Andreas Krause
Collateral provision

- Many loan agreements include that the borrower needs to provide a collateral as a surety against them not repaying the loan.
- The most prominent example are mortgages.
- We will look at some implications of providing collateral and how banks can extract information from borrowers voluntarily providing collateral.
- We will also look at how banks might use the collateral they have obtained.

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The impact of collateral

- Collateral are assets that the bank can obtain if the borrower defaults
- This would be assets in addition to those the bank could obtain as part of the default process
- Collateral increases the costs of default to borrowers
- Collateral reduces the losses of default to the bank

The impact of collateral

→ Collateral are assets the borrower provides that are not part of the company obtaining the loan.

- If the company defaults, the bank will seize the collateral and be able to sell it with the aim to recover at least some of the loan repayment the company was not able to make.
- Collateral would be assets that the bank could not seize as part of the bankruptcy proceedings. This might include the personal property of company owners, guarantees by legally independent parties, or assets that would otherwise not seizable.
- With limited liability the company would not have to repay more than its existing assets, but the collateral would be an additional payment which increases losses in the case the company defaults.
- As the bank seizes the collateral if the loan is not repaid, the losses to the bank are reduced and hence the risks to the bank are lower.

→ Collateral increases the costs of default to companies, but reduces the losses to banks.

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The use of collateral

- If the risk to banks is reduced, this should reduce the loan rate
- Borrowers weigh up the reduced loan costs against the potential loss of the collateral in default
- We will look at the motivation for companies to provide collateral and banks to demand collateral
- Banks may also use collateral they have obtained to obtain loans themselves and we will look at why borrowers would agree to that

The use of collateral

→ Collateral can have a significant impact on borrowing and lending decisions. It affects the loan conditions, but also the incentives to companies in reducing risks.

- A direct impact of collateral should be that as losses to the bank are reduced, the loan rate should be lower.
- Of course this lower loan rate comes at the price of potentially losing the collateral if the company defaults. Companies need to weigh up the benefits and costs of providing collateral.
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  - We will investigate this trade-off between loan rates and collateral provision for companies.
  - We will investigate this trade-off between loan rates and collateral provision for banks. Using this trade-off for both, comapneis and banks, will then allow us to specify equilibrium loan contracts that include the provision of collateral.
- In addition we will investigate how banks might use collateral, beyond holding it in case the companies does not repay its loan.

→ While there are many aspects of collateral that can be discussed, we will focus on two specifically here.

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Providing collateral

- Not all borrowers provide collateral, despite the loan costs being lower
- The motivation for borrowers to provide collateral will be explored and how banks can use this decision to their advantage
- Banks have to offer contracts with and without collateral for borrowers to have a choice and we will see that this is an equilibrium

Providing collateral

→ We will investigate under which condition borrowers provide collateral

- ▶
  - While often banks insist on collateral, it is often that companies offer collateral without being ask to secure more favourable loan conditions, most notably a lower loan rate. However, not all borrowers seek to provide collateral.
  - These borrowers are willing to pay higher loan rates rather than provide collateral. We will seek to explore the reason for this.
- ▶
  - We look at the reason why and when collateral is provided by borrowers voluntarily.
  - Banks will be able to extract information from this behaviour of borrowers as we will see.
- ▶
  - We also often find that banks are willing to offer a loan without collateral at some loan rate and a different loan rate if collateral is provided.
  - Offering borrowers such a choice will be shown to be an equilibrium market structure.

→ We will now see how banks can use the choice of companies to provide collateral or not as an indicator for the risks these companies are taking.

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Chapter 8.2.1

Identifying company types through collateral

→ The model we are going to discuss is based on Chapter 8.2.1 of the book 'Theoretical Foundations of Banking'. A more detailed description of the model, additional steps for its solution, and a more in-depth discussion of results can be found there.

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Discussion of model results

- Low-risk companies provide collateral and high-risk companies prefer to not provide collateral
- Banks will offer contracts that allow them to distinguish the type of borrower

? If we observe that a borrower does not provide collateral, can we conclude it is high-risk?

! Collateral can only be provided if it exists; many companies will have no collateral to offer or it is already pledged for other loans

Discussion of model results

→ Now that we have derived the main results of the model, as far as relevant for us, we will briefly discuss some implications as well as limitations of this model. This will allow us to interpret the model in its context of the initial problem and enables us to apply it appropriately in a realistic context.

-
    - We have seen that low-risk company value the lower loan rate, which they pay often, more than the risk of losing the collateral, which happens rarely an provide collateral.
    - In contrast to this, high-risk companies are less concerned about the high loan rate, which due to frequent defaults is less likely to be paid, but are more concerned about the prospect of losing the collateral.
- Banks offering contracts with and without the provision of collateral can use the choice of companies as an indication of the risk these companies take; they can then price their loans accordingly using this information.
- [?] The theory suggests someone not providing collateral will be high risk. Can we always make this conclusion?
- [!] The model assumed that companies have a free choice, but in reality many companies will not have collateral or no collateral that can readily be accepted by banks. In this case there is no information content in the company not offering collateral.

→ We can conclude that as long as companies have collateral it can be an indication of the riskiness of their investments, but we need to consider any constraints companies have in providing such collateral.

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- Banks will offer contracts that allow them to distinguish the type of borrower

? If we observe that a borrower does not provide collateral, can we conclude it is high-risk?

! Collateral can only be provided if it exists, many companies will have no collateral to offer or it is already pledged for other loans

Discussion of model results

→ Now that we have derived the main results of the model, as far as relevant for us, we will briefly discuss some implications as well as limitations of this model. This will allow us to interpret the model in its context of the initial problem and enables us to apply it appropriately in a realistic context.

- - We have seen that low-risk company value the lower loan rate, which they pay often, more than the risk of losing the collateral, which happens rarely an provide collateral.
  - In contrast to this, high-risk companies are less concerned about the high loan rate, which due to frequent defaults is less likely to be paid, but are more concerned about the prospect of losing the collateral.
- Banks offering contracts with and without the provision of collateral can use the choice of companies as an indication of the risk these companies take; they can then price their loans accordingly using this information.
- [?] The theory suggests someone not providing collateral will be high risk. Can we always make this conclusion?
- [!] The model assumed that companies have a free choice, but in reality many companies will not have collateral or no collateral that can readily be accepted by banks. In this case there is no information content in the company not offering collateral.

→ We can conclude that as long as companies have collateral it can be an indication of the riskiness of their investments, but we need to consider any constraints companies have in providing such collateral.

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Re-use of collateral

- Collateral obtained from a borrower could be used by banks as collateral in their own borrowing
- This is referred to as rehypothecation
- Borrowers might lose their collateral if the bank fails to repay its loan and will have to agree to this process

Re-use of collateral

→ Collateral serves no purpose for banks until the company providing it defaults. Banks could be using this collateral to obtain their own funding by handing the collateral on to another lender.

- Banks can use the collateral they hold as collateral in their own borrowing, thus handing on the collateral to secure additional funding and expand their lending.
- This process is known as rehypothecation and while used, it is not widely applied.
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  - The concern for the borrower is that by handing on the collateral, the bank defaulting on their loan would forfeit the collateral, and the original borrower be deprived of it, despite not defaulting itself.
  - For this reason, the original borrower will have to agree to such an arrangement.

→ We will see when banks would want to engage in rehypothecation and companies agree to it. We will also explore how it affects effort to reduce the risk of companies.

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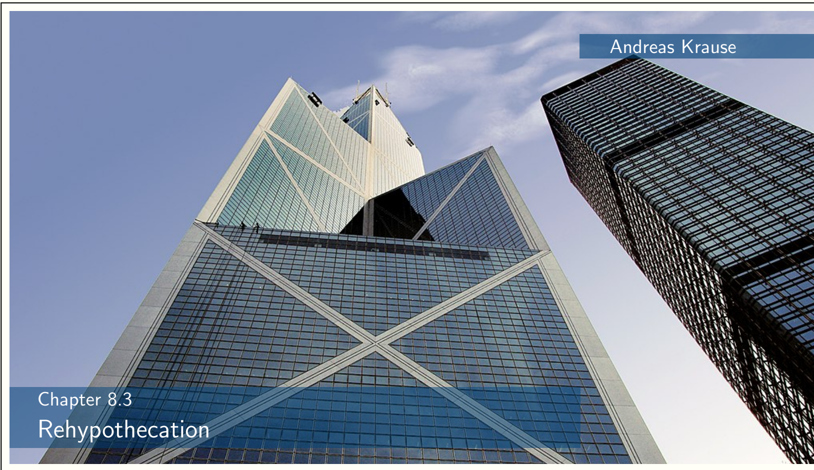
Andreas Krause
Chapter 8.3
Rehypothecation

→ The model we are going to discuss is based on Chapter 8.3 of the book 'Theoretical Foundations of Banking'. A more detailed description of the model, additional steps for its solution, and a more in-depth discussion of results can be found there.

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Discussion of model results

- Banks can make additional profits using the collateral for their purposes, allowing them to offer loans they would otherwise find not profitable
- Borrowers benefit by gaining access to loans they would otherwise not have

? Why would a company ever not agree to rehypothecation as long as the value of the collateral is below the repayment of the loan?

! The value of the collateral to the company might be higher than the value to the bank, for example essential equipment or patents

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- For borrowers it may reduce the threshold at which banks are willing to lend in terms of the size of the loan to ensure the company exerts sufficient effort to reduce risk; Thus companies might be able to get smaller loans than otherwise possible.
- It seems companies are agreeing to rehypothecation in most cases as they do not have to repay the loan if the bank forfeits their collateral. In some instances this agreement will be refused however.
- The value of the collateral to the company might be higher than the market value to the bank, for example an asset might of strategic value. It could, from the company's point of view, be an over-collaterisation of the loan and agreement be refused, while from the bank's point of view it might still be an under-collaterisation.

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Summary of key results

- Collateral can be used to distinguish borrowers with different risks, reducing adverse selection
- Collateral can be more widely used by banks, reducing the impact of moral hazard
- Collateral affects information asymmetry and incentives, allowing loan markets to be more efficient

Summary of key results

→ We can now summarize the key results we have obtained about the role of collateral in lending.

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  - rather than just reduce risks to banks, collateral can be used as a signal about the risks the companies themselves believe they take.
  - This would reduce the adverse selection between companies and banks as banks have additional information on the risks of the company.
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  - Collateral can also be handed on by banks so they themselves can secure additional loans.
  - These additional profits banks can generate can then be used to provide more incentives to companies to reduce their risks, thus reducing moral hazard.
- The use of collateral can reduce informational asymmetries and provides incentives that reduce moral hazard, with the result that loan market perform with less imperfections.

→ Collateral does not only affect the risks banks are exposed to, but the quality of loan markets. It is thus that using collateral is not only relevant in the relationship between the bank and its borrowers, but the possibility of providing collateral and the ability to re-use collateral will contribute to a better functioning of the market for credit.

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→ Collateral does not only affect the risks banks are exposed to, but the quality of loan markets. It is thus that using collateral is not only relevant in the relationship between the bank and its borrowers, but the possibility of providing collateral and the ability to re-use collateral will contribute to a better functioning of the market for credit.

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Summary of key results

- Collateral can be used to distinguish borrowers with different risks, reducing adverse selection
- Collateral can be more widely used by banks, reducing the impact of moral hazard
- Collateral affects information asymmetry and incentives, allowing loan markets to be more efficient

- → We can now summarize the key results we have obtained about the role of collateral in lending.
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  - rather than just reduce risks to banks, collateral can be used as a signal about the risks the companies themselves believe they take.
  - This would reduce the adverse selection between companies and banks as banks have additional information on the risks of the company.
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  - Collateral can also be handed on by banks so they themselves can secure additional loans.
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