

## Credit Market Frictions

- Last time we discussed one reason why financial markets tend to be unstable, i.e., banks engage in maturity transformation. Their liabilities/deposits are liquid/short-term and their assets/loans are illiquid/long-term. This was formalized by the Diamond-Dybvig Model.
- This exposes banks to "runs" or "panics" if withdrawals are based on "first-come/first-served".
- Deposit insurance can largely eliminate this risk, but this can create a 'moral hazard' problem unless banks are carefully regulated.
- Today we will discuss 2 other reasons why financial markets tend to produce instability:

1.) Asymmetric Information

2.) Limited Commitment

## Asymmetric Info.

- Borrowers know more about themselves than banks do. Some borrowers are more likely to be able and/or willing to pay back their loans.
- Let  $\gamma$  = fraction of 'good borrowers' (always pay back)  
 $1 - \gamma$  = " " " 'bad borrowers' (never pay back)
- Banks know  $\gamma$ , but they can't tell whether any single individual is a 'good' type or a 'bad' type.
- In practice, banks will try to screen/separate borrower types. Likewise, good borrowers will try to signal their type. However, these practices are imperfect.
- Let  $r_1$  = interest rate on deposits (lending rate)  
 $r_2$  = " " " loans (borrowing rate)

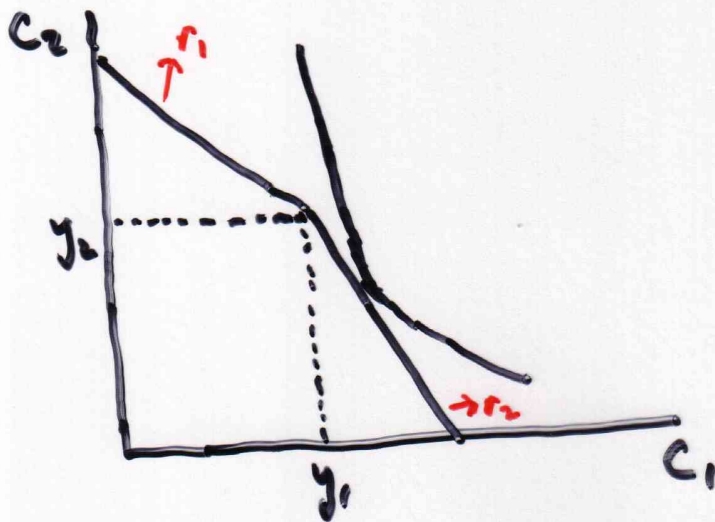
Zero Profit Condition (Free Entry/Exit) :

$$\pi = \gamma \cdot L(1+r_2) - L(1+r_1) = 0$$

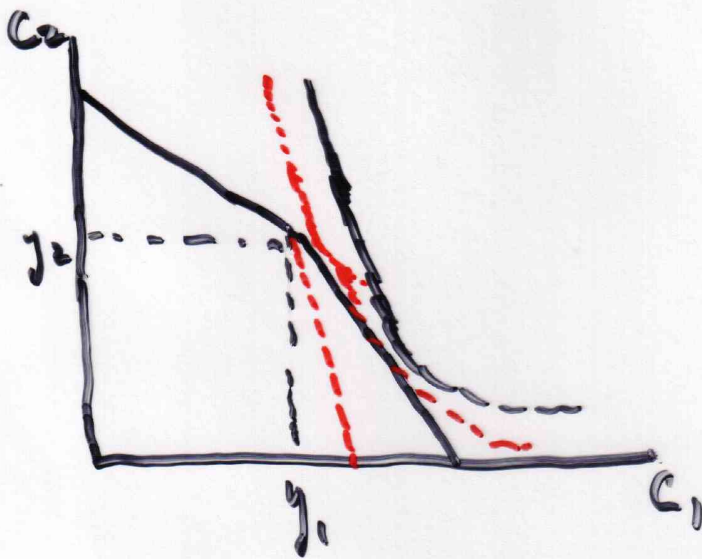
$$\Rightarrow 1+r_2 = \frac{1}{\gamma}(1+r_1)$$

$$\Rightarrow r_2 > r_1 \quad [\text{Borrowers must pay a default risk premium}]$$

# Budget Constraint With Asym. Info.



- Now suppose <sup>average</sup> default risk increases [ $\delta \downarrow$ ]



Note: Lending / Borrowing  $\downarrow$   
 Current Consumption  $\downarrow$

## Limited Commitment

- Without penalties, some (most?) borrowers would not pay back their loans. Banks know this.
- In practice, banks often require borrowers to pledge collateral to back their loans. If the borrower defaults, the bank is legally entitled to seize the collateral. This provides an incentive for borrowers to repay.
- The 2 most common forms of collateral are houses and cars.
- With limited commitment, individuals ability to borrow is constrained by the value of their collateral. That is,

$$-s(1+r) \leq p \cdot H$$

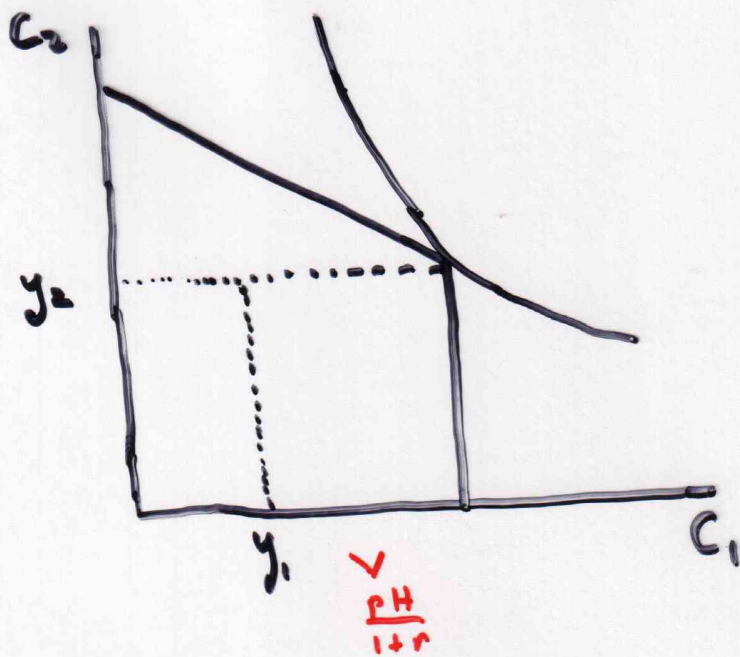
$H$  = quantity of collateral  
 $p$  = price of collateral

This must be satisfied in addition to the usual lifetime budget constraint

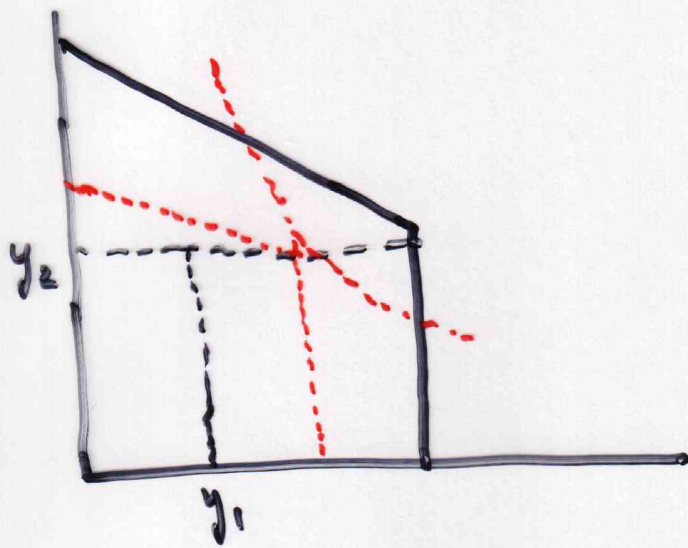
$$c_1 + \frac{c_2}{1+r} = y_1 + \frac{y_2 + p \cdot H}{1+r}$$

Assuming  $H$  can't be sold in 1st period, e.g., it is "illiquid".

# Budget Constraint with Limited Commitment



- Now suppose the market value of the collateral decreases



- Note, Borrowing/Lending ↓  
Current Consumption ↓