

Chapter 11.2.3  
Evergreening



# Extending new loans

- ▶ Companies may have loans outstanding they cannot repay with the resources available
- ▶ This makes them subject to liquidation if the bank insists on loan repayment, causing the bank losses
- ▶ Banks might extend a new loan for companies to generate additional profits, which will be put towards the repayment of the outstanding loan, reducing bank losses
- ▶ Extending such loans is referred to as evergreening

# Company profits

- ▶ A company has a loan outstanding which it cannot repay
  - ▶ The bank provides a new loan, which the company invests and uses these proceeds to repay both loans
  - ▶  $\Pi_C = \pi \left( (1 + R)L - (1 + r_L) (L + \hat{L}) \right)$
  - ▶ Companies accept loans if  $\Pi_C \geq 0$
- $\Rightarrow 1 + r_L \leq 1 + r_L^* = (1 + R) \frac{L}{L + \hat{L}}$

## Loan rate if both loans are repaid

- ▶ Assume the revenue of the investment is large enough to repay the both loans
  - ▶  $\Pi_B = \pi (1 + r_L) (L + \hat{L}) - (1 + r_D) (L + \hat{L})$
  - ▶ Banks grant the new loan if they are better off than losing the outstanding loan:  
 $\Pi_B \geq -\hat{L}$
- $$\Rightarrow 1 + r_L \geq 1 + r_L^{**} = \frac{(1+r_D)(L+\hat{L})-\hat{L}}{\pi(L+\hat{L})}$$
- ▶ A loan is agreed if  $1 + r_L^* \geq 1 + r_L^{**}$
- $$\Rightarrow \hat{L} \leq \hat{L}^* = \frac{\pi(1+R)-(1+r_D)}{r_D} L$$

## Loan rate if both loans cannot be repaid

- ▶ If the revenue is not enough to repay both loans, the bank will seize all revenue
  - ▶  $\Pi_B = \pi (1 + R) L - (1 + r_D) (L + \hat{L})$
  - ▶ Banks grant the new loan if they are better off than losing the outstanding loan:  
 $\Pi_B \geq -\hat{L}$
- $$\Rightarrow \hat{L} \leq \hat{L}^* = \frac{\pi(1+R)-(1+r_D)}{r_D} L$$
- ▶ A new loan is agreed if  $\hat{L} \leq \hat{L}^*$

## Loan from another bank

▶ A new bank would not be concerned about the outstanding loan, but only the new loan granted

▶ Assume all loans can be repaid fully:  $(1 + R) L \geq (1 + r_L) L + \hat{L}$

$$\Rightarrow \hat{\Pi}_B = \pi (1 + r_L) L - (1 + r_D) L$$

▶ Banks grant the new loan if this is profitable:  $\hat{\Pi}_B \geq 0$

$$\Rightarrow 1 + r_L \geq 1 + \hat{r}_L^* = \frac{1 + r_D}{\pi}$$

▶ A loan is agreed if  $1 + r_L^* \geq 1 + \hat{r}_L^*$

$$\Rightarrow \hat{L} \leq \hat{L}^{**} = \frac{\pi(1+R) - (1+r_D)}{1+r_D} L$$

# Loan limits

- ▶ If both loans cannot be repaid fully, the new bank obtains the revenue of the company pro-rata
  - ▶  $\hat{\Pi}_B = \pi (1 + R) \frac{L}{L + \hat{L}} L - (1 + r_D) L$
  - ▶ Banks grant the new loan if this is profitable:  $\hat{\Pi}_B \geq 0$
- $\Rightarrow \hat{L} \leq \hat{L}^{**} = \frac{\pi(1+R)-(1+r_D)}{1+r_D} L$

# Lending decisions

- ▶  $\hat{L} \leq \hat{L}^{**}$ : Other banks would provide a loan the company is creditworthy
- ▶  $\hat{L}^{**} < \hat{L} \leq \hat{L}^*$ : Only the existing bank provides a loan, evergreening
- ▶  $\hat{L} > \hat{L}^*$ : No new loan is granted
- ▶ To entice companies taking the evergreening loan, existing banks offer better conditions than other banks would



# Summary

- ▶ If the outstanding loan is not too large, an existing bank will extend a new loan to recover some of the loan amount
- ▶ Banks provide a loan to a company that is not creditworthy to reduce their losses on the outstanding loan
- ▶ This can delay the failure of a company and expose other creditors to additional risks if they are unaware of the impending default



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