

Entrepreneurship and Credit Constraints

Evidence From a French Loan Guarantee Program

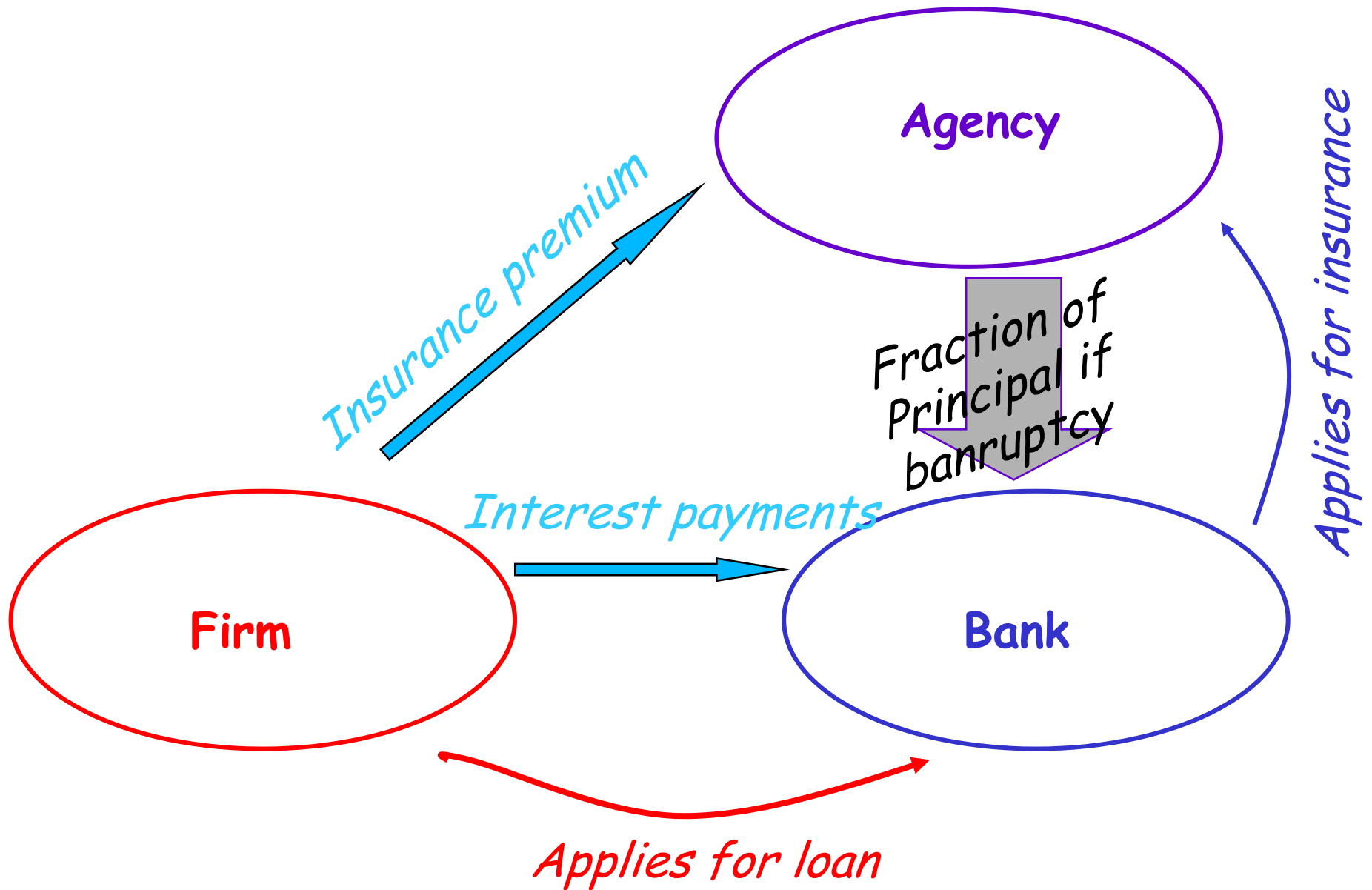
Claire Lelarge (OECD)

David Sraer (UC Berkeley)

David Thesmar (HEC Paris & CEPR)

Subsidizing Entrepreneurial Finance

- **Widespread perception that entrepreneurs are financially constrained.**
- **Existing subsidized loan programs:**
 - Directed lending/subsidies to the unemployed/state as VC
- **Also, loan guarantee programs pervasive around the world, yet much less studied...**
 - Equals loan insurance, paid for partly by borrower
 - Insurer = government agency: US (SBA's 7a), UK (SFLG), France (OSEO)



→ Trade-off: *ex ante* fee vs. *ex post* guarantee

Economic Rationale

- **Loan guarantee = indirect subsidy**
 - $0 < \text{ROE of agency} < \text{cost of equity}$
- **Yet: does not necessarily make credit markets “more” first best efficient...**
 - LG/loan subsidy policies not welfare improving...
 - Selection of worse/riskier projects
 - Risk of subsidizing firms not needing it
- **... unless some non convexity**
 - Investment indivisibilities, local externalities

What We Do

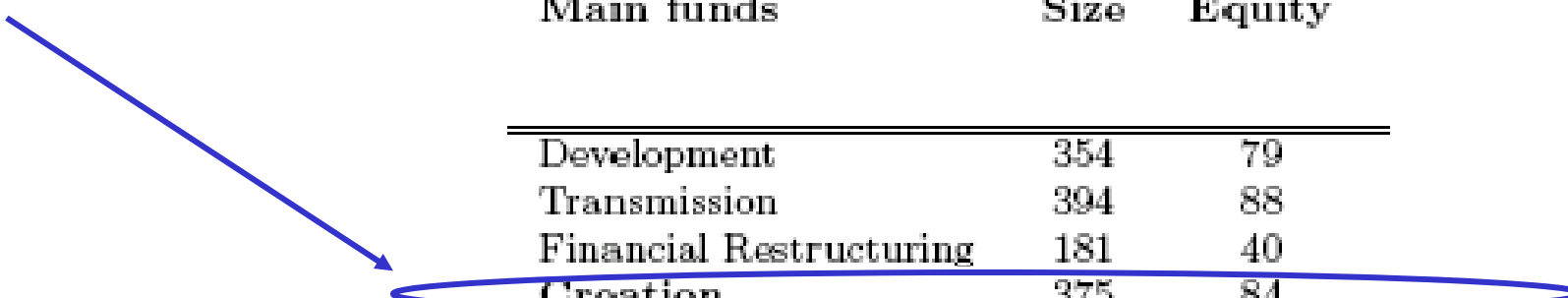
- **Evaluate the French LG program:**
 - Costs: indirect subsidy
 - Benefits: investment, jobs created
- **Estimate benefits using firm level data and a quasi-natural experiment:**
 - Endogeneity concern: only « good » firms apply for a guarantee...
- **What happens to firms receiving this subsidy?**
 - OLS vs IV
 - Look at investment, jobs, exit
- **Are entrepreneurs financially constrained?**

What we Find

- **Using our “quasi-natural” experiment: check bias of OLS estimators**
 - OLS unbiased: pricing of insurance is ok?
- **Causal impact of program**
 - Growth: YES (investment, job creation)
 - Entry: NO
 - Risk shifting: YES (more bankruptcies)

The French LG Program

- **SOFARIS/OSEO Garantie:** French agency in charge:
 - 50% French state, 50% Private banks
 - Backs some 4.5bn € of debt (40,000 firms)
 - Several funds (different objectives):



Main funds	Size	Equity
Development	354	79
Transmission	394	88
Financial Restructuring	181	40
Creation	375	84
All funds	1,582	354

(Firm Level) Data

- SIRENE files: firm created (date of creation, employment)
- BRN files: Accounting data from Tax reports (firms above 75,000€sales)
- OSEO files: identity of firms receiving a guaranteed loan.
- Bankruptcy files: date at which firms file for bankruptcy

Data (2)

- Some 210k obs over 1989 – 2000
 - 1-2 employees at birth (*small firms!*)
 - 2% go bankrupt in 2 yrs, 10% in 4 yrs
 - $T_{it} = 1$: getting a GL 1 year after creation
 - In practice: up to 3 years after creation
 - Convention to simplify presentation
 - Only 0.7% of the sample is treated: *Small program*
- No rationing: allocation rule?

Evaluating the program

- **First spec: OLS/matching**

for firm i created at t

Y_{it} can be 0-2 year growth in jobs, capital etc.

$$Y_{it} = \alpha + \beta.T_{it} + \gamma.X_{it} + \varepsilon_{it}$$

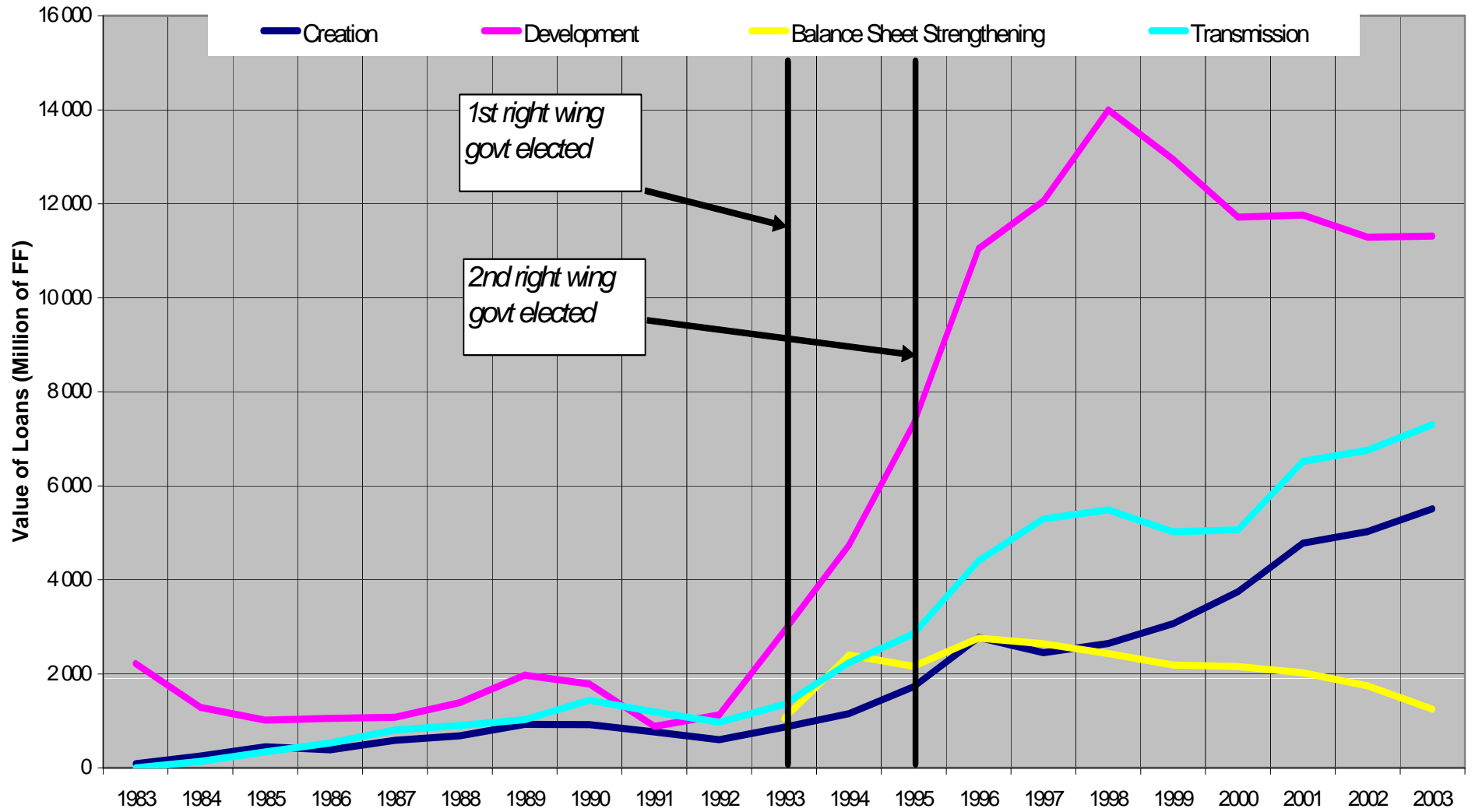
Getting a guar. loan 

But... T_{it} could be endogenous \rightarrow need for exogenous variations in proba. of treatment!

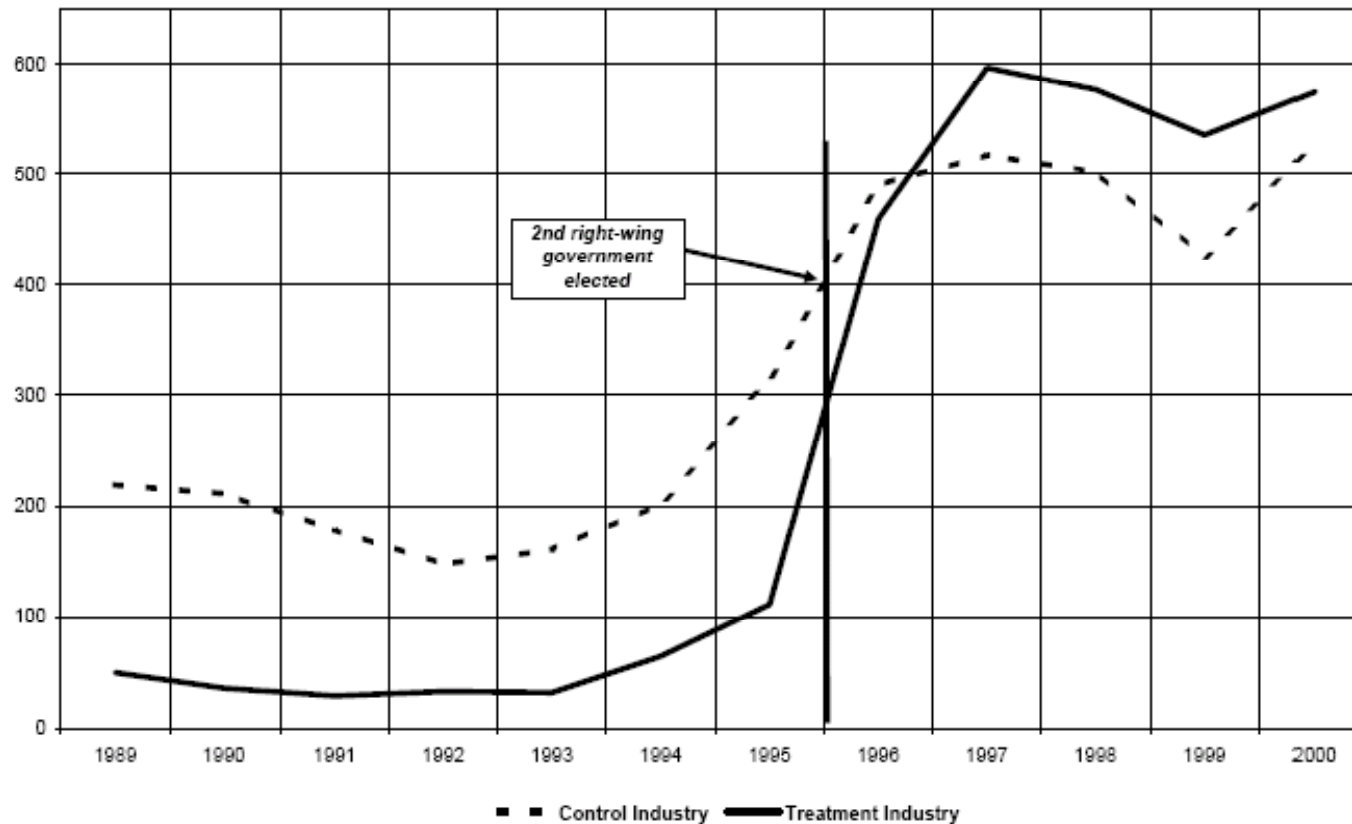
The 1993-95 Shock

- **1993 & 1995 election: the right wing won**
- **2 shocks on the LG program**
 1. 1993 - 1997: x5 growth of creation fund
 - limitations: *no control group, not a sudden shock*
 2. 1995: new industries become eligible
 - Construction, trade, transp., rest.& hotels, pers. services
 - Control : manufacturing, corp. services *already eligible*
 - limitation: *not quite the same industries*

Value of loans guaranteed by SOFARIS (by program)



First Stage: $NEs \times POST_t \rightarrow GL ?$



- *Regression: Yes, diff in diff significant (t-stats ~3.5)
proba of getting a GL increases by 0.3 ppt*
- *However: small differential increase in probability
→ can magnify any bias/measurement errors...*

Measuring the effects of the program

- **Alternative spec.: non linear IV**

Newly eligible industry →

Non linear Probit model →

$$T_{ist} = \underbrace{NE_s}_{\text{Newly eligible industry}} \times POST_t + \underbrace{NE_s \times t + NE_s \times POST_t \times t}_{\text{Focus on break in level}} + X_{it} + u_{it}$$

« *Second Stage* »:

$$Y_{ist} = \alpha + \beta.T_{it} + \gamma.X_{it} + \dots + Mills_ratio + \varepsilon_{it}$$

→ Instrument: **$NE_s \times POST_t$**

→ Identification assumption: reform independent of expected future growth of treated industries...

Growth Effects of GL

- **(Financial) debt: lots of action**
 - Grows by ~60%, highly significant (#.5 std dev.)
 - Same for OLS & IV → minor endogeneity bias...
 - Persistent in the long run (=56% over 4 years)
- **Fixed assets**
 - Grows by 30% (#.28 std. dev)
 - OLS significant, IV larger but less sig...
- **Employment**
 - Grows by 20%, highly significant (#.17 std. dev.)
 - OLS significant, IV larger but less sig...

Entry/exit of GL

- **Exit: probability of going bankrupt**
 - Large : + 16 ppt (sample mean: 24%), and sig.
 - OLS = IV
 - Consistent with risk shifting / less bank monitoring
- **Entry: industry data**
 - Larger firms created in « treated » industries after the reform (employment elasticity #.18, asset elasticity #.46)
 - Nothing on number of firms created...

(Tentative) Cost-Benefit Analysis

Main funds	Size	Equity	Earnings	Equival. subsidy
Development	354	79	22	-11
Transmission	394	88	11	2
Financial Restructuring	181	40	-8	14
Creation	375	84	-24	36
All funds	1,582	354	11	42

"required earnings" = 15% x 84 = 12m€

Actual earnings = -24m€

→ Annual subsidy = 36m€

(Tentative) Cost-Benefit Analysis

- Would require a more structural model... Little we can do beyond very imprecise back of the envelope computations...
 - Treated firms ~ 2.6 employees at birth
 - For each *SURVIVING* treated firm
 - +20% = +0.52 jobs
 - Bankruptcy rate = +16 ppt
- ➔ **For each treated firm: #0 employees in the long run**
- ➔ ***BUT THESE SORT OF COMPUTATIONS ARE HIGHLY DEPENDENT ON SELECTED SPECIFICATIONS...***

Conclusion...

- LG programs do foster post entry growth
 - No effect on entry decisions
 - Matching/OLS result similar
 - Good pricing?
 - Interesting effect on long term risk: firms with guarantees much more likely to default.
- ➔ This is evidence that entrepreneurs face credit constraints (in France, in the 1990s)
- ➔ ... but we don't know their extent