

Corporate Finance: The soft budget constraint

Yossi Spiegel

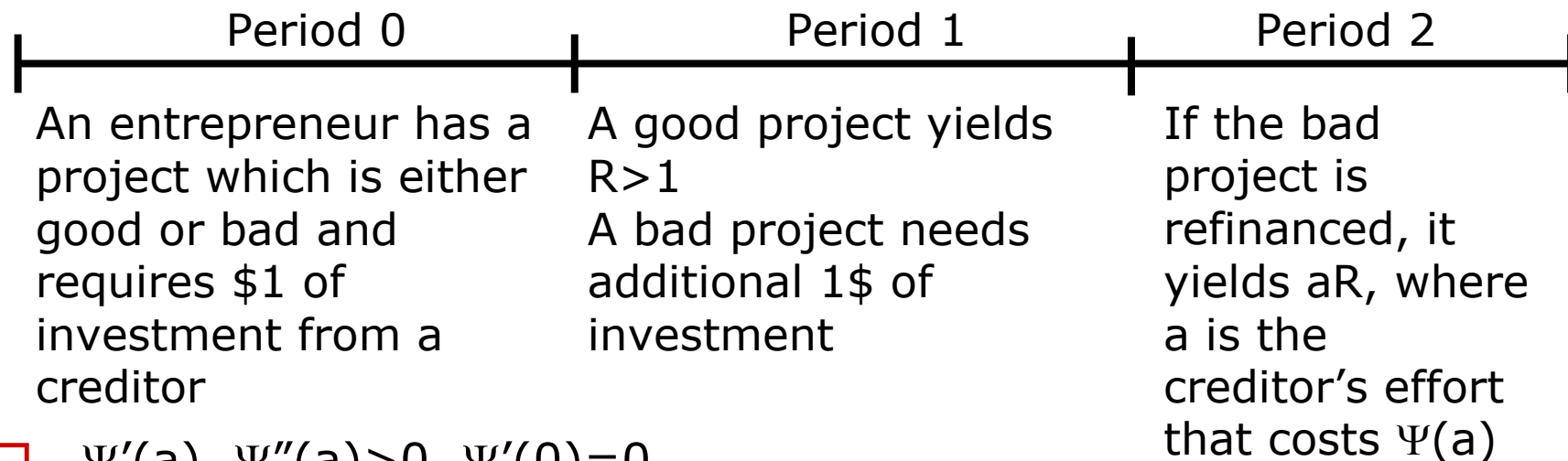
Recanati School of Business

Dewatripont and Maskin, RES 1995

Credit and efficiency in centralized
and decentralized economies

The model

- The timing:



- $\Psi'(a), \Psi''(a) > 0, \Psi'(0) = 0$
- a is the "prob. of success"
- The entrepreneur gets positive benefits from completed projects and negative benefits from aborted projects
- The creditor has all the bargaining power vis-à-vis the entrepreneur

The period 1 problem when the project is bad

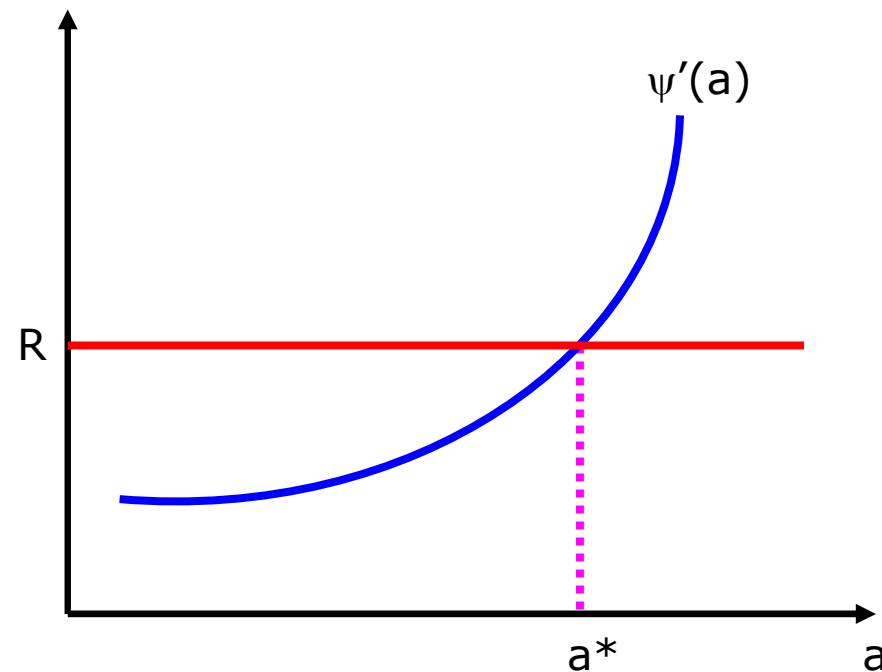
- When the creditor agrees to refinance he will demand the entire cash flow
- The entrepreneur will accept since he gets private benefits from completed projects (if he rejects the project is aborted)
- The creditor's problem:

$$\underset{a}{\text{Max}} aR - \psi(a)$$

The creditor's problem in period 1 when the project is bad

□ F.O.C for the creditor's problem:

$$R - \psi'(a) = 0 \quad \Rightarrow \quad \psi'(a^*) = R.$$



The SBC problem

- The creditor's payoff at the optimum:

$$\pi(a^*) \equiv a^* R - \psi(a^*)$$

- Two possibilities:
 - $\pi(a^*) > 1$: the creditor will refinance a bad project
 - ⇒ An entrepreneur with a bad project will take it anyway (he knows it will be refinanced in period 1)
 - $\pi(a^*) < 1$: the creditor loses money and will not refinance a bad project
 - ⇒ An entrepreneur with a bad project will not take the project (he knows it will be aborted in period 1)

Deterring bad projects

- To deter bad projects, the creditor must commit not to refinance
- When $\pi(a^*) > 1$, this commitment is not credible
- Sol'n: suppose the initial creditor is "small" and has only \$1. Refinancing can be done only by another creditor:
 - The new creditor is passive and does not exert effort (the initial creditor must still exert effort during refinancing)
 - The initial creditor has all the bargaining power vis-à-vis the new creditor and the entrepreneur

Contracting with a new creditor

- The new creditor must break even (otherwise he will not agree to refinance):

$$\underbrace{\hat{a}}_{\text{Expected effort by initial creditor}} \times \underbrace{C}_{\text{Compensation}} = 1 \Rightarrow C = \frac{1}{\hat{a}}$$

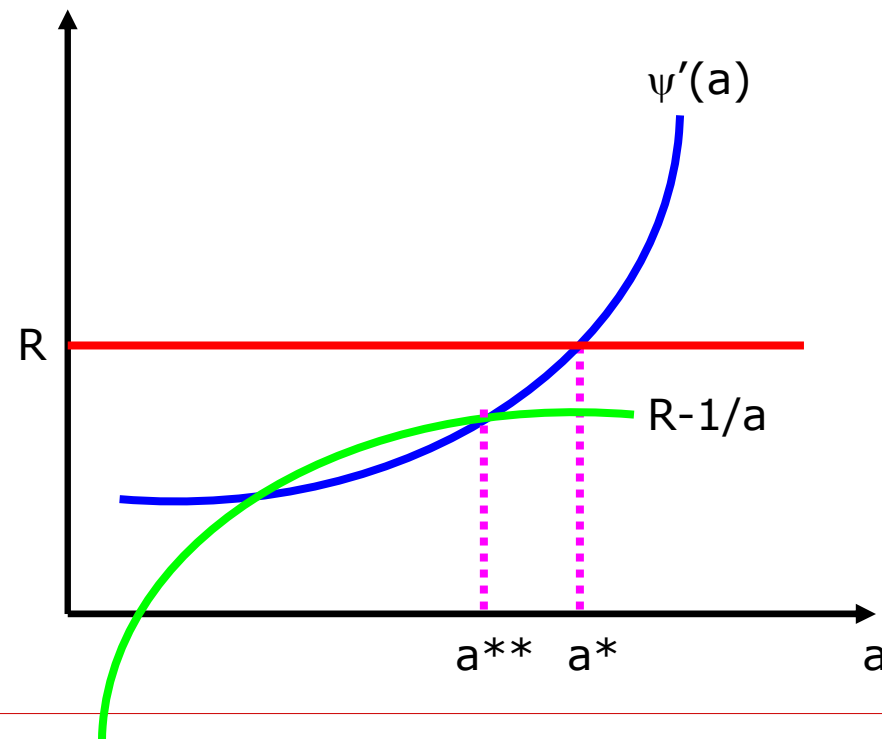
- The initial creditor's problem:

$$\text{Max}_a a \left(R - \frac{1}{\hat{a}} \right) - \psi(a)$$

The initial creditor's problem in period 1 when the project is bad

□ F.O.C for the creditor's problem:

$$R - \frac{1}{\hat{a}} - \psi'(a) = 0 \Rightarrow \psi'(a^{**}) = R - \frac{1}{\hat{a}} = R - \frac{1}{a^{**}}.$$



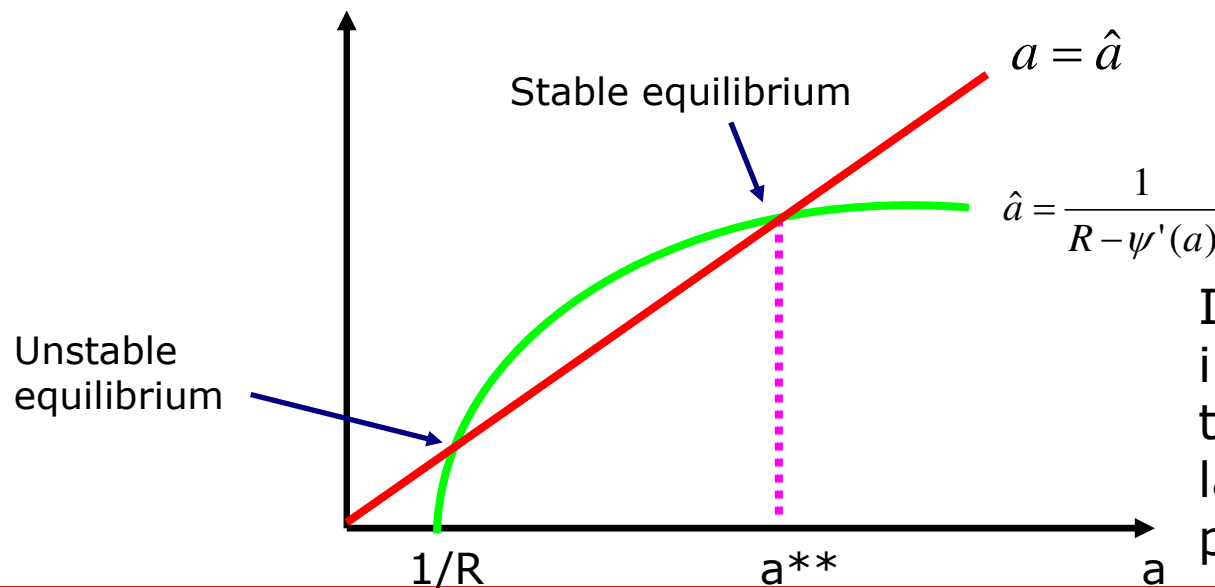
$a^{**} < a^*$ due to a "free-rider" problem or "cost of outside equity"

Illustrating the equilibrium

- The best response of the first creditor against the second creditor's beliefs are defined by:

$$R - \frac{1}{\hat{a}} - \psi'(a) = 0 \Rightarrow \hat{a} = \frac{1}{R - \psi'(a)}$$

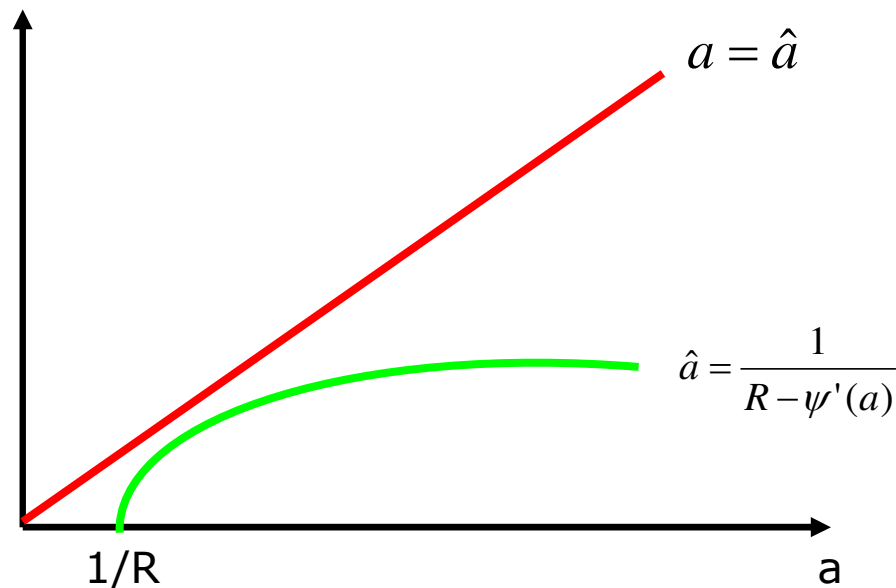
- The second creditor's beliefs are correct: $a = \hat{a}$



If we are interested in stable equilibria then a^{**} is the large intersection point

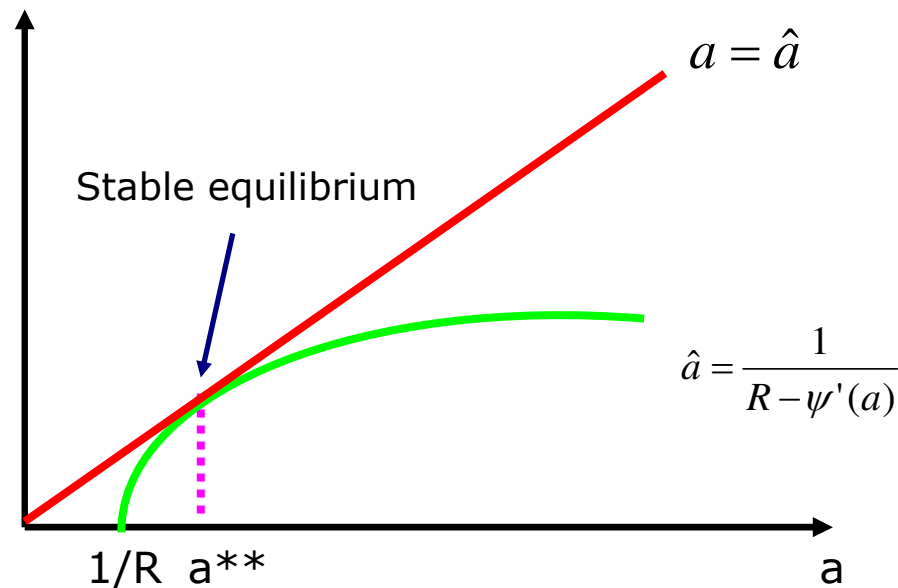
No effort equilibrium

- If the best response of the first creditor is always below the 45 line, then the first creditor will exert no effort and the second creditor will anticipate that
- But with no effort, a bad project fails for sure and will not be refinanced \Rightarrow no SBC problem



Unique interior equilibrium

- We can also have a unique equilibrium if the best response of the first creditor is just tangent to the 45 line. This obviously happens for a measure 0 of parameters



The SBC problem with a new creditor

- The initial creditor's payoff at the optimum:

$$a^{**} \left(R - \frac{1}{a^{**}} \right) - \psi(a^{**}) = \underbrace{a^{**}R - \psi(a^{**})}_{\pi(a^{**})} - 1$$

- By revealed preferences:

$$\pi(a^{**}) = a^{**}R - \psi(a^{**}) < a^*R - \psi(a^*) = \pi(a^*)$$

- Two possibilities:
 - $\pi(a^{**}) < 1 < \pi(a^*)$: the SBC problem is solved when a bad project has to be refinanced in period 1 by a new creditor (the entrepreneur will not take a bad project)
 - $1 < \pi(a^{**}) < \pi(a^*)$: the SBC problem remains

Short-termism

- 2 types of entrepreneurs, all require \$1 in period 0:
 - Bad (prob. $1-\alpha$) – have access to bad projects which require additional \$1 in period 1 and yield aR in period 2
 - Good (prob. α) – can choose between:
 - Good projects which yield $R > 1$ in period 1
 - Very good projects which require additional \$1 in period 1 and yields $R_v > R$ in period 2

Pessimistic beliefs – small creditors and short-termism

- Suppose that investors believe that $\alpha = 0$
- ⇒ Creditors believe that if a project requires refinancing in period 1 then it must be bad
- ⇒ If $\pi(a^{**}) < 1$, a small creditor will never refinance projects in period 1, so good entrepreneurs will only take good projects, but will not take very good projects
- ⇒ A large creditor cannot profitably penetrate the industry: in equil. all good entrepreneurs will take good (but not very good) projects, so if $\pi(a^*) > 1$, the large creditor will attract all bad entrepreneurs and will lose money

Optimistic beliefs – large creditors

Very good and bad projects

- Suppose that investors believe that α is close to 1
- Conditions for equil. with large creditors and very good projects:
 - Condition for refinancing in period 1 (to ensure that good entrepreneurs take very good projects):

$$\underbrace{\alpha R_v}_{\text{Good entrep.}} + \underbrace{(1 - \alpha)\pi(a^*)}_{\text{Bad entrep.}} - 1 > 0$$

- Large creditors make more money than small creditors:

$$\underbrace{\alpha R_v + (1 - \alpha)\pi(a^*) - 2}_{\text{Payoff of large creditors}} > \underbrace{\alpha(R - 1)}_{\text{Payoff of small creditors}}$$

- The first condition implies the second since the LHS of the first exceeds the LHS in the second