

# Economic performance, creditor protection and labor inflexibility

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# Outline

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# Observations on the financial systems and the real economy

The financial system affects the efficiency and growth of the real economy (Beck 2005, La Porta et al, 2002, etc)

- Credit restrictions (due to weak creditor protection) reduce economic efficiency.
- Increased creditor protection leads to:
  - Increased use of external finance in startups (Demigurc-Kunt and Maksimovic 1996),
  - Market value is less sensitive to financial crisis (Johnson et al 2000),
  - Increased responsiveness to growth opportunities (La Porta et al 1997),
  - Increased efficiency of collateral in gaining access to loans.

## Additional facts

Increased creditor protection in bankruptcy:

- Speeds recovery after a shock.(Bergoeing et al 2002),
- Reduces spreads (Araujo and Funchal 2005).

Increased **asset hardness** of a sector:

- Better response after a shock (Braun and Larrain 2005),
- Explains the relative development of sectors within countries.

¿Why are financial markets underdeveloped?

- Opposition from incumbents,
- Redistributive effects,
- Closed economies.

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# Description of the model

A simple general equilibrium model that explains these observations as due to the interaction between:

- Market imperfections,
- Wealth distribution on the

Performance of the economic system.

Later, we add the effects of labor inflexibility.

# Model I

Continuum of entrepreneurs  $z \in [0, 1]$ .

Risk neutral.

Born with mobile wealth  $K_Z \simeq G(\cdot) \rightarrow [0, 1]$ ,

Born with a unit of inalienable specific capital.

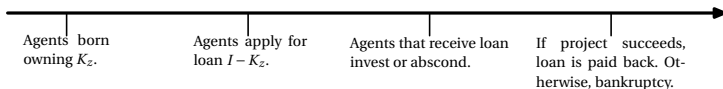
## Example

*Idea, project or ability.*



## Time arrow

There is one period and four stages:



1st stage, entrepreneur  $z$  is born with  $K_z$

2nd stage, entrepreneur asks for a loan  $D_z = I - K_z$ .

3rd stage, entrepreneur may choose to **abscond** (B-E, AER 2004), fraction  $1 - \phi$  of the loan is recovered.

4th stage, with probability  $p$ , project is successful, returns  $R > I$ .

If the project fails, bankruptcy provisions apply, **residual value** is  $V < I$ .

## Interpretation of the residual value

$V/I$ : **Appropriability** of sunk investment after bankruptcy.

Two interpretations:

Across sectors, it measures the relative **hardness** of a sector (as  $I$  is constant,  $V$  measures hardness).

### Example

*Real estate and buildings are harder than customer relations, brand image, or a project.*

Across countries,  $V < V^*$  measures the **relative quality** of bankruptcy procedures.

## Model II

Residual value  $V$  is observable but not contractible: only  $\tau V$  is contractible (**ex post protection**).

### Assumption

*Agents cannot collateralize all the debt, i.e.,  $D_z \geq \tau V$*

### Assumption

*Competitive investors.*

### Assumption

*(Profitable Project)*  $pR + (1 - p)V - (1 + \rho)I > 0$

$\Rightarrow$  credit restrictions **lower the efficiency** of the economy.

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## Analysis: Open economy

Profits of the entrepreneur:

$$\Pi_Z = p \cdot \max \{R - (1 + r_z) D_z, 0\} + (1 - p)(1 - \tau)V$$

Profits of a bank:

$$\Pi_B = p \cdot \min \{(1 + r_z) D_z, R\} + (1 - p)\tau V - (1 + \rho) D_z.$$

$\rho$ : cost of funds for the bank, interest rate charged  $r_z$  depends on  $z$ .

Banking competition:

$$p(1 + r_z) D_z + (1 - p)\tau V = (1 + \rho) D_z \Rightarrow \boxed{1 + r_z = \frac{1 + \rho}{p} - \frac{1 - p}{p} \frac{\tau V}{D_z}} (*)$$

## Analysis: No absconding condition

There is no absconding if

$$p(R - (1 + r_z)D_z) + (1 - p)(1 - \tau)V \geq \phi(I - K_z). \quad (1)$$

Using (\*), the minimum wealth level that receives loans is:

$$K(\phi, V) \equiv I - \frac{pR + (1 - p)V}{1 + \rho + \phi}$$

1. If ex ante protection increases,  $K(\phi, V) \downarrow \Rightarrow$  **Efficiency**  $\uparrow$ .
2. Role separation:  $\tau$  determines interest rate for  $z$ ,  $\phi$  whether  $z$  receives the loan.

**Note:** If  $K_z < K(\phi, V)$  agent consumes  $(1 + \rho)K_z \Rightarrow$  utility jump at  $K(\phi, V)$ .

# Macroeconomic implications of changes in creditor protection

Aggregate Value Added is:

$$GDP(\phi, \tau, V) = \int_{K(\phi, V)}^1 (pR + (1-p)V - (1+\rho)I) dG$$

Investment is  $\mathcal{I} = \int_{K(\phi, V)}^1 IdG$ . Using (1) y (\*), we have:

## Proposition

*Better creditor protection ( $\phi \downarrow$ ), bankruptcy procedures or increased asset hardness raise investment and value added. If  $\phi$  increases, access to credit is more sensitive to asset hardness and improved bankruptcy procedures:  $\frac{\partial K(\phi, V)}{\partial \phi \partial V} \geq 0$ .*

# Access to credit and spreads

## Definition

*Access to Credit*

$$C(\phi, V) = \frac{1}{GDP(\phi, V)} \int_{K(\phi, V)}^1 (I - K_z) dG$$

## Definition

*Average Spread*

$$S(D) = \frac{1}{1 - G(K(\phi, V))} \int_{K(\phi, V)}^1 (r(p, K_z) - \rho) dG.$$



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# Results

## Proposition

- i. Higher credit recovery ( $\phi \downarrow$ ) o better bankruptcy procedures ( $V \uparrow$ ) increase access to credit. Access to credit is higher in sectors with higher asset hardness (Braun-Larraín 2005).*
- ii. The average spread increases with the rate of credit recovery ( $\phi \downarrow$ ), and falls with better ex post recovery. ( $\tau \uparrow$ ).*

Spreads increase with lower  $\phi$  because agents with less wealth have access to credit.

## Wealth distribution results

Consider two countries A, B, identical except for the distribution of wealth.

### Definition

An economy is **credit restricted** if  $K(V, \phi) > \bar{K}$ .

### Proposition

If the distribution of wealth in A **FOSD** that of B, investment and output are higher in A.

If the wealth distribution in A is **MPS** of that of B, then investment and output are higher in A if the countries are credit restricted (and viceversa). Moreover, the spread is larger.

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# Closed economy

Capital market equilibrium:  $\int_0^q K_z dG = I(1 - G(K(\phi, V)))$ .

The equilibrium **exists**.

## Proposition

*An improvement in ex ante credit protection ( $\phi \downarrow$ ), asset hardness ( $V$ ) or the efficiency of bankruptcy procedures ( $V$ ):*

- Raises the interest rate, but reduces the spread (Shleifer-Wolfenzon 2002).*
- There are no other effects on the economy.*

*An increase in ex post protection ( $\tau$ ) raises the spread.*

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## Effects due to labor protection

Increased labor protection reduces labor rotation (Micco y Pagés 2006), and the creation-destruction process (Caballero et al (2006)).

**Model:** Each firm hires one worker, at a salary  $w$ .

In bankruptcy, the worker indemnity  $f$  has priority, the residual value is:  
 $V - f \geq 0$ .

We get:

$$K(\phi, V, f) \equiv 1 - \frac{p(R - w) + (1 - p)(V - f)}{1 + \rho + \phi}$$

Minimum capital for access to loans increases with the **labor cost** ( $w, f$ ).

## The labor market

Labor supply is  $L^S(w, f)$ , increasing and differentiable.

### Assumption

*Salary dominance*

$$p \frac{\partial L^S}{\partial w} \geq (1-p) \frac{\partial L^S}{\partial f}$$

**Labor demand** is the mass of entrepreneurs with access to loans,

$$L^D(w^*) = 1 - G(K(\phi, V, f))$$

### Proposition

i. *There is an equilibrium wage  $w^*$  for all  $(\phi, \tau, V)$ .*

$$r_z = \frac{1+\rho}{p} - \frac{1-p}{p} \frac{\tau(V-f)}{D_z} - 1$$



# Results

## Proposition

1. *If labor protection increases, salaries fall, but **total labor costs increase**.*
2. *Higher loan recovery rates, improved bankruptcy procedures or higher asset hardness raise salaries.*
3. *If the loan recovery rate falls, access to credit is more sensitive to labor protection*
4. *Output and investment fall with higher labor protection.*
5. *If the wealth distribution in A is an MPS of that of B, and  $K(\phi, V, f) > \bar{K}$ , salaries are lower in A..*
6. *If labor protection increases (or if credit protection falls), **wealthy entrepreneurs are better off**.*

## Further Implications of the results

In an open economy, financial development is bad for incumbents, but good for workers and new entrepreneurs.

In a closed economy, increased creditor protection does not increase access, has little effect on wages and incumbent entrepreneurs are worse off.

Explains Braun y Raddatz (op. cit), Rajan y Zingales (2003): in closed economies there are fewer reforms to increase credit protection.

Workers employed in well-capitalized firms prefer higher labor protection (higher expected salaries), despite the higher unemployment.

In a closed economy, employers are not opposed to higher labor protection since it lowers interest rates.

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A simple model with a lot of explanatory power.

Study effects of credit protection on economic efficiency.

Explains political economy observations:

- Why incumbent entrepreneurs oppose financial reforms.
- Why workers in large firms prefer more labor protection at the expense of higher unemployment.
- Why incumbent employers are not totally opposed to increased labor protection
- Explains the conflicts between the aims of established and small, new firms.