company

The role of the investors, that is to say the bank, they will house and share facilities and resources with the project. In return they will get full ownership of project and the entire profits. The team will therefore be a part of a new department within the bank.

5 Executive Summary

In the following sub chapters, the various reports executed are summarized. The mentioned reports are the market-, technical- and financial report where the market research, technical aspects of the solution and the executive and financial plans are disclosed. Appended, in appendixes A, B and C, are the detailed reports for the market, technical and financial aspects of the project respectively.

5.1 Market Report

The objective of the market report is to perform a market analysis on the solution and need of Mortgage Backed Securities (MBS) and Collateralized Debt Obligation (CDO). The potential customers were identified to be pension funds and large investors. The SWOT and PESTLE analysis shows that the project has strengths and opportunities and the market research showed a clear interest from both the large banks to look into

this opportunity. Interviews were conducted with pension funds also showed interests from the pension funds to invest in projects of this type.

The result from the discussions with the investment managers in the pension funds was that it will be required that the underlying assets in the CDO's need to be readily available to the purchasing customer. The reason why the banks are not selling CDO's is because of the stigma that resulted from the financial crisis in 2008 which resulted in large part of falsified credit rating CDO's which were sold as good CDO's with good rating.
For more detailed information, see Market Report in Appendix A.

5.2 Technical Report

The technical report covers the technical issues to be considered and provided a thorough analysis of the technical aspects involved when implementing Mortgage backed securities (MBS) and Collateralized Debt Obligation (CDO) in the Icelandic market.
The key considerations were explores as well as the challenges that must be addressed, including legal and regulatory frameworks, market infrastructure, risk management, and valuation methodologies. By examining these critical technical issues and offering guidance, this report serves as a valuable resource for financial institutions, investors, and policymakers who are interested in participating in or regulating the MBS and CDO markets in Iceland and hopefully assist in the development of a robust and sustainable MBS and CDO market in Iceland.
For more detailed information, see Technical Report in Appendix B.

5.3 Financial Report

The financial report covers the financial aspects of the project. The objective of the financial report is to figure out if this business idea is feasible, therefore outline cost, finance needed and how the project is financed. It goes over how much capital is needed to start the project and how many employees are needed the first 5 years of operation.
Net Present Value (NPV) calculations for the project along with the sensitivity analysis are contained in the financial report in order to see how profitable the project is.

The total capital fund needed is calculated to get the total cost that is needed to realize the project from idea to market. This is estimated to be 103.322 thousand ISK in total. The main financing of the project will come exclusively from the banks equity for full ownership of the project.

A financing plan, revenue and cost estimates, balance sheet and cash flow plan, was formed and is divided into 5 parts for the first 5 years of operation. It shows how much money is needed from each part at each time.

A sensitivity analysis for the project is performed along with Net Present Value (NPV) calculations. The net present value (NPV) of the company in the first year of sales is 795.465 thousand ISK (KISK) and investment needed is 103.322 thousand ISK (KISK), as shown in the financial report. The investor's share, the new project owners share; the bank, in the company is 100%.
For more detailed information, see Financial Report in Appendix C.

6 Appendices

6.1 Appendix A: Market Report

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Market Report

MBS and CDO's

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March 1, 2023

Contents

1 Introduction

This report will focus on market research for Mortgage backed securities (MBS), Collateralized Debt Obligation (CDO) and Derivatives trading for the Icelandic market. In chapter 2 the solution and need will be described along with an overview of the Canvas Business Models. Competition analysis will be reviewed in chapter 3 where the need for the solution in Iceland will be analysed. Market segmentation is covered in chapter 4 where the potential customer groups will be reviewed. In chapter 5 external factors will be analysed with PESTLE and SWOT analysis. The market research results will be reviewed in chapter 6. In chapter 7 the 4 P's of marketing will be explained and chapter 8 is promotion and market entry plan.

2 Definition of solution and need

2.1 Solution

2.1.1 Mortgage backed securities (MBS)

Mortgage backed securities are pools of loans sold as one bond to an investor. These pools consist exclusively of mortgages. This benefits the bank in two ways. First it allows the bank to lock in profit quickly by selling the MBS for more than it costs to put it together and frees up cash for reinvestment which can even be the same product again. Second benefit is the fact that this transfers risk from the bank to the investor which can be very beneficial to comply with risk management requirements within the bank.

2.1.2 Collateralized Debt Obligation (CDO)

A CDO (Collateralized Debt Obligation) is a type of structured financial product that is similar to a standard MBS (Mortgage-Backed Security) in that it is backed by a pool of underlying assets, such as mortgages or other types of loans. However, there are some key differences between a CDO and a standard MBS. One of the biggest differences is that a CDO can be backed by a variety of different types of debt, not just mortgages. For example, a CDO might be backed by a mix of mortgage loans, auto loans, and credit card debt. Another key difference is the way that the underlying assets are structured. The underlying debt is often structured into multiple layers or tranches, each with a different level of risk and return. This creates several very different investments that can be sold to different customers all over the market. When a buyer buys a tranche he is really buying a right to a part of the cash flow, so pricing of tranches is similar to option pricing. The lowest rated tranche with the highest yield takes on all defaults until it is wiped out and then the next tranche can be affected by defaults and so on. The tranche with the least risk is most appealing to institutional investors and the lower tranches would be an exciting product for investment funds both Icelandic and foreign. If the underlying loans are good, which in Iceland they most often are, then the risk of these products is very low while still outperforming most other low risk investments.

2.1.3 Derivatives Trading

Derivatives are by far the biggest financial instrument in the world and make up for a large part of the overall market. It is therefore safe to say that derivatives are essential for the world of finance, but for some reason the derivatives market has not been established in Iceland. While this may not be a problem for Iceland's biggest companies who have the option to hedge themselves through foreign banks, this could be a deal breaker for smaller companies that don't have that option.

If smaller companies in Iceland were able to hedge themselves against fluctuations on the market using derivatives, it could stabilize the market drastically. It is incomprehensible that Iceland, a country with it's current financial status, does not offer this to it's citizens and companies, especially because every tool needed for it is already there.

The proposed solution is to open up a derivative trading desk within one of the large banks in Iceland. While being the first to the market can be profitable it can be very tricky with this segment. When banks in larger markets sell options to their customers they will often hedge themselves right away with another bank where they get better prices than their customer pays them. If you are first to this market on the other hand it might be more difficult to hedge these positions. One way would be to sell options at a rather high price and with a return roof to compensate for the risk or similar products like covered calls. This way, if the bank models the risk correctly, it can make good money. Another way would be to set up a platform where customers ask to buy or sell options and other customers can bid on them until a deal is struck. The bank would then take compensation for making the deal possible by housing the platform and have contracts ready.

Companies try to make money by selling the product or service they are offering but not by speculating on markets for their supplies. This fact makes it appealing to companies to be able to hedge their exposure to markets. This department would connect customer companies with companies which need to buy or sell to them some product in a given time. The department would then help them settle on a forward price and help them make the deal. Then it would make the contract for them and even, if a part of the deal, house a margin account and then take compensation for the service. These forward contracts may be simple and accessible in other places but this department would specialize by making structured notes when needed to meet the customers needs

and pricing them correctly.

2.2 Need

2.2.1 CDO and MBS

Pension funds and large investors are constantly looking for good investments that meet their standards for yield and risk. Securitized loans can be a good option for these investors for a few different reasons but mainly these three. First is diversification, buyers can gain exposure to a large pool of loans, which can help diversify their portfolio and reduce overall risk. Secondly is the yield, buyers can receive higher yields compared to traditional fixed-income investments like bonds, due to the higher risk associated with securitized loans. Thirdly is the liquidity, securities backed by loans are generally more liquid than the loans themselves, which can provide buyers with greater flexibility to manage their investments.

2.2.2 Derivatives Trading

Derivative trading has not been done in this way in Iceland before as the market is small and businesses have not been keen on hedging in Iceland. We believe that the landscape has changed with growing public interest in trading on the stock exchange.

The need for a supplier of derivatives is inevitable but this may be a bit early which is why we would want to target three key areas of derivatives. In each area we believe that there is a market but there is no consistent supplier for these products today.

Under the umbrella of one of the bigger banks in Iceland we believe it would be possible to run a very profitable business in arranging hedge positions, creating and selling futures and options and also creating securities and collateralise debt obligation instruments to free up cash for the banks and provide good investment tools for institutional investors in Iceland.

2.3 Canvas Business Model

2.3.1 MBS and CDO's

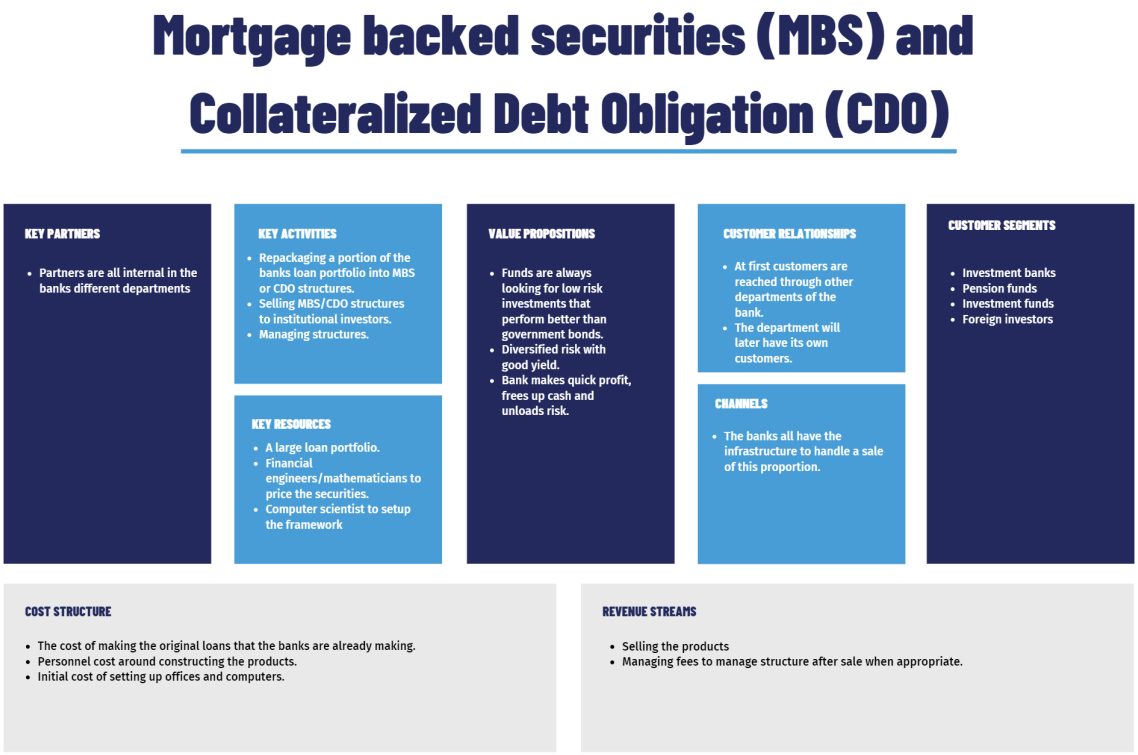

Figure 1: Canvas Business Model - Lánavafningar

- **Key Partners:** Partners are all internal in the banks different departments
- **Key Activities:** Repackaging a portion of the bank's loan portfolio into MBS or CDO structures and sell them to institutional investors.
- **Key Resources:** A large loan portfolio, financial engineers/mathematicians and computer scientist.
- **Value Propositions:** Funds are always looking for low risk investments that perform better than government bonds. Banks will make quick profit, free up cash and unload risk.
- **Customer Relationships:** At first customers are reached through other departments of the bank, but later it will have it's own customers.

- **Channels:** The banks all have the infrastructure to handle a sale of this proportion.
- **Customer Segments:** Main customers will be investments banks, pension funds, investments funds and foreign investors.
- **Cost Structure:** Initially operation setup and personnel cost around constructing the product. Also the cost of making the original loans that the banks are already making.
- **Revenue Streams:** Selling the product.

2.3.2 Derivative Trading

Figure 2: Canvas Business Model - Derivative Trading

- **Key Partners:** Foreign banks will be key partners as the large bank in Iceland will need to hedge themselves. The market provides the knowledge needed to price the derivatives.
- **Key Activities:** To sell options to companies that want to hedge themselves against uncertainties and fluctuations in the market.
- **Key Resources:** Collaboration with one of the large banks in Iceland along with financial engineers/mathematicians to price the derivatives. Computer scientist to setup the framework.
- **Value Propositions:** Assurance to companies that in case certain assets, that the respective company depends on, decrease in value, loss of money can be minimized by hedging against the change as well as provide the ability to gain money due to prediction of market fluctuations.

- **Customer Relationships:** Companies that are regulars at the bank. Smaller companies that don't have the option to hedge themselves in large foreign banks.
- **Channels:** Obscure target audience but can be reached through finance news on news pages. Would be executed in a collaboration with a bank which would advertise to relevant customers.
- **Customer Segments:** Main customers will be large companies that rely largely on some specific resources. For example airlines using oil.
- **Cost Structure:** Initially operation setup and personnel cost will be a large part of the cost. During operations the largest cost will be hedging in foreign banks.
- **Revenue Streams:** Companies pay to defend themselves against market fluctuations by hedging. Income will come through the price difference of hedging offered to customers and the banks hedging in foreign banks.

3 Competition Analysis and foreign market

This section will review the current competitors in the derivative trading market, as well as the MBS and CDO in Iceland.

3.1 Iceland

This section will look into whether the three major banks in Iceland are providing the proposed solutions in some version. The variation and similarity between the banks will be presented as well.

Key competitors in Mortgage backed securities (MBS), Collateralized Debt Obligation (CDO) seem to be nonexistent locally at this time. Before the economic crash in 2008 MBS's and CDO's were used as collateral for the governments refinancing of the banks and were mentioned in news articles for few years after. These loan repackages are not available at this time, however the banks do offer a somewhat similar bond alternative but while those bonds are financing the bank these securities are not financing tools but rather what the bank would use financing to make.

3.1.1 Arion Banki

According to stock investment advisor in Arion, derivatives are used in the stock exchange there with rate of currency & stock as the underlying. Specialists on CDO's and MBS were unavailable and information could therefore not be obtained.

3.1.2 Íslandsbanki

Contacts at Íslandsbanki could not provide information on securitized loans such as MBS and CDO however derivative trading is done on daily basis mainly bespoke contracts.

Customers deemed capable investors (with over 30.000 EURO), capable of providing collateral, and doing trade for estimated around 5 MISK or more is able to do derivative trades with the bank. Usually stocks or currency are the underlying. These parties usually do not accept these instruments, only settled in money.

3.1.3 Landsbanki

According to source in Landsbanki investment risk management team derivatives are used in the stock exchange there with rate of currency & stock as the underlying. General and bespoke contracts are offered, the capability of investor is evaluated and escrow account is established before trade. General and bespoke contracts are used depending on need. According to a source in Landsbanki data intelligence department high level of secrecy is involved in the derivative trades. The banks do not offer derivative trades without a way to hedge against losses. There is nothing that says smaller companies cannot hedge their companies with derivatives trading if they are evaluated as capable investors with an established escrow account.

CDO and MBS are not used, instead loans owned by the bank are collected into bonds and set interest rate is paid. There is little or no evidence that banks, or other large lenders are consolidating loans and selling them and is not practiced in Iceland to any extent. Instead the bank issues covered bonds that have collateral in e.g. real estate loans. The banks keep the ownership of the loans and only pay fixed interest on the bonds.

3.1.4 Conclusion Iceland

The main 3 banks are already using some form of derivative trade under strict conditions as long as they have a way to hedge against losses, and at least in Landsbankinn the MBO and CDO are not used anymore and loans are collected into bonds which the bank still owns and pays a set interest rate.

3.2 Foreign markets

Almost every foreign bank of any notability trades in derivatives with just the OTC market on equity related derivatives hitting over 40 billion contracts in 2021 and the notional value of derivatives said to be up to a quadrillion dollars. These contracts are traded on many platforms and on many exchanges all over the world. Traders in this segment are of various kinds from day traders betting on markets to large corporations hedging their exposure to certain markets.

Regarding securitized loans according to data from the Securities Industry and Finan-

cial Markets Association (SIFMA), the total volume of securitized products issued in the US in 2021 was approximately $935 billion. This includes a range of asset classes, such as mortgage-backed securities, asset-backed securities, and collateralized loan obligations. The total volume of corporate bonds issued in the US in 2021 was approximately $2.2 trillion so the market for securitized products is almost half the size of the corporate bond market.

It is clear that all of these products are traded in all big markets and even make up a big portion of those markets. This is interesting as here in Iceland they are a small portion of products traded.

In Scandinavia, according to the banks websites OTC derivative trades are at least offered in Swedebank (Sweden), Danske bank (Denmark), and Handelsbanken (Norway). At least Swedebank offers Mortgage Backed securities.

3.3 Conclusion

From the competition analysis it is clear that Derivative Trading is performed in some capacity in Iceland however the MBS and CDO's were done to some extent, but not anymore (probably due to stigma after 2008), instead the banks issue covered bonds and pay a set interest rate to bonds owner.

4 Market Segmentation

Market segmentation is a marketing term that refers to collecting expected buyers into groups or segments. The objective of a market segmentation is to identify targeted groups of consumers and to modify products in a way that is attractive to the targeted group.

Three potential customer groups will be covered in the market segmentation that have been identified as a potential customer base for CDO's and MBS or derivative trading:

- **Pension funds:** For MBS and CDO's, investment funds and pension funds will be main customers. Pension funds are continuously looking for investment opportunities and MBS and CDO's could be a good option.

- **Private investors:** This will be a small customer base but important nonetheless. Individuals are the base of companies. If individuals get the sense of what is possible with MBS, CDO's those individuals might turn into the main customer base. The alternative to CDO's and MBS, government bonds backed with mortgages are already very popular and have been for a very long time.

- **Smaller and mid sized companies**: The main customer base for derivative trading will be mid sized companies who are unlikely to have contact or knowledge to perform derivative tradings like the larger companies do. Smaller and midsized companies that use or produce raw materials or depend on certain aspects e.g. exchange rate derivative trading contracts can be beneficial and decrease the uncertainty.

5 Analysis of external factors (PESTLE and other) and SWOT analysis

Many factors can effect the success of the project. It is therefore necessary to analyze which factors in the internal and external environment might affect the success. The analyses performed were PESTLE and SWOT. PESTLE analysis stands for political, economic, social, technological, legal, and environmental. SWOT analysis stands for strengths, weaknesses, opportunities, and threats. As a company will not be created around the solution an internal analysis will not be performed.

5.1 CDO's and MBS

PESTLE and SWOT analysis was performed for CDO's and MBS and revealed that there are no laws obstructing securitized loans which are a good product for a variety of investors and require little manpower to make and manage. The main drawback is that there might be large shifts in interest rates due to the long lifetime, and the bank might need to service them for all of its lifetime.

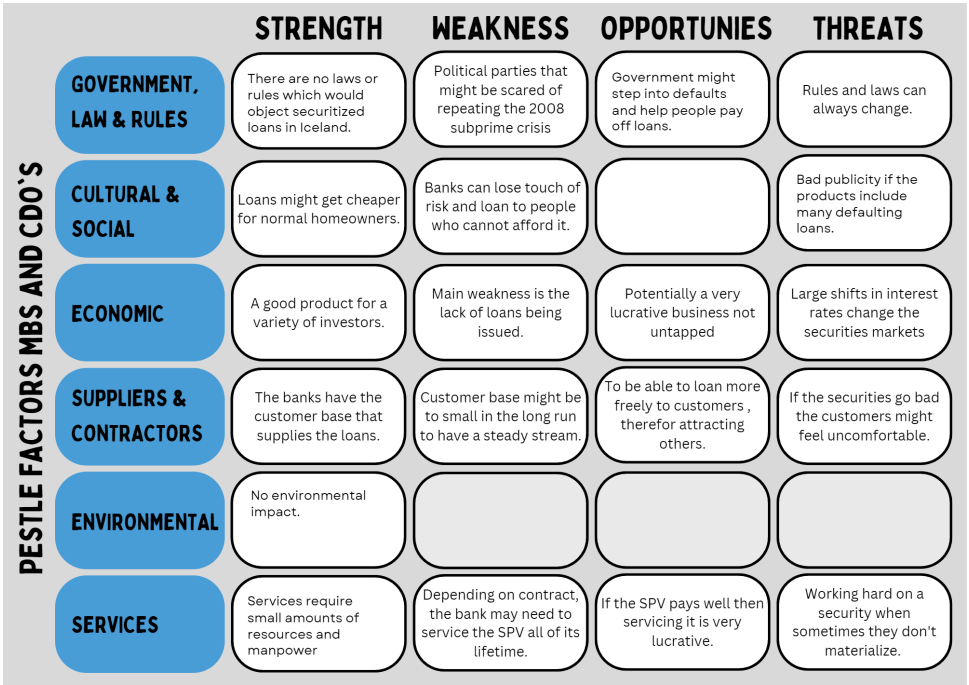

Figure 3: Pestle and SWOT - CDO's and MBS

5.2 Derivative Trading

The PESTLE and SWOT analysis for derivatives revealed that it can provide companies with certainty and stability a good product, main drawback is that there is much higher expertise on the subject abroad.

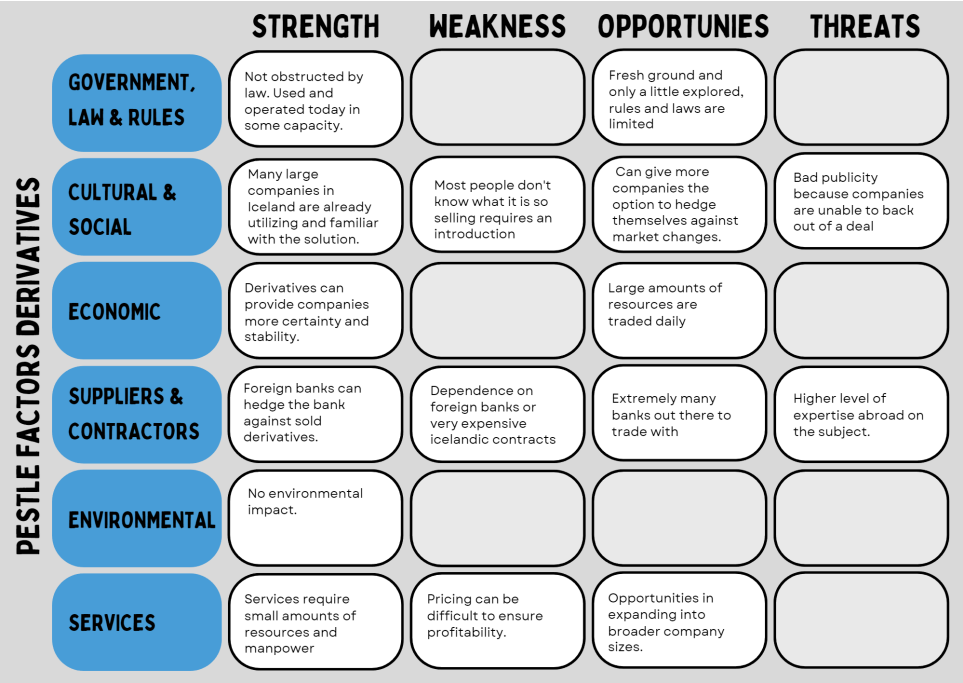

Figure 4: PESTLE & SWOT - Derivative Trading

5.3 Conclusion

The result of the SWOT analysis shows that there are more strengths than weaknesses and more opportunities than threats for both the projects. The positive factors outweigh the negative factors which indicates the projects can be successful. Both projects are promising and can offer multiple benefits for investors and companies in Iceland.

6 Market research

The objective was to gather information from the most important customer groups that have been defined in chapter 4. Contacts were made within the main banks, pension funds and companies. Interviews were the main market research tool. Three types of questionnaires were presented; one for banks, one for pension funds and one for businesses.

Below are listed the results of the interviews performed concerning the need of each contact of our proposed solution and how they think it should be structured.

6.1 Interviews with banks

The banks were asked a total of 14 questions. but categorized into the 3 main subjects; Mortgage backed securities (MBS), Collateralized Debt Obligation (CDO) and Derivatives trading.
The following questions were asked:

1. Do you offer derivative trading (forward contracts)? If so, how does it work and how much do you charge for the service?
2. What are the estimated annual revenues for forward contracts?
3. What is the estimated cost of forward contracts per year?
4. What is the pricing?
5. Do you offer derivative trading with underlying assets in commodities, currencies, and stocks? If so, how are the transactions conducted and what are the charges for the service?
6. What are the estimated annual revenues from derivative trading?
7. When you have sold call and put options, what is the implied volatility?, Who are the buyers?
8. Would you be interested in selling more of them to a wider group if the implied volatility in the market was significantly higher than what the bank had calculated?

9. "Are you using CDO's? If so, how are the trades conducted and what are the charges for the service?"

10. What are the estimated annual revenues for CDO's?

11. "Would you be interested in selling a portion of your loan portfolio? How big is your loan portfolio? What percentage of the loan portfolio would you be willing to sell?"

12. "Are you offering them for individuals, larger and smaller companies?"

13. What are your main clients?; individuals, larger and smaller companies?"

14. "How do you estimate the trading volume for questions 1, 2, 5, and 6 to develop in the next 5 years (increase or decrease in %)?"

6.1.1 Landsbankinn

Landsbankinn offers derivative trading to some clients, around 5-10 million are required to be deposited into an insurance account (affect swap), the contract period can be from a week to 5 years, they charge parts of percentage for larger currency exchange contracts. Landsbankinn is not using CDO's now but before the financial crash in 2008 they were.

6.1.2 Arionbanki

Arion banki didn't want to discuss any numbers, so much of the questions became irrelevant. They offer derivative trading to some clients, but the bank usually does not write a forward contract without it being worth 30 million ISK. They are a maximum of 12 months and you place 6% in an account as insurance. They do not using CDO's, but would be interested if there was a buyer, what portion would be the boards call.

6.1.3 Íslandsbanki

Íslandsbanki does offer derivative trading a select group of individuals. Each contract is a bespoke. The cost is proprietary data but it depends on each contract and the risk profile of each costumer. They are not selling any CDO's but would be interested if there was a buyer.

6.2 Conclusion of interviews with banks

All the banks offer derivative trading to some extent, mostly currency exchange contracts, they evaluate the customer from a question list about their knowledge about derivatives. The customer needs to put down at least 5 million ISK in insurance, in cash or stocks. They all offer derivative trading with underlying assets in currencies, stocks and bonds and take money or stocks as insurance deposit. The banks were very unwilling to provide any figures on most of these questions and none were using MBS or CDO. All the banks were interested to some extent in CDO and MBS. The banks were fairly unwilling to provide derivatives using commodities as underlying. Landsbankinn does not even have the option open, Arion rarely does commodity derivatives, simply requires too much manpower per contract to even consider it for smaller ones. Through talking to individuals

in the banks it was clear that they are all into traditional derivatives and do not have great interest in receiving help with that. On the other hand they seem to have decided without reason that there are no buyers to securitized loans while admitting that they would have interest in selling them as they are good products. According to yearly statements 2021 we found that outstanding loans and claims of each bank are Landsbankinn: 1.387.463 m.ISK Arion: 936 b.ISK Íslandsbanki 1.036 b.ISK Total: 3.359.000 m.isk For purposes of finding supply for CDO MBS we assume banks are willing to sell 10% of their loans and claims Supply: 335.900 m.isk

So in conclusion none of the banks were really interested in derivatives trading. The focus group is really obscure and none of the banks are really willing to widen that group to any extent. The reason for that being that they don't want just anyone to be able to do derivatives, you have to fully understand what you are doing because this is after all a very complex financial instrument.
The volatility turned out to be way higher then group originally assumed, causing the options to be way more expensive then the group originally thought they would be. So the product in itself is not as appealing for the buyer as originally thought.
Knowing this the thought of creating a business plan for derivatives trading in Iceland immediately became less appealing. And the last nail in the coffin, so to speak, was the fact that none of the banks were willing to explain in any detail how they are doing derivatives today. So the group has no real comparison about how it is done and therefore can't improve it. And even if the group did it, chances are that it would just end up with something very similar to what is already being done.
So given the banks lack of interest in derivatives trading and the fact that none of them are offering securitized loans (MBS and CSO) and all of them were interested, the decision was made to drop derivatives trading from the project and only focus on securitized loans from here on.

6.3 Interview with companies

Many companies were contacted and sent inquiries regarding derivative trading. Larger companies were targeted with a request to talk to their financial manager regarding derivative trading. A total of 18 were contacted, 6 responded but only 4 could take the time to do an interview and answer the questions verbally.
The following questions were asked:

1. Do you know what derivative trading is?
   * If yes, how did you learn about it, from a bank or elsewhere?

2. Are you engaging in derivative trading?
   * If yes, what type of derivatives trading are you involved in (*for which commodity, currency or product*)?
   How and how much is charged for the service?

   * If no: If futures trading with forward contracts would provide you with more price predictability on e.g. currency or raw materials for production, would you want to use them?

6.3.1 ISAL - Rio Tinto Iceland

ISAL is an aluminium smelter that produces high-quality aluminium. ISAL is using derivative trading for their operations but they are performed only by the parent company for the subsidiaries. Derivative trading is used for aluminia which is the main raw material for aluminium production and contracts are made for 3-6 months at a time. The global price of aluminia is tied to the market price of aluminium. The contracts are priced so the company either pays a certain price or a % of each contract for the service.

6.3.2 Icelandair

Icelandair is a leading airline that offers flights to, from and through Iceland, as well as domestic flights. The company was originally founded in 1937, called *Flugfélag Akureyrar*. It uses Iceland's location, between America and Europe, as a business opportunity and has built an international route network with Iceland as the center.

Icelandair uses derivative trading regarding their aviation fuel, currency and has interest rate protection. Icelandair's risk management takes care of all the company's derivative contracts. Market risk emerges from changes in market prices. These changes are seen in foreign exchange rates, interest rates, carbon prices and fuel prices. These changes affect the company's cash flow or the value of its holdings in financial instruments so derivative trading is very important to them to see ahead and stear prices.

6.3.3 Play airlines

Play airlines are in derivatives business and have a specific strategy in that, starting with oil, will certainly expand to currency hedging and more. The oil is big, started last year. In cooperation with an Icelandic oil company, contracts with that company guarantee a certain price with that company and they are then in contact with another company and hedge themselves there.

In the last year, 2022, they fixed their prices 3 months ahead of time. Now, in 2023, they are allowed to fix up to 50-60% of their total oil prices up to 6 months ahead of time. The oil is about 40% of their costs. There is high volatility in the oil market and there is risk no matter whether you hedge or not. By doing this is give some efficiency and helps to foresee the future, if you can fix a little bit of that cost based on the tickets they've sold today. Play, and Airlines in general, are looking more at what is booked the most and fix those prices. It is not as beneficial to fix prices one year ahead of time. If you have a specific expected rate of return, e.g. 7-8% return, more risk over a longer period, a little more margin.

6.3.4 SVN - Síldarvinnslan

Sildarvinnslan is a herring processing company based in Neskaupstaður, in Iceland's East Fjords. It is one of Iceland's largest fisheries operators, with over four decades of experience. It is also the country's largest catcher and processor of pelagic species and largest producer of fish meal and oil. Síldarvinnslan is the third largest quota holder in Iceland. The group's catch quota for the quota year 2022/2023 is 186 thousand tons or 37 thousand cod equivalent tons.

Síldarvinnslan have used derivative trading from the beginning. This gives them predictability for their prices and expenses. Their derivative trading is manly done for currency, oils and interest rate swap contracts.65-70% of their income is in Icelandic kroners. They have income in Icelandic kroners, Norwegian kroners and dollars but most of their costs are in Icelandic kroners so derivative trading with currency is very important to them. They fix their prices 2-3 months ahead of time and do most of their trading contracts themselves. But if need be, they can extend their contract.

6.3.5 Conclusion from interviews with companies

All the companies that were interviewed were using derivative trading of some sort but none through the bank directly. From the interview it was clear that derivatives are an important factor for large companies to decrease certainty in their business environment. Síldarvinnslan was making derivative trading contracts through a bank but only for the exchange rate. Other companies doing contracts for raw materials or products required for their operations made the contracts through other specialised partners, e.g. Play negotiates derivative contracts with an oil company for their oil.

6.4 Interview with pension funds

9 pension funds were contacted and meetings requested however only 2 pension funds could take the time for an interview.

The following questions were asked:

1. Can you tell us how large is the fund you manage?
2. What is your rate of return?
3. How big are your investments on average?
4. What is your investment risk strategy?
5. Have you bought CDO's before?
6. Would you be interested in buying CDO's? If so, how big of a package would you be interested in?

7. If you were to trade CDO's, which product would be more attractive to you, CDOs or MBSs?

8. If you were to trade CDO, which tranche would be the most attractive?

6.4.1 Birta pension fund

The fund total assets are around 550 billion ISK, the private equity fund is around 22 billion ISK. Investments are made to aim to achieve the expected rate of return of 3.5% over all investments which can vary significantly.

Assets in bond categories can vary from few hundred million ISK to 10-30 billion ISK. These are bond categories issued by the treasury, Municipal loan fund, Íbúðalánasjóður, Orkuveitan and real estate companies. The largest category of assets in covered bonds are around 3 billion ISK. The investment policy of the pension fund is to widely spread purchased assets to fend against fluctuations.

Birta pension fund has not invested in CDO/CMO/CLO's but the fund has much experience in financial transactions based on pools of mortgage loans. The pension fund showed possible interests in mainly MBS's but would definately look into CDO's. CDO's and MBS's would simply be looked into and evaluated like other investment opportunities that come their way and fall within the investment policy of the fund.

Since there are 23 pension funds listed in Lifeyrismal.is we assume each one is managing funds on similar level as they are, if each pension fund is managing only 100-600 b.isk then the total money managed by all the funds is 2.300-13.800 b.ISK if we assume that they are willing to invest 5% of the money managed by the fund the total demand would be 115-690 b.ISK for MBS and CDO's

6.4.2 Almenni lífeyrissjóðurinn

The pension fund is managing around 365.6 billion isk, Almenni lífeyrissjóðurinn does have some experience with securitized loans. They have bought a CDO tranche before the economic crisis and that product did well. They would be willing to buy similar products again given that some requirements are met, mainly that they are shown which loans are put into the structure as well as having a large portion of the underlying pool made up of inflation indexed loans.

Expected rate of return of the pension funds investments are different between investment categories but the investment policy is of minimum 3.5% rate of return on investments.

6.5 Conclusion from interviews with pension funds

The two pension funds we interviewed were familiar with CDO and MBS. were managing 365.6 to 550 billion ISK, only a poriton of which can assumed to consider investing in MBS and CDO's. They expect a 3.5% minimum interest by law which both MBS and CDO's could provide.

7 The 4 P's and marketing

After interviews with the banks and pension funds mainly we found out the competition is fierce on derivative market, not many capable customers and high degree of skill (capable investor). Knowing that it was decided not to do derivative trade contracts and focus exclusively on CDO (Collateralized Debt Obligations) and MBS (Morgage Backed Securities).

7.1 Product

The product being sold is a security backed by loans which the bank originates and sells as well as all service around making the structure. With all securitized loans (MBS, CMO, CDO, BTO,...) the steps needed are the same:

Origination: The first step in creating an MBS is for lenders to originate mortgages by making loans to individual borrowers. These mortgages are typically secured by real estate, such as a home or commercial property.

Aggregation: Once a sufficient number of mortgages have been originated, they are typically aggregated by a sponsor or issuer, who packages them into a pool. The pool is designed to meet certain criteria, such as a specific credit rating or geographic diversification.

Securitization: The pool of mortgages is then transferred to a special purpose vehicle (SPV), which issues bonds or securities that are backed by the cash flows generated by the mortgages. These securities are sold to investors, who receive regular payments based on the principal and interest payments made by the individual borrowers in the pool.

Servicing: The individual mortgages in the pool are serviced by a mortgage servicer, who is responsible for collecting payments from the borrowers and distributing them to the investors. The servicer may also be responsible for managing delinquent loans and handling foreclosures.

Ratings: Before the MBS securities are sold to investors, they are typically rated by credit rating agencies, which assign a rating based on the creditworthiness of the pool of mortgages and the structure of the securities. As there are no credit rating agencies in Iceland this would be done by a third party or in conjunction with the buyer.

Trading: Once the MBS securities are issued, they can be traded on secondary mar-

kets, such as the bond market, where they are bought and sold by investors. The price of the securities can be influenced by a variety of factors, including changes in interest rates, prepayment rates, and credit risk.

7.2 Price

Determining the right price of both instruments will be the main challenge of the people working on them. Given the minimum size of the MBS and CDO Lets say a MBS or CDO has 100 mortgages of 50 million isk each, then the whole thing would be a 5 billion package. The income would mainly come from charging lets say 1-5% of the whole thing, a 2% fee would then be 100 million isk along with a special fee if client wishes to customize the CDO, hours charged for experts customizing the CDO to clients need.

7.3 Place

The place would mainly be the bank, investment funds and pension funds. Largest proportion of sales will go trough introductory meetings but after some time, some will likely be over the phone.

7.4 Promotion

The promotion plan will be discussed in chapter 8.

8 Promotion / Market Entry Plan

It will be necessary to promote the product but the group we are targeting is small and well informed, so they will likely have heard of it before we would begin to sell it.

8.1 Indirect Marketing

Members of the project owner group will communicate with the applicable members of various pension and investment funds, visit them and deliver compatible presentations.

Visits to customers are estimated to be the most expensive factor since it is very time consuming. Each visit is prepared with a customized presentation which highlights their needs with possible solutions. Because we are not experts in the field we assume bank specialists do the work, we assume the specialist hourly rate is 18.000 ISK. On average it will take around 40 hours for 3 people to prepare for a visit totalling 120 man hours, and the visit will likely be 4-5 hours totalling another 12-15 man hours. so the total cost of 3 people working on a 1 visit will then be 2.430.000 ISK, according to https://www.lifeyrismal.is/ there are 23 pension funds listed totalling 55.890.000 ISK for visiting each one.

9 Final words

From the market research it was clear the derivative trading is already performed in Iceland and Icelandic banks are offering it in some way and the market for derivatives trading is small with very few clients. Going forward the group will focus exclusively on Mortgage Backed securities and Collateralized Debt Obligations instead since the pension funds and the banks did show interest in them and they are not being done currently in Iceland. The pricing of the CDO/MBS would be around 1-5% fee. The promotion will mainly be done through presentations at investment and pension funds.

10 Heimildaskrá

Ársreikningar banka 2021

Landsbankinn

https://www.landsbankinn.is/uploads/documents/arsskyrsluroguppgjor/Consolidated-Financial-Report-2021-IS.

Arionbanki

https://arsskyrsla2021.arionbanki.is/english

Íslandsbanki

https://cdn.islandsbanki.is/image/upload/v1/documents/islandsbanki$_hf_arsreikningur_samstaedu_2021$

6.2 Appendix B: Technical Report

T-814-INNO

MARKET REPORT

MBS and CDO's

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17. mars 2023

Efnisyfirlit

1 Introduction

The purpose of this report is to provide a comprehensive overview of the technical aspects involved in implementing Mortgage backed securities (MBS) and Collateralized Debt Obligation (CDO) in the Icelandic market. We will explore the key considerations and challenges that must be addressed, including legal and regulatory frameworks, market infrastructure, risk management, and valuation methodologies. By examining these critical technical issues, this report aims to provide guidance for financial institutions, investors, and policymakers seeking to participate in or regulate the MBS and CDO markets in Iceland.

2 Laws and regulations

When it comes to financing a project, it's important to consider all the potential costs involved. One area that can be a concern is allowances - ensuring that there is enough funding set aside to cover any unexpected expenses that may arise during the course of the project.
However, in the case of this particular project, there's some good news. All the allowances that the bank needs are already in place through their general allowances with the Financial Supervision Authority. This means that no related costs will need to be calculated for this project.
This is excellent news for the bank and for anyone else involved in the project. With the allowances already secured, there's no need to worry about unexpected expenses eating into the budget or causing delays. The project can move forward with confidence, knowing that the necessary funding is already in place.
Of course, it's always important to monitor the budget and keep an eye on expenses as the project progresses. However, with the allowances already taken care of, this should be a relatively smooth process. The bank can focus on executing the project to the best of their ability, without worrying about financial constraints.
Overall, this is a positive development for the project and a great example of how careful planning and preparation can pay off in the long run. With the allowances already secured, the bank can move forward with confidence, knowing that they have the necessary funding to see the project through to completion.

3 Intellectual property rights

Intellectual property is a critical consideration for many projects, particularly those that involve creating and protecting a trademark. However, in this particular case, the project will not create or protect a trademark, so intellectual property laws and associated costs will not apply.
This is excellent news for the project, as it means that there will be no need to spend money on obtaining patents, copyrights, or other forms of intellectual property protection. This can often be a significant expense, so the fact that it won't be necessary for this project is a major advantage.
Of course, it's still important to ensure that any materials or content used in the project do not infringe on existing intellectual property rights. However, this can be achieved through careful research and sourcing of materials, rather than through expensive legal proceedings.
Overall, the fact that intellectual property laws do not apply to this project is a positive development that will help keep costs down and allow the project to move forward more smoothly. With this issue out of the way, the team can focus on other aspects of the project and work to ensure its success.

4 Creation and Testing of Solution

4.1 Identify the pool of assets

Banks must first identify the pool of assets that they will use to create the CDO. These assets may include bonds, loans, mortgages, or other debt instruments.

4.2 Analyze the credit quality of the assets

Banks must analyze the credit quality of each asset in the pool to determine its risk level. This involves assessing factors such as the creditworthiness of the borrower, the type of collateral securing the debt, and any other relevant factors.

4.3 Group assets into tranches

Banks then group the assets into different tranches based on their risk and return characteristics. The senior tranches typically have lower risk and lower return, while the junior tranches have higher risk and higher potential return.

4.4 Create a special purpose vehicle (SPV)

Banks typically create an SPV to hold the CDO and issue the securities. This helps to isolate the CDO from the bank's balance sheet and insulates the bank from potential losses.

4.5 Issue the securities

Once the SPV has been established, the bank can then issue the different tranches of securities to investors. Each tranche will have a different risk and return profile, and investors can choose which tranche they want to invest in based on their risk tolerance and investment objectives.

4.6 Manage the CDO

Banks must then manage the CDO over time, which may involve monitoring the performance of the underlying assets, adjusting the composition of the asset pool, and making distributions to investors.

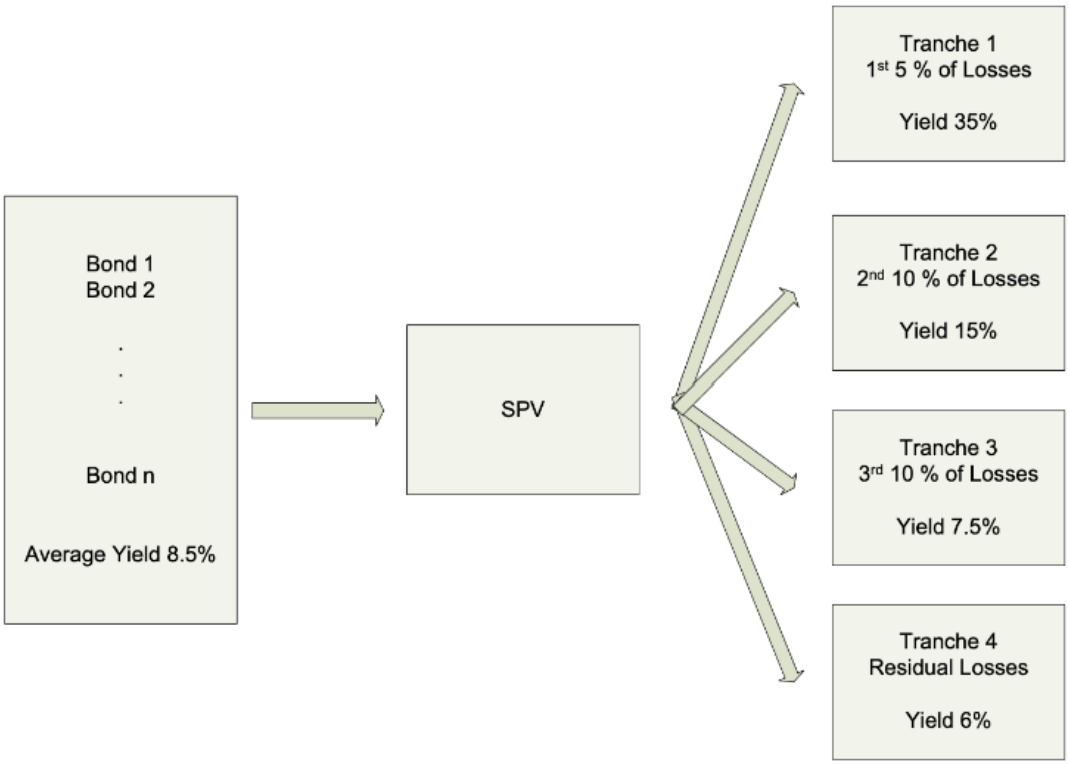

Figure 1

5 Supporting material

When it comes to purchasing collateralized debt obligations (CDOs) and mortgage-backed securities (MBS), there are many legal considerations that must be taken into account. As a result, the bank will need to hire lawyers to draft contracts for the purchase of these securities by investors.

It's important to note that each contract will be unique, which means that the required time for completion may vary. Depending on the complexity of the transaction, the lawyers may need to spend a significant amount of time drafting and reviewing the contract to ensure that it accurately reflects the terms of the agreement.

Of course, it's important to get these contracts right. Any errors or oversights could lead to legal disputes down the line, which could be costly and time-consuming for all parties involved. As a result, the bank will need to be patient and allow the lawyers the time they need to ensure that the contracts are comprehensive and accurate.

While the time required for completion may vary, it's important to budget for these legal expenses and build them into the project plan. By doing so, the bank can ensure that it has the necessary resources to complete the project successfully and minimize the risk of any legal issues arising.

Overall, the legal considerations involved in purchasing CDOs and MBS are complex and time-consuming. However, with the help of experienced lawyers, the bank can ensure that it navigates these issues successfully and completes the project to the best of its ability.

6 Investment cost

There is some investment cost that needs to be looked at. In this chapter all possible investment cost will be covered and time plan and cost plan for each will be created.

6.1 employees

The project requires 5 employees to work in the department. 3 Financial engineers, and 2 lawyers. Hiring and training of the employments will not be necessary, the lawyers are already employees of the bank.

6.2 Office space

The Financial engineers will need a office space to work. Office space will be provided within the bank for the department. Requirements will be desks, office chairs, computers and phones for each employee within the department. If the bank can't provide a office space there is a possibility to buy or rent an office space. Estimated Time and cost plan will be in table 1 and 2.

6.3 Vehicles

Vehicles will be required for the employees to travel to and from business meetings with investors such as pension funds. One vehicle will be sufficient as it will be assumed no more than 1 meeting will be occurring at a time. Estimated Time and cost plan will be in table 1 and 2.

Time Plan (6-0 months prior)	Entreprenuers	External	In Total
Company Office	20	40	60
Vehicle	10	20	30

Table 1: Time plan 6-0 months prior

Cost plan (6-0 months prior)	Entreprenuers	External	In Total
Company Office	-	5.000.000	5.000.000
Vehicle	-	160.000 (per month)	160.000 (per month)

Table 2: Cost plan 6-0 months prior

7 Process analysing and testing of value creation process

To analyze and test the value creation process for a structured notes department within a bank, it is important to consider a number of technical steps. First, it is necessary to define the goals and objectives of the department, including the types of MBS and CDO products that will be created, sold, and managed. This would be done in part by inviting potential buyers to meetings where they are probed for which kind of characteristics they would like to see in the products. Once these are defined, it is important to identify the underlying assets and liabilities that will be used to construct the structured notes. This may involve working with traders and portfolio managers to select the most suitable assets.
Once the assets and liabilities have been identified, simulations can be used to test the performance of the structured notes under different market scenarios. This allows the bank to assess the risk and return characteristics of the products and to optimize the structure to meet the needs of investors. Simulations can also be used to stress test the products under extreme market conditions, such as a recession or a sharp increase in interest rates. This helps the bank to identify potential weaknesses in the products and to develop contingency plans to manage risk. The group did make one simple example product with four different levels of seniority and a simulation of the underlying loan pool using a geometric brownian motion and assume a lognormal distribution of the asset prices.

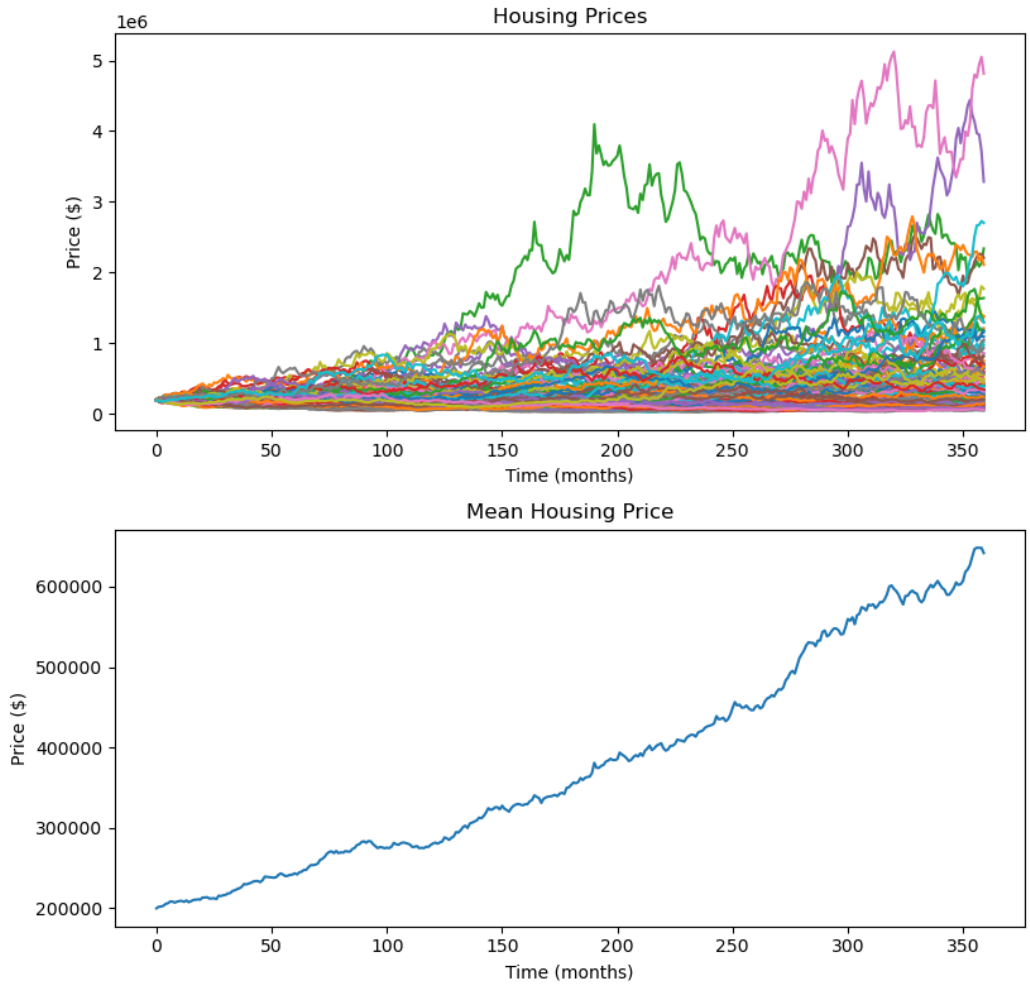

Figure 2: Simulating the values of assets underpinning pools of loans

It is also important to develop metrics and key performance indicators (KPIs) to measure the success of the department, such as revenue growth, profitability, and customer satisfaction. These metrics can be used to track the performance of the products over time and to identify areas for improvement. For example, if revenue growth is below target, the bank may need to adjust the pricing or marketing strategy for the products.
Overall, the process of analyzing and testing the value creation process for a structured notes department within a bank involves a combination of technical analysis, simulations, and KPI development. By carefully considering these factors, banks can create a successful department that meets the needs of their clients while generating value for their shareholders.

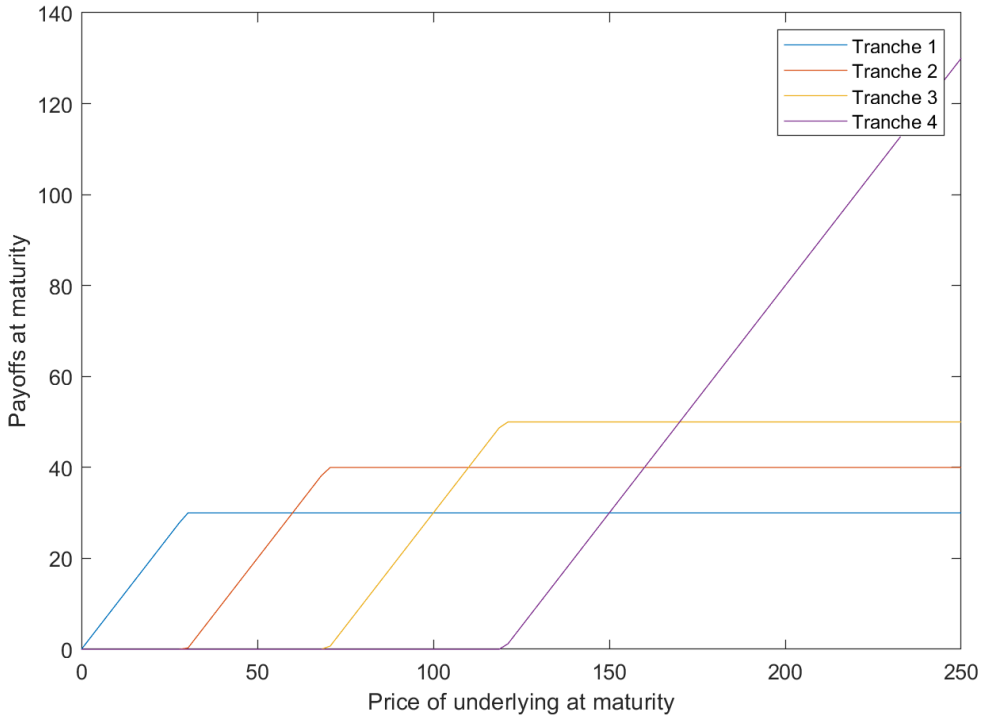

Figure 3: One example of a structured note with a different levels of seniority

8 Software systems and other systems

The bank already has an operating software used for the banks operations. No cost will be calculated for the software.

9 Employees hiring and training

The bank already has a lot of employees so they may have someone to spare to help this new department.

9.1 Employees

As mentioned above the bank already has a lot of employees. There are a lot of departments with in the bank and therefore there is almost surely always someone who can help you with the kind of problems you have. The bank already has lawyers on its payroll so it may not even be necessary to hire new lawyers.

9.2 Hiring

It might not be necessary to hire anyone for this operation. As stated in section 9.1 the bank already has lawyers and possibly has a contract with a law firm. In that case the law firm would provide more lawyers if need be. With regards to the technical part the bank might decide that they already have enough qualified employees for the job and therefore don't have to hire anyone new. The process of hiring an employee can very expensive for an organization of this magnitude. When a bank puts up an ad for an open job there are a lot of people who apply and it takes a lot of time to find out who is the most qualified person for the job. So if the bank thinks that it has to hire new employees the group would advice the bank to hire people from the group instead of having to go through the whole process of hiring a new person.

9.3 Training

The level of training depends on what way the bank decides to go in hiring. If the bank decides to use current employees they would only need to train them in this particular field, but that should not take to long, especially if the employees are qualified on this field. If the bank wants to hire a new person they would need to train them be an employee of the bank in addition to the training they would need on this field. If the bank would decide to hire members of the group then they would only need to train them to be employees of the bank. So the best option would be to either use current employees qualified for the task or hire members from the group.
The lawyers most likely already know how to write up these kind of contracts. If not it would not take them long to get the hang of it, given that they are qualified lawyers which is safe to assume because they are working for a bank.

9.4 Wages and related costs

In this chapter the three different options in hiring will be explored in regards to wages and related cost.
The bank needs 5 people in the department. 3 financial engineers and 2 lawyers. Assuming that all the financial engineers are hired at the same time only one employee will be needed to train all of them. It will be assumed that it will take 16 hours to train members of the group to be employees of the bank, 24 hours to train current employees to work on this field and 50 hours to do both. Like before it will be assumed that it will cost the bank 18.000 ISK/hour for each employee.

Cost plan (6-0 months prior)	Time (hours)	Cost (ISK)
Hiring	8	144.000
Training	64	1.152.000
Total	72	1.296.000

Table 3: here we can see the cost plan if the bank hires members of the group

Cost plan (6-0 months prior)	Time (hours)	Cost (ISK)
Hiring	0	0
Training	96	1.728.000
Total	96	1.728.000

Table 4: here we can see the cost plan if the bank sticks with current employees

Cost plan (6-0 months prior)	Time (hours)	Cost (ISK)
Hiring	100	1.800.000
Training	200	3.600.000
Total	300	5.400.000

Table 5: here we can see the cost plan if the bank hires new people

10 Project Management

A project manager will be required to oversee the implementation and operation of the project. Estimated cost for the project manager is 2.2 M/ISK per month.

Cost plan (6-0 months prior)	Time (months)	Cost (ISK)
Project Manager	6	13.200.000

Table 6: Project manager cost plan

11 Summarized time and cost plan

The summarized time and cost plan are displayed in tables 4 and 5 below. it is estimated that this project takes 6 months prior to opening.

Cost plan (6 months prior)	Entreprenuer	External	6-4 months before operation	4-2 months before operation	2-0 months before operation
Company office	-	5.000.000			
Vehicle	-	160.000 (per month)			
Project manager	-	13.200.000			

Table 7: summarized cost plan

Time plan (6-0 months prior)	Entreprenuers	External	6-4 months before operation	4-0 months before operation	2-0 months before operation
Company Office	-	5.000.000			
Vehicle	-	160.000 (per month)			

Table 8: summarized time plan

12 Final Words

In conclusion, this report has provided a thorough analysis of the technical aspects involved in implementing Mortgage backed securities (MBS) and Collateralized Debt Obligation (CDO) in the Icelandic market. The report has highlighted the key considerations and challenges that must be addressed, including legal and regulatory frameworks, market infrastructure, risk management, and valuation methodologies. By offering guidance on these critical technical issues, this report serves as a valuable resource for financial institutions, investors, and policymakers who are interested in participating in or regulating the MBS and CDO markets in Iceland. It is hoped that the insights provided in this report will assist in the development of a robust and sustainable MBS and CDO market in Iceland.

13 References

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6.3 Appendix C: Financial Report

T-814-INNO

FINANCIAL REPORT

Mortgage backed securities and Collateralized Debt Obligation

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April 2, 2023

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List of Tables

1 Introduction

The purpose of this financial report is to give the reader/project owner a clear overview of the finance, cost and revenue of the project so that its feasibility can be decided. In this report all associated cost and revenue from the project will be covered and and analyzed. Total capital need and income for the project is divided into development time cost and first 5 years of income for the project.
This report will go over financing, sensitivity analysis and net present value (NPV) analysis for the project so that the project owner can easily understand and verify the profitability of the project.

2 Calculating Total Capital Need

2.1 Cost of creating the business plan

The total cost of the creation of a business plan was set up with already spent hours and estimations for financial report and the final report. It is estimated that the total hours spent on the creation of the business plan will end in 740 hours and with an 5000 ISK hourly student rate.

Components	Hours	Cost [KISK]
Business Plan	140	700
Market Report	160	800
Technical report	140	700
Financial report	180	900
Final Report & presentation	120	600
Total	**740**	**3,700**

Table 1: Cost of creating a business plan.

2.2 Cost of legal issues

As covered in the Technical report no legal cost or cost regarding intellectual properties or trademarks for the project. Therefore no associated cost is applicable.

2.3 Product development

According to section 9 in the finance report, the bank needs 5 people for the first 6 months of the project 2 lawyers and 3 financial engineers. According to the yearly statement of 2022 from Íslandsbanki the salary cost was 13.452 MISK. With around 700 employees this is 19.2 MISK per employee a year or approximately 1.6 MISK per month.
Since this job involves responsibility for large sums of money, 1.7 MISK salary per month for financial engineers and 1.8 MISK in lawyer salary, and assumed cost per employee per hour at 18.000 ISK per hour. and This was calculated compared to work and was found too costly. It seems to be that 1 financial engineer and 1 lawyer is what is needed to make, promote and manage a CDO, with the help of a project manager. The project manager being a financial engineer as well, will be a bit overstaffed at first, however further along the line having a capable worker on hand will be needed, therefore the extra financial engineer is kept on payroll and thereby investing in the future.
The total time of hiring is estimated to be 100 hours and the training of employees within the bank is assumed to be a total of 200 hours. In addition, they will be sent abroad for 2 training courses with CDO specialists, since CDOs are not done locally. See breakdown in table 2

Cost plan *(6-0 months prior)*	**Time** (hours)	**Cost (KISK)**
Hiring	100	1,800
Training as employees	200	3,600
Training cost/courses		1,600
Flight		300
Hotel		600
Per Diem		756
Payroll	336	6,048
Total	**636**	**14,704**

Table 2: Estimated hiring and training cost plan for 6-0 months before launch

2.3.1 Training abroad

It is assumed that the training abroad will take place in Dortmund, Germany where the international investment bank, Commerzbank, is located, with approximately 470 billion EUR in assets. This location will be pinpointed for travel calculation purposes. Their wage range is similar to the wage range in Iceland.

The project owner will arrange and pay for flight and hotel details where a minimum of 4 stars is required for the hotel accommodation. With these requirements, flights and hotel accommodation is estimated at 50.000 ISK and 100.000 ISK per employee per training course. The employees will need 2 training courses before the launch of the project and later employees will be obliged to complete in 2 training courses abroad their first year on the job, therefore a total of 300.000 ISK is estimated for each employee in flight and accommodation costs, see table 2.

Each employee will get paid their hourly wage for sitting these courses as well as a daily allowance (per diem). In general, the per diem amount relies on the the SDR exchange rate at the Central Bank (Seðlabankinnn) when calculating daily allowances; per diem. It is approximately 180 ISK which leads to daily allowances of 18.000 ISK/day.

One instructor will lead each course, which will span over 5 days each where 1 whole day is taken for each travel day. Each course will span a 40 hour work week where the instructor from the German bank will guide and teach them 8 hours a day, 5 times a week with an hourly wage of 18.000 ISK, making each course cost 720.000 ISK. Various cost can add to this such as rental of business rooms, refreshments, fuel, etc., therefore estimating the total cost for the training course to be 800.000 ISK per group. See table 4.

Re-education will be mandatory for every employee within the department, every other year for a 5 day trip. Each re-education course cost 450.000 ISK per group. One instructor will lead each course, which will span over 5 days each where 1 whole day is taken for each travel day. Each course will span a 40 hour work week where the instructor from the German bank will guide and teach them 8 hours a day, 3 times a week with an hourly wage of 18.000 ISK, making each course cost 432.000 ISK. Various cost can add to this, therefore estimating the total cost for the training course to be 450.000 ISK per group.

The first part of training needs to be finished before the launch of the product, so it has been marked as year 0 in table 3. Table 4 shows the total training cost from after launch.

Training cost items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Total [KISK]
Training within bank	3,600	0	0	3,600	1,800	1,800	10,800
Training abroad	4,168	0	0	8,336	4,168	4,168	20,840
Re-education	0	0	4,086	0	8,310	3,324	15,720
CDOnet software	5,000	0	0	0	0	0	5,000
Total	12,768	0	4,086	11,936	14,278	9,292	52,360

Table 3: The estimated training cost for years 0-5 of operation (in thousand ISK).

Training cost items	Year 1	Year 2	Year 3	Year 4	Year 5	Total [KISK]
Training within bank	0	0	3,600	1,800	1,800	7,200
Training abroad	0	0	8,336	4,168	4,168	16,672
Re-education	0	4,086	0	8,310	3,324	15,720
CDOnet software	0	0	0	0	0	0
Total	0	4,086	11,936	14,278	9,292	39,592

Table 4: The estimated training cost for the first 5 years of operation (in thousand ISK).

2.3.2 Software

CDOnet software will be purchased to help with the work of the financial engineers as well as secure the data. CDOnet is a software from Moody's Analytics. The CDOnet solution is both an adjustable and comprehensive software platform for cash flow analytics. It has an extensive deal library, industry-leading analytics and will improve the capability of monitoring CDO holdings, understand the risk concentrations, and value the portfolio. The software is assumed to cost 5.000.000 ISK and will be bought before the launch of the product, in year 0, so it can be part of the employees training.

2.4 Creation and maintainance of CDO

During the creation of the CDO the hours spent are as such: Around 40 hours are spent by financial engineer finding appropriate loans and analyzing their credit quality and then grouped into tranches by the financial engineer. After this is done a special purpose vehicle needs to be made estimated 64 hours work by a lawyer. Then the issuing the securities, legally moving the assets to the buyer is estimated 40 hours hours for a financial engineer, and 40 hours for a lawyer. After the assets have been moved 1 lawyer and 1 financial engineer will manage up to 7 CDO's for full time of contract. To clarify the work process is:

1. Identifying the asset pool and analyzing credit quality of assets
   A Financial engineer finds the loans to fit the requirements for CDO, then analyzes their credit quality. Estimated time is 40 hours.

2. Group into tranches. Estimated 8 hours for a financial engineer

3. Creating special purpose vehicle
   The legal management of the sale. Estimated time is 64 hours for a lawyer.

4. Issue the securities
   The process of legally moving the assets to the buyer estimated one finance engineer and one lawyer for one week each. Estimated time is 40 hours for a lawyer and 40 hours for a finance engineer.

5. Management of the CDO

   The financial and legal management of the assets, taking care of defaults, managing revenue streams. 1 finance engineer and 1 lawyer for the entire time of the CDO (20 years). It is estimated that 1 lawyer and 1 financial engineer can manage up to 7 CDO's (25 BISK), after that 1 lawyer will be needed per 7 CDO's. The CDO needs management for full time for the entire 20 years of contract.

Time/Cost plan per CDO	Lawyers *(hours)*	Finance Engineers *(hours)*	Total time *(hours)*	Total cost [KISK]
Identifying/analyze pool of assets		40	40	720
Group into tranches		8	8	144
Creating SPV	64		64	1152
Issue securities	40	40	80	1440
Total hours/cost creation of CDO	104	88	192	3456
CDO management (per month)	160	160	320	5760

Table 5: CDO management and creation time/cost plan

2.5 Premises and equipment

The Lawyers and Financial engineers will need a office space to work. Office space will be provided within the bank for the department . Requirements will be desks, office chairs, computers and phones for each employee within the department. If the bank can't provide an office space there, it's a possibility to buy or rent an office space. Estimated Time and cost plan is displayed in table 6.

The price for "rent inside a bank is assumed to be 4.500 ISK per square meter, if it is not at a bank, the office rented will be in a similarly high rent area.. We assume 6 square meters per employee 18 m2.

324.000 ISK per month. For other office cost 200.000 ISK per month per employee is assumed. The technical report includes a car at 160.000 per month which is enough for a 5 year contract for a Tesla, in the finance chapter of this report the distance and energy requirement per month are calculated. Assumed at 1.500 km per month at 2 ISK per kilometer totalling 3000 ISK per month.

There are various utilities at the bank such as computersystems elevators and other operating costs of running the bank as a whole. In 2022's yearly statement from Íslandbanki, the operating cost was 10.466 MISK, with 700 employees the operating cost per employee

a year is therefore 15 MISK. The total income for year 2022 in Íslandsbanki according to the yearly statement was 50.172, in future calculations we take this operating cost to be operating cost/income approximately 20%.

With 3 employees for the 6 months before start 22.5 M ISK for first For the office and supplies 25.444.000 isk, and a car at 978.000 totalling 26.422.000 ISK for first 6 months.

Premises and equipment	**Cost (KISK)**
Rent	1,944
Employee related cost	1,000
Operating cost and utilities	22,500
Car	978
Total	**26,422**

Table 6: Premises and equipment

2.6 Promotion

As listed in chapter 9 in the market report, the promotion cost will be in hours spent by bank personnel doing promotion presentations for the pension funds individually and web developers hired as external consultants listed in the following table:

Time plan *(hours)*	**3-0 months**		**After**		**Total Project Owners**	**Total External Consultants**	**Total [KISK]**
	Project Owners	**External Consultants**	**Project Owners**	**External Consultants**			
Webpage		15				15	15
Indirect marketing	150		425		575		45
Total hours	150		425		575		45

Cost plan *[KISK]*	**3-0 months**		**After**		**Total Project Owners**	**Total External Consultants**	**Total [KISK]**
	Project Owners	**External Consultants**	**Project Owners**	**External Consultants**			
Webpage		390				390	390
Indirect Marketing	2,700		7,650		10,350		10,350
Total cost	2,700				10,350		10,740

Table 7: CDO promotion time/cost plan

2.7 Project management during development time

A project manager will be a financial engineer required to oversee the implementation and operation of the project for the first 6 months. At estimated salary 2.2 M ISK per month A project manager will be required to oversee the implementation and operation of the project for the first 6 months. At estimated salary 2.2 M ISK per month, his office cost is apart from rent is assumed

2.8 Capital cost

As the money for the project is intended to come from within the bank itself, the bank assumes full ownership of profits so the capital comes at no interest in these calculations, however the 25% yield requirement is used for Net Present Value evaluation.

2.9 Total cost

The total cost of the project including capital cost for the first 6 months is 103.322.000 ISK, this is taken as an investment from the bank equity paid in monthly installments ownership of the project. For the Net Present Value evaluations.

Total cost first 6 months	**Cost [KISK]**
Business plan	3,600
Product development	14,704
Office and supplies	25,444
Management software	5,000
Promotion plan	10740
Car	978
Training staff	8,656
Salary	34200
Total cost	**103,322**

Table 8: CDO promotion time/cost plan

3 Financing

3.1 Project owner

The financing for the project will come exclusively from the banks equity. 103.322.000 ISK at for full ownership of project.

3.2 Grants

As this kind of project is very unlikely to get any grants since it is within an established company and solutions exist already we omit this chapter.

3.3 Loans

As the overhead is low and facilities and equipment are already at the bank, there is nothing physical to be the security for a loan. This chapter is omitted.

3.4 Finance conclusion

The banks equity will be the only source of finance for this project, see following table.

Financing of project	Cost [KISK]
Loans	0
Investors	0
Grants	0
Banks equity	103,322
Total	**103,322**

Table 9: Financing for project

4 Income and Cost plan for first 5 years after start

4.1 Income

The income for the project is twofold for sold CDO bonds:

1. For each sold CDO a fee of 1% is collected. For the 5 year period it is assumed that each CDO is sold for 5 billion ISK. Therefore the 1% fee for each CDO is equivalent to 50 million ISK per year.

2. The income from managing the running CDO's is collected through 0.5% of the remaining value of each CDO. This percentage is collected each month. The total amount of the loans in the CDO will decrease over time as the loans within the CDO are paid off. In the project it is assumed that each CDO has a lifetime of 20 years, reducing its value by 5% per year.

   In figure 2 the expected sales for the first 10 years is estimated based on only one CDO sold per year. However, from the results of the market research the market for the project is larger.

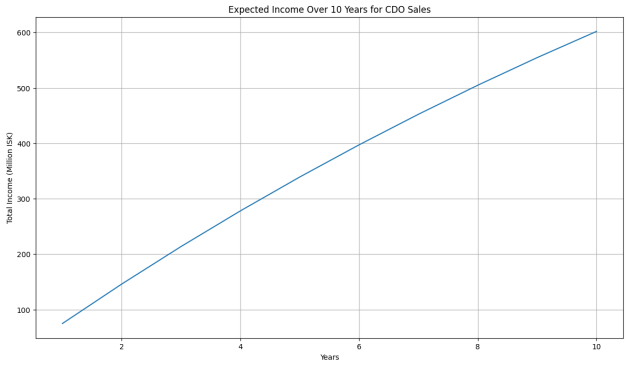

Figure 1: Expected sales first 10 years [in millions ISK] if only one CDO is sold per year

It is realistic to assume that since all the pension funds are contacted at the same time that at least 3 can be done in the first year, 4 in the second year and, 6 after that because of increased knowledge and trust in the product and not much more since the pension industry is not likely to invest a large percentage in only this bracket because they diversify investments for risk management.

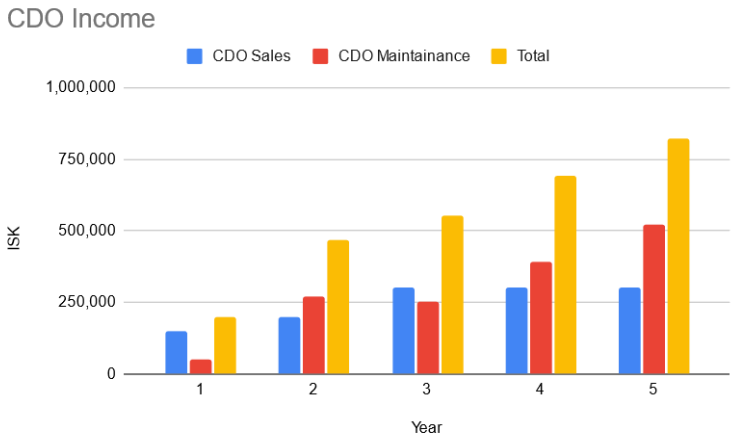

Figure 2: Expected sales in 5 years if 3-6 CDO's are sold per year [in thousands of ISK]

4.2 Variable cost

Variable cost is the cost that changes in a specific proportion to volume of products (goods and/or services) that is produced or sold, e.g. raw materials and packaging.
Variable cost is not applicable for the project as there is no physical product being produced.

4.3 Fixed cost

Fixed costs were divided into payroll cost, facility cost, office costs, vehicle cost, marketing costs and other operating costs. The payroll consists of three specialists within the banks; a lawyer and two financial engineers, where one is the project manager.
The number of employees evolve from 3 employees in the first year of operation into 7 employees in the fifth year. Employees are added with respect to more CDOs sold. Their monthly wage range from ISK 1.700.000 to ISK 2.200.000 in the first 5 years.

4.3.1 Payroll cost

Initially the project consists of 3 employees; 1 project manager, 1 financial engineer and 1 lawyer. The project manager is a financial engineer as well, so all 3 employees represent the interests of the bank and establish meetings with investors. The project manager is the head of operations, overseeing all aspects of the day-to-day business operations. He assigns the other employees tasks and projects and coordinates them. He is responsible for setting and upholding the quality standards.

Salary related cost including insurance, pension, medicare and social security taxes were estimated to be 30% of the salaries. No salary increase is calculated throughout the first 5 years of the project operation. The monthly salary for each employee is displayed in table 10.

Position	Salary [KISK]	Salary [KISK] (with 30% cost)
Project Manager	2,200	2,860
Lawyer	1,800	2,340
Financial Engineer	1,700	2,210
Total	**5,700**	**7,410**

Table 10: The estimated salary cost for job descriptions within the project for the first 5 years of operation (in thousand ISK).

The payroll cost for the employees over the 5 years is described in table 11.

Year	Number of employees	Project Manager	Financial Engineer	Lawyer	Total cost [KISK]
1	3	1	1	1	5,700
2	3	1	1	1	5,700
3	5	1	2	2	9,200
4	6	1	2	3	11,000
5	7	1	2	4	12,800
Total					**44,400**

Table 11: The estimated payroll related cost for the first 5 years of operation (in thousand ISK) with respect to the number of employees in each position each year.

4.3.2 Facility cost

The facility cost consist of costs concerning running the facility like water and electricity, real estate tax, maintenance and insurance. This will be a new department within the bank, so it is estimated that facility costs, such as electricity and heating, will raise in proportion with the number of employees.Real estate tax, maintenance and insurance is not applicable for the project since these factors are already fixed costs within the banks and does not change with an addition of 7 employees.
The department will have 7 employees, some possibly who are already working within the banks, for example the lawyers. It is unlikely that the bank will need to expand their housing, rather re-organize offices within their walls. Therefore some costs do not apply.

It is estimated that the larger banks have approximately 700 employees and the cost of electricity and heating is approximately 80.000 ISK/month, 960.000 ISK annually. This indicates 114 ISK/employee, therefore the additional facility cost for this department is less than 1.000 ISK/month and less than 10.000 ISK annually. The first year costs 4.104 ISK and the fifth years costs 9.576 ISK with a growing average in the years between. This gives a total of 32.832 ISK, or 32.8 KISK, for the additional electricity and heating costs for the number of employees listed in these 5 years. Table 12 displays the proportional cost of electricity and heating the first 5 years.

Year	Number of employees	Electricity and heating per month [KISK]	Electricity and heating per year [KISK]
1	3	0.3	4.1
2	3	0.3	4.1
3	5	0.6	6.8
4	6	0.7	8.2
5	7	0.8	9.6
Total			**32.8**

Table 12: The cost of electricity and heating with respect to number of employees each year.

4.3.3 Office costs

Office costs consist of office supplies, telephones, computers and computer system costs, accounting, legal services, travelling cost and insurance. The Financial engineers will need an office space to work, which will be provided within the bank for the entire department. Requirements, for each employee within the department, will be desks, office chairs, phones and computers with appropriate systems installed. This is estimated to be a fixed fee of approximately 400.000 ISK/employee, or 1.400.000 ISK in total after the first 5 years of operation. In addition, office rental cost varies by year due to number of employees each year. Other costs is defined as various forgotten costs within the office, such as writing instruments, paper and other small objects. It is estimated to be approximatley 10.000 ISK monthly, 120.000 ISK annually.
Table 13 displays the office cost estimates for the first 5 years of operation.

Office cost items	Year 1	Year 2	Year 3	Year 4	Year 5	Total [KISK]
Office rent	972	972	1,620	1,944	2,268	7,776
Computer systems, phones, etc	600	0	400	200	200	1,400
Desks and chairs	600	0	400	200	200	1,400
Other cost	120	120	120	120	120	600
Total	**2,292**	**1,092**	**2,540**	**2,464**	**2,788**	**11,176**

Table 13: The estimated office operation costs for the first 5 years of operation (in thousands ISK).

Since this will be a new department within the bank, it is estimated that facility costs will raise in proportion with the number of employees. According to real estate agents in Reykjavík and a former manager in a real estate company that specialized in renting out commercial real estate, the square meter price is approximately 4.500 ISK in the city center area for this type of commercial building.

With a total of 7 employees in this department at year 5, approximately 6 m2/employee and 4.500 ISK/m2 it is estimated that the office space for this department will cost 972.000 ISK the first year, with 3 employees, and 2.268.000 ISK the fifth year with 7 employees. The total rental cost for the 5 years of operation is 7.776.000 ISK.
It is assumed that each employee has a workspace in an open plan office, therefore has

an open plan desk among other teammates. Table 14 displays the rental cost the first 5 years with respect to square meters and number of employees.

Year	Number of employees	Rental cost per month [KISK]	Rental cost per year [KISK]
1	3	81	972
2	3	81	972
3	5	135	1,620
4	6	162	1,944
5	7	189	2,268
Total			**7,776**

Table 14: The cost of office rent with respect to number of employees each year (in thousands ISK).

4.3.4 Vehicle costs

A vehicle will be required for the employees, as determined in the technical report, to travel to and from promotions and business meetings with investors. Since the meetings will be spread out and only one meeting occurring at a time, one vehicle will be sufficient. In accordance with the technical report, a vehicle will be rented long term for 160.000 ISK per month. The price was estimated based on a five year rental contract for a Tesla or equivalent car. Renting an electrical car is favorable if maintenance and fuel costs are taken into account. The rental contract estimates 1.500 km per month. With a 75 kWh drive battery it costs 1.200 ISK to fill that drive battery with electricity, where 1 kWh costs 16 ISK. If the car in question can reach 602 km at full charge, the car's consumption of electricity is 12.5 kWh per 100 km, giving 0.125 kWh/km. Therefore 1 km costs 2 ISK. The monthly charging cost for the electrical car is therefore 3.000 ISK, see calculations below in figure 4.

No fixed extra charges apply since tires, maintenance and insurance is included in the rental costs. The setup of the charging station will go through the company ON, which provides the charging station and its installation, operation and all maintenance, service and payment system ON, ON-keys and more with a monthly subscription of 4.400, or 52.800 ISK annually.

75 kWh * 16 ISK/kWh = 1.200 ISK
12.5 kWh / 100 km = 0.125 kWh/km
0.125 kWh/km * 16 ISK/kWh = 2 ISK/km
1.500 km/month * 2 ISK/km = 3.000 ISK/month

Figure 3: The calculations of various vehicle costs.

Presented below, in the following table, table 15, are the costs expected to be incurred when operating a vehicle. They include a setup of a charging station, charging costs, rental costs, and other related costs. Other costs can be e.g. extra charging due to extra usage, special equipment in the car, additional features in the car etc.

Vehicle cost items	Year 1	Year 2	Year 3	Year 4	Year 5	Total [KISK]
Car rental	1920	1920	1920	1920	1920	9,600
Charging/Electricity	36	36	36	36	36	180
ON subscription	52.8	52.8	52.8	52.8	52.8	264
Other costs	46	46	46	46	46	230
Total	**2,055**	**2,055**	**2,055**	**2,055**	**2,055**	**10,274**

Table 15: The total cost of renting a car (in thousands ISK).

4.3.5 Marketing cost

The marketing costs consist of cost of running the web page, cost of manpower in promotions etc.

The cost of running the webpage is estimated to be 100.000 ISK/month, 1.200.000 ISK annually. This is approximately 5 hours worth of work each month, which includes supervision and modifications if necessary.

4.3.6 Other operating costs

Other operating costs include coffee cost and festivities, clothing and cleaning and per diem costs.

Training abroad with per diem costs is disclosed above, in chapter 2.3.1 Training abroad, and is therefore unnecessary in this chapter.

Costs regarding annual feasts, coffee and cleaning for 1-2 additional persons to the bank is needless to list since they are within the margin of error. However, unexpected costs can be estimated as 20.000 ISK monthly, 240.000 ISK annually.

The initial cost of offering Mortgage backed securities (MBS) and Collateralized Debt Obligation (CDO) is very little. The initial cost is directed towards developing knowledge in this field by sending employees abroad to banks who offer these services. Other operating costs include staff training and other operational related costs, see table 2.

4.3.7 Fixed cost summary

Fixed costs are generally split evenly between the months for simplicity and they increase as a factor of yearly revenues for each year. Table 16 displays the estimated five years fixed cost summary.

Operation cost items	Year 1	Year 2	Year 3	Year 4	Year 5	Total [KISK]
Payroll cost	5,700	5,700	9,200	11,000	12,800	44,400
Facility cost	4.1	4.1	6.8	8.2	9.6	33
Office cost	2,292	1,092	2,540	2,464	2,788	11,176
Vehicle cost	2,055	2,055	2,055	2,055	2,055	10,274
Marketing cost	1200	1200	1200	1200	1200	6,000
Other operating cost	240	240	240	240	240	1,200
Total	**11,491**	**10,291**	**15,242**	**16,967**	**19,092**	**73,083**

Table 16: Summary of costs for the first five years of operation (in thousands ISK)

5 Sensitivity analysis

A sensitivity analysis was performed for the main input variables for the model. The main input variable is the profits of sold CDO's. Sensitivity analysis was performed by increasing and decreasing the income for the CDO's and analysing the effect on the EBITDA. Table 17 shows an overview of the total income in the first 5 years where it is increased and decreased by 10%.

	Year 1	Year 2	Year 3	Year 4	Year 5
Income - 10%	179,997	422,984	498,173	623,415	738,720
Income	199,997	469,983	553,525	692,683	820,800
Income + 10%	219,996	516,981	608,878	761,952	902,880

Table 17: Effects on income with 10% increase and decrease.)

The effects on the EBIDTA by increasing and decreasing the income by 10% can be seen in table 18.

	Year 1	Year 2	Year 3	Year 4	Year 5
EBITDA - 10%	49,288	240,792	237,041	306,887	375,712
EBIDTA	65,287	278,390	281,323	362,302	441,376
EBIDTA + 10%	81,287	315,989	325,605	417,716	507,040

Table 18: Effects on EBITDA with 10% increase and decrease on income.)

By the analysis it is clear that the project is highly dependant on sales on CDO's and decreases or increases in sales will make large impacts on the business model.

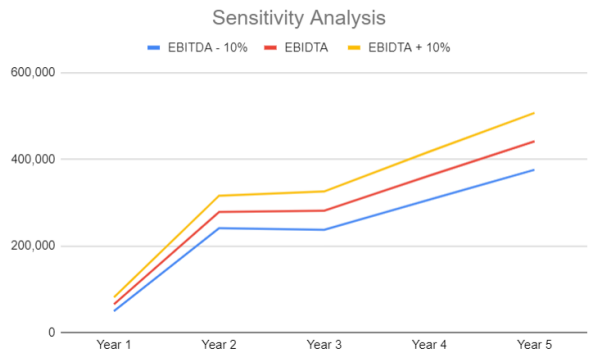

Figure 4: The calculations of various vehicle costs.

6 Net Present Valuation and calculation of equity need and price.

The net present value (NPV) was calculated based on year 5 of operations. Table 19 shows an overview of the variables used in the calculations.

Profit Year 5	EBIDTA	441,376
Financial institutions in OECD countries	K	5.5
Debt from year 5	Debt	0
Cash from year 5	Cash	1,290,315
Interest rate	r	25%
Number of years	x	5

Table 19: The calculations of various vehicle costs.

The formula for the net present value is as follows:

$$NPV = \frac{(EBITDA \times K - Debt + Cash)}{(1+r)^x} \tag{1}$$

The NPV value for the operations in year 5 calculated using the variables in Table 19.

$$NPV = \frac{(441,376 \times 5,5) - 0 + 1,290,315}{(1+25\%)^5} = 795.465KISK \tag{2}$$

The Business plan will be sold to one of the large banks in Iceland for 3.700 KISK which is the cost of the creation of the business plan as per table 1. The Bank will therefore be a shareholder of 100% in the project.

7 Final words

The future project owner will need to put in 103,322 KISK as per figure 8 which is the capital need to initiate the project. From the NPV calculations in Section 6 it is clear that the project is profitable and is an exciting investment opportunity for one of the large banks in Iceland. The project offers an opportunity for high income flow with relatively low operation cost in comparison.

8 Appendix

Annual reports

	2026	2027	2028	2029	2030
Income					
Income category 1	199,997	469,983	553,525	692,683	820,800
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
Total	199,997	469,983	553,525	692,683	820,800
Operating expenses					
Variable costs					
Variable costs as % of income	0	0	0	0	0
Other variable costs	0	0	0	0	0
Total	0	0	0	0	0
Fixed costs					
Payroll	88,920	88,920	143,520	171,600	199,680
Facility cost	41,215	95,212	112,572	140,729	166,678
Office costs	1,320	120	920	520	520
Vehicle costs	2,054	2,054	2,054	2,054	2,054
Marketing costs	1,200	1,200	1,200	1,200	1,200
Other operating costs	0	4,086	11,936	14,278	9,292
Total	134,709	191,593	272,203	330,381	379,424
[illegible]	65,287	278,390	281,323	362,302	441,376
Depreciation	25,608	25,608	25,608	0	0
Total cost for interest and taxes	160,317	217,201	297,811	330,381	379,424
Operating results before interest	39,679	252,782	255,715	362,302	441,376
Interest income and interest expense					
Interest income	719	3,409	7,978	13,239	19,833
Interest expense	0	0	0	0	0
Total	719	3,409	7,978	13,239	19,833
Profit (-loss) before tax	40,398	256,191	263,693	375,541	461,209
Tax	(8,888)	(56,362)	(58,012)	(82,619)	(101,466)
Operating results	31,511	199,829	205,680	292,922	359,743

Balance sheet

	2026	2027	2028	2029	2030
Assets					
Fixed assets					
Real estate	0	0	0	0	0
Tools and machinery	0	0	0	0	0
Vehicle	0	0	0	0	0
Start-up cost	59,752	34,144	8,536	8,536	8,536
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
Total	59,752	34,144	8,536	8,536	8,536
Current assets					
Cash	66,027	327,305	564,292	876,416	1,250,045
Receivables	4,166	19,027	17,429	25,068	31,734
Stocks	0	0	0	0	0
Total	70,194	346,332	581,721	901,484	1,281,779
Total assets	129,946	380,476	590,257	910,020	1,290,315

Liabilities and equity

Equity

Share capital	0	0	0	0	0
Grants and other unrecoverable contributions at the start	0	0	0	0	0
Contribution to business on own ID	85,360	85,360	85,360	85,360	85,360
Other equities	31,511	231,340	437,020	729,942	1,089,685
Total	116,871	316,700	522,380	815,302	1,175,045

Long term liabilities

Long term liabilities	0	0	0	0	0
Next year payments	0	0	0	0	0
Total	0	0	0	0	0

Short term liabilities

Accounts payable	2,477	5,704	7,105	8,799	9,964
Loan from owner	0	0	0	0	0
Unpaid costs	1,710	1,710	2,760	3,300	3,840
Next year payments	0	0	0	0	0
Calculated need for funding	0	0	0	0	0
Calculated taxes	8,888	56,362	58,012	82,619	101,466
Total	13,075	63,776	67,877	94,718	115,270
Total liabilities	13,075	63,776	67,877	94,718	115,270
Total liabilities and equity	129,946	380,476	590,257	910,020	1,290,315

Cash Flow

	2026	2027	2028	2029	2030
Net earnings	31,511	199,829	205,680	292,922	359,743
Depreciation and amortization	25,608	25,608	25,608	0	0
Working capital (to) from operations	57,119	225,437	231,288	292,922	359,743
Receivables, decrease (increase)	(4,166)	(14,860)	1,597	(7,638)	(6,666)
Inventories, decrease (increase)	0	0	0	0	0
Short liabilities, (decrease) increase	13,075	50,701	4,101	26,841	20,552
Changing the operating assets and liabilities total	8,908	35,841	5,698	19,203	13,885
Cash flow from operations	8,908	35,841	5,698	19,203	13,885
Investment activities	0	0	0	0	0
Real estate	0	0	0	0	0
Tools and machinery	0	0	0	0	0
Vehicle	0	0	0	0	0
Start-up cost	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
Total investment activities	0	0	0	0	0
Financing activities					
New long-term loan	0	0	0		
Payment of long-term loan	0	0	0	0	0
Dividends paid	0	0	0	0	0
Paid new shares	0	0	0	0	0
Total financing activities	0	0	0	0	0
Change in chash and cash equivalents	66,027	261,278	236,986	312,124	373,628
Cash and cash equivalents at beginning of year	0	66,027	327,305	564,292	876,416
Cash and cash equivalents at end of year	66,027	327,305	564,292	876,416	1,250,045

Ratios

	2026	2027	2028	2029	2030
Current ratio	5.37	5.43	8.57	9.52	11.12
Equity ratio	90%	83%	89%	90%	91%
Total assets turnover	1.54	1.24	0.94	0.76	0.64
ROE	27.0%	63.1%	39.4%	35.9%	30.6%
Return on total capital	24.2%	52.5%	34.8%	32.2%	27.9%
Calculated dividends on shares					

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