Aggregate Risks, Collateral Value and the Role of Loan Guarantee in Small Business Financing

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Small business loan guarantees programs

- Loan guarantees programs - major component of entrepreneurship policy in N.A:
  - SBA currently provides guarantees for $99 billions of loans;
  - CSBFP backs nearly $1 billion of new loans every year.
- Goal of programs:
  - relax credit constraint caused by frictions in the financial market: information asymmetry, moral hazard...
- Questions:
  1. Do frictions due to aggregate uncertainty justify government supplied loan guarantees?

Small business loan guarantee program in NA

- Guarantees up to certain maximum portion of loans through financial institutions;
- Charges an upfront fee (2-3.75 %) and annual fees (0.55-1.25%) on guaranteed portion;
- Interest rate cap, prime+ (2.25-4.75%);
- To qualify:
  1. Small: $<$ 100 employees;
  2. Incrementality: denied for loans under similar terms;
  3. Sound prospects for repayments.

Zero subsidy

- Bush administration required that the SBA's guarantee programs run at a zero subsidy rate, 2003–2008;
- Throughout the 1990s, the SBA loan guarantee programs generated profits for the government;
- Similarly, the Canadian CSBFP generated profits for most of the 2000s.

Rationales

Rationales:

1. Small businesses are important (engine of growth, job creation.) — subsidize them.

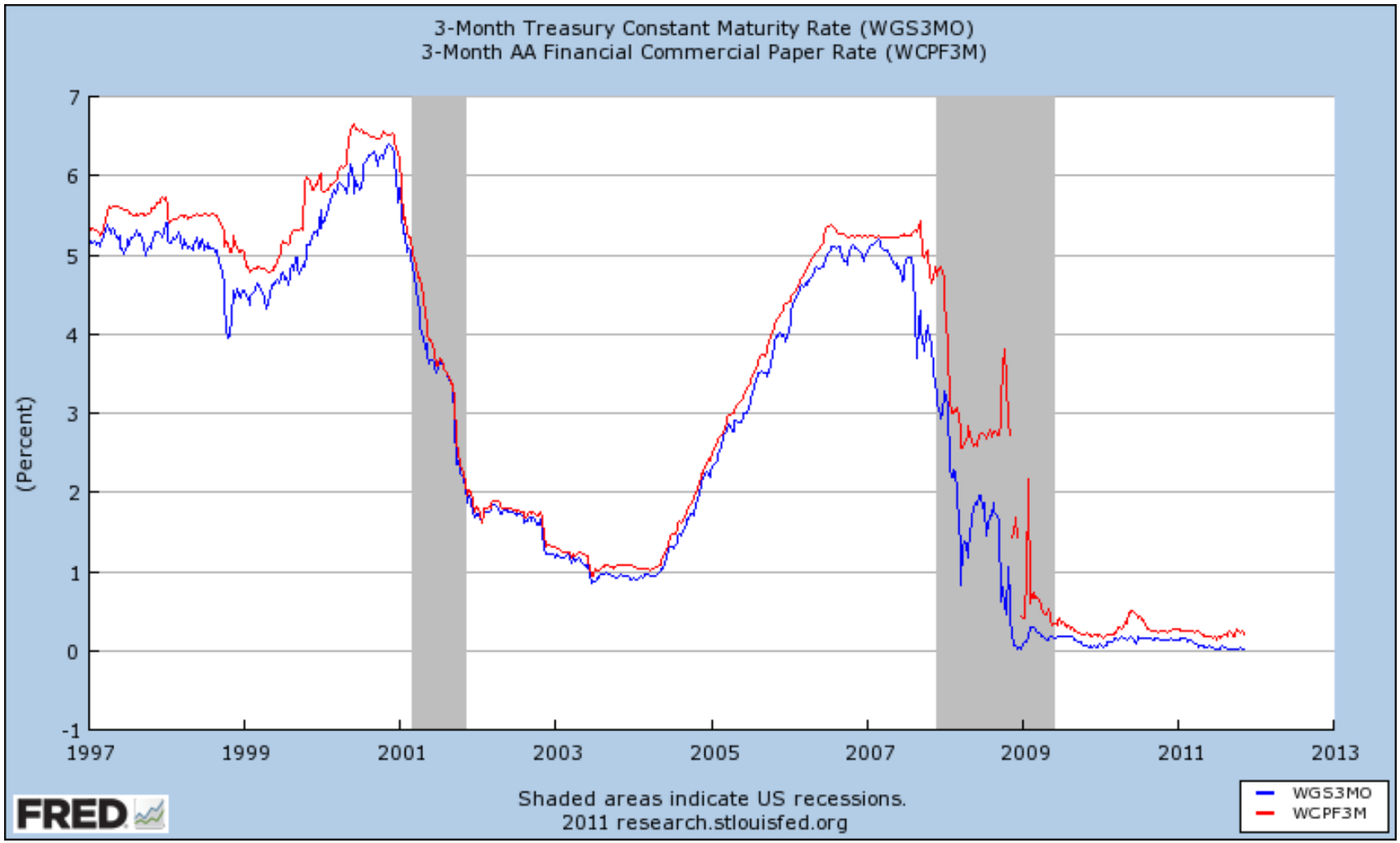
2. Possible inefficiency caused by informational frictions:
   - Causes:
     - State verification - Williamson (1994), Li (1998) (2002);
     - Hidden types - Gale (1990), Williamson (1994), Meza (2002);
   - Government has no informational nor technology advantage
     - with subsidy - limited effects on improving the small business sector;
     - might reduce the efficiency of the overall economy.

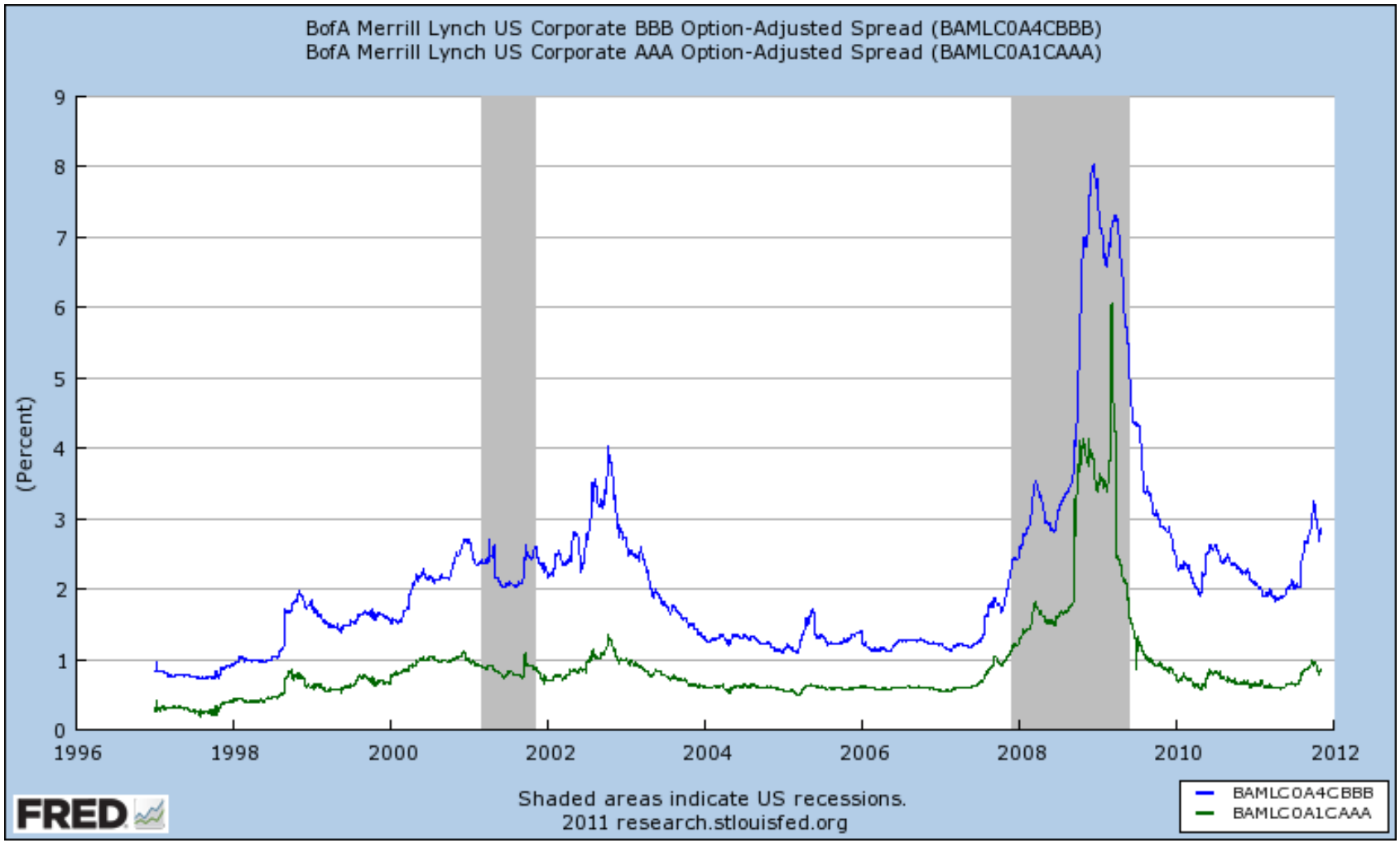
What I do

1. Financial institution's cost of funds goes up during downturn
   $\Longrightarrow$ hard to smooth cross time
   $\Longrightarrow$ ration loans ex-ante;

2. Government enjoys lower borrowing cost during downturn
   $\Longrightarrow$ easier to move remove resources cross time
   $\Longrightarrow$ could offer guarantee program as insurance;

3. Formalize idea in stylized model, illustrate a guarantee program improve small business sector + efficiency;


3-Month Treasury Constant Maturity Rate (WGS3MO)
3-Month AA Financial Commercial Paper Rate (WCPF3M)
(Percent)
7
6
5
4
3
2
1
0
-1
1997
1999
2001
2003
2005
2007
2009
2011
2013
FRED
Shaded areas indicate US recessions.
2011 research.stlouisfed.org
WGS3MO
WCPF3M


BofA Merrill Lynch US Corporate BBB Option-Adjusted Spread (BAMLC0A4CBBB)
BofA Merrill Lynch US Corporate AAA Option-Adjusted Spread (BAMLC0A1CAAA)
(Percent)
9
8
7
6
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3
2
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1996
1998
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2002
2004
2006
2008
2010
2012
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FRED
BAMLC0A4CBBB
BAMLC0A1CAAA

Model: Agents

- Two period model with a continuum of agents of measure one;
- Preference: $c_1 + c_2$;
- Endowments: wealth $\omega \in [\underline{\omega}, \bar{\omega}]$, project with quality $p \in [0, 1]$, one unit of indivisible time per period;
- small business owners vs. worker.

Model:Corporate Sector

1. Production:
$$Y = \theta K^{\alpha} L^{1-\alpha}$$
2. Capital depreciates at rate δ
3. $\theta_1 \in \{\theta_l, \theta_h\}$ is the aggregate productivity for period 1, no aggregate risk in period 2: $\theta_2 = \bar{\theta}$

prob	state
γ	θ_h
$1-\gamma$	θ_l

4. Perfectly competitive market:
$$\begin{aligned} w_t &= \theta(1-\alpha)\left(\frac{K_t}{L_t}\right)^{1-\alpha} \\ r_t &= \theta\alpha\left(\frac{L_t}{k_t}\right)^{\alpha} - \delta \end{aligned}$$

Small Business

1. Production: θk^{β}
2. Capital depreciates at rate δ
3. If default, liquidation process costs $1 - \epsilon_s$ fraction of un-depreciated capital

$$\epsilon_l < \epsilon_h$$

Financial Intermediation

1. Takes deposits and offer loans;
2. Perfect competitive intermediaries;
3. Interest rate endogenously determined;

$$r = E[\theta\alpha(\frac{L_t}{k_t})^{\alpha} - \delta]$$

4. Liquidation cost is contingent on aggregate state

$$1 - \epsilon_s$$

5. **Cannot smooth across periods due to competition**.

Loan pricing

- Suppose
  - x is the promised repayment
  - d is the probability of default

  then loans will be priced according to (contingent contract):

$$(1-d)x_h + d[(1-\delta)k\epsilon_h] = r(k-\omega)$$

$$(1-d)x_l + d[(1-\delta)k\epsilon_l] = r(k-\omega)$$

- For a non-contingent contract: x_l is the payment.

Aggregate risks

- The introduction of this aggregate risk makes the economy less efficient $\rightarrow$
- Tighter credit constraints make poorer agents:
  1. less likely to pursue entrepreneurship;
  2. operate at inefficient scales.

Loan guarantee program

- Long-term contract;
- Guarantees ϕ portion of the loan (promised repayment x);
- Charges proportional fee τ on guaranteed portion ϕx.
- Loan pricing:

$$(1-d)x_h + d[(1-\delta)k\epsilon_h + \phi x_h] = r(k-\omega)$$
$$(1-d)x_l + d[(1-\delta)k\epsilon_l + \phi x_l] = r(k-\omega)$$

Numerical Example

- Running

- 1. Tax vs. Borrowing;
  2. Fixed vs variable guarantee fees;
  3. Uncertainty in second period.

Conclusion

- Insurance against aggregate risks could be important rationale for small business loan guarantee programs;
- Government's ability to borrow cheaply during downturn is key;
- Numerical example coming up.