



# PRIVATE AND/OR PUBLIC DEBT?

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Why some firms choose bank debt  
and others a pure bond issue  
or both?



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- Bank debt or bond issue: how to explain the choice?
  - Sme's seem to prefer bank debt
- Bank debt and bond issue: complementary?
  - Big firms seem to choose both bank debt and bonds
- The trade-off between mixed financing (bank and bonds) and a pure bond issue



# 1-BANK DEBT OR BOND ISSUE?

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- 5 arguments
  - Bank debt is more easily renegotiable than public debt
  - There exists a life cycle in the firm financing
  - Some firms would prefer to issue bonds to avoid the hold-up problem associated with bank debt
  - Bank debt requires less information dissemination than a bond issue
  - Fixed costs for a bond issue are expensive



# 1-BANK DEBT OR BOND ISSUE?

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- The renegotiation argument
  - Private debt is easier to renegotiate than public debt
    - Bank debt maturity is on average shorter than bonds maturity, which in turn facilitates more accurate renegotiation
    - There are less creditors in private debt, so coordination problems are less important
    - Banks are information producers; so they are able to distinguish:
      - Those firms that are profitable and that need only a debt rescheduling
      - Those unprofitable firms that must be liquidated
  - Conclusion: firms that value the more the renegotiation option will choose to borrow from banks



# 1-BANK DEBT OR BOND ISSUE?

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- The life cycle argument (Diamond, 1991)
  - The choice between public or private debt depends on the initial reputation of the firm
    - Firms with a good reputation choose public debt
    - Firms less reputed choose to acquire a reputation on the bank credit market where banks can reduce information asymmetrie
  - Young firms initially borrow from the bank market
    - In a multiperiod framework, reputation increases after each period when the credit is reimbursed
    - After  $n$  periods, young firms have acquired enough reputation to shift to the bond market



# 1-BANK DEBT OR BOND ISSUE?

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- The hold-up problem (Rajan, 1992)
  - To avoid the hold-up problem, firms with highly profitable projects will choose to borrow directly from the bond market



# 1-BANK DEBT OR BOND ISSUE?

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- Bank debt requires from the firm to produce less information (Yosha, 1995)
  - Firms with highly profitable projects will choose a bilateral financing (bank)
    - To avoid to reveal strategic information to their competitors on the product market
  - Firms with poor projects will prefer multilateral financing
  - The choice of private vs public debt reveals imperfectly the firm's quality because of the costs of a bond issue



# 1-BANK DEBT OR BOND ISSUE?

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- A bond issue is costly (Detragiache, 1994)
  - A firm which issue bonds incurs high fixed costs (ratings, fees linked to syndicated loans)
  - Only big firms with large bond issues can support such fixed costs
  - Small firms (sme's) will choose to borrow from banks



## 2-PRIVATE AND PUBLIC DEBT

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- Denis and Mihov, 2003
  - Big firms financial debt seem to be equally divided between private and public debt
- Holmstrom and Tirole, 1997
  - Bank monitoring acts as a mechanism which permits to economize on equity
    - Firms less capitalized will choose more bank debt than public debt
    - Firms well capitalized will issue more public debt than private debt
    - Both types of debt will be used by firms



## 2-PRIVATE AND PUBLIC DEBT

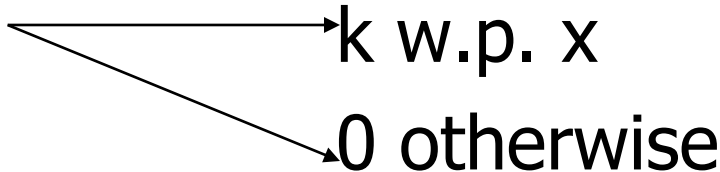
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- A SIGNALING APPROACH
  - Intuition: bank debt cost is higher than bonds cost
    - But marginally greater for bad firms
  - So a signaling equilibrium is feasible
    - By which good firms signal their quality to the bond market by borrowing first from banks



## 2-PRIVATE AND PUBLIC DEBT

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- The framework
  - Risk neutral firms
  - Must finance by debt a 1-unit investment
    - $\alpha$ =part of the investment financed by bank
    - $1-\alpha$ =part financed by bonds
    - Bank debt is negotiated before bonds issue
  - Investment: 1 



## 2-PRIVATE AND PUBLIC DEBT

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- Firm  $x$  is characterized by its success probability
  - $x$  distributed in  $[a;b]$ ;  $0 < a < b < 1$ ;  $ax > r$  (NPV  $> 0$ )
  - Density function is  $f$
- Bank
  - Knows perfectly the risk type  $x$
  - Exerts some market power on the firm (hold-up problem)
- Bond market
  - Information asymetrie
  - Infers  $x$  from the observation of the bank contract
    - Because of the hold-up pb, the bank rate is uninformative
    - But the part  $\alpha$  will be used as a signal



# 2-PRIVATE AND PUBLIC DEBT

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- Notations

- $R_b(x)$  = bank rate
- $R_o(\alpha(x))$  = bond rate
- $m$  = mark up by the bank (hold-up problem)
- Firm maximizes its wealth  $W$



## 2-PRIVATE AND PUBLIC DEBT

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- The program

$$\text{Max}_{\alpha} W(\alpha, x) = \left\{ x \left[ k - \alpha R_b(x) - (1 - \alpha) R_o(x(\alpha)) \right] \right\}$$

$$R_b(x) = \frac{r + m}{x}$$

$$R_o(x(\alpha)) = \frac{r}{x(\alpha)}$$

$$x(\alpha) = x$$

Note that the marginal cost of the signal is decreasing with firm's quality (Spence condition)



## 2-PRIVATE AND PUBLIC DEBT

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- Solution

$$\alpha = 1 - \left( \frac{x}{a} \right)^{-\frac{r}{m}} \quad (7)$$

- With a the riskiest firm
- and  $\partial\alpha/\partial x > 0$
- *result : bank debt is increasing with firm's quality*

# 2-PRIVATE AND PUBLIC DEBT

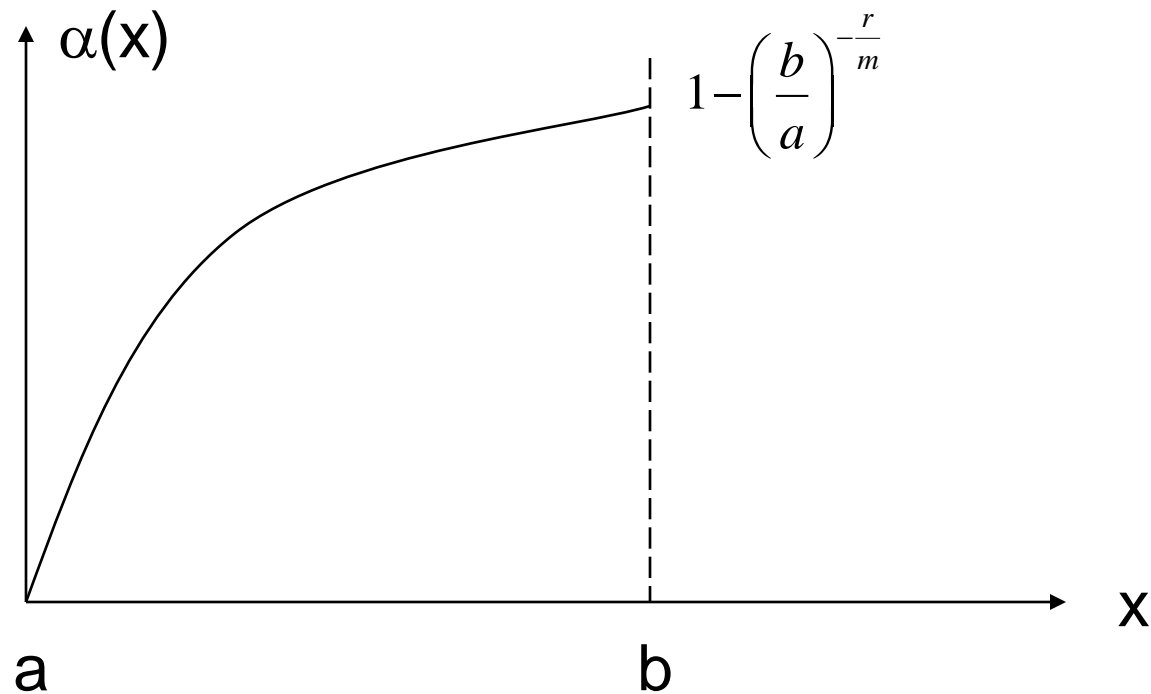


Figure 1-Part of the bank debt in the whole financing as a function of the firm's quality  $x$



## 3-THE TRADE-OFF BETWEEN MIXED FINANCING AND A PURE BOND ISSUE

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- Hyp: firms can choose between a mixed financing (Bank+bonds) and a pure bond issue
  - Issuing bonds implies fixed costs  $M$  (rating)
- $C_b(x)$  = The cost of a mixed financing

$$C_b(\alpha, x) = \alpha R_b(x) + (1 - \alpha) R_o(x(\alpha))$$

$$C_b(x) = \frac{r}{x} + \frac{m}{x} \left[ 1 - \left( \frac{x}{a} \right)^{-\frac{r}{m}} \right]$$



## 3-THE TRADE-OFF BETWEEN MIXED FINANCING AND A PURE BOND ISSUE

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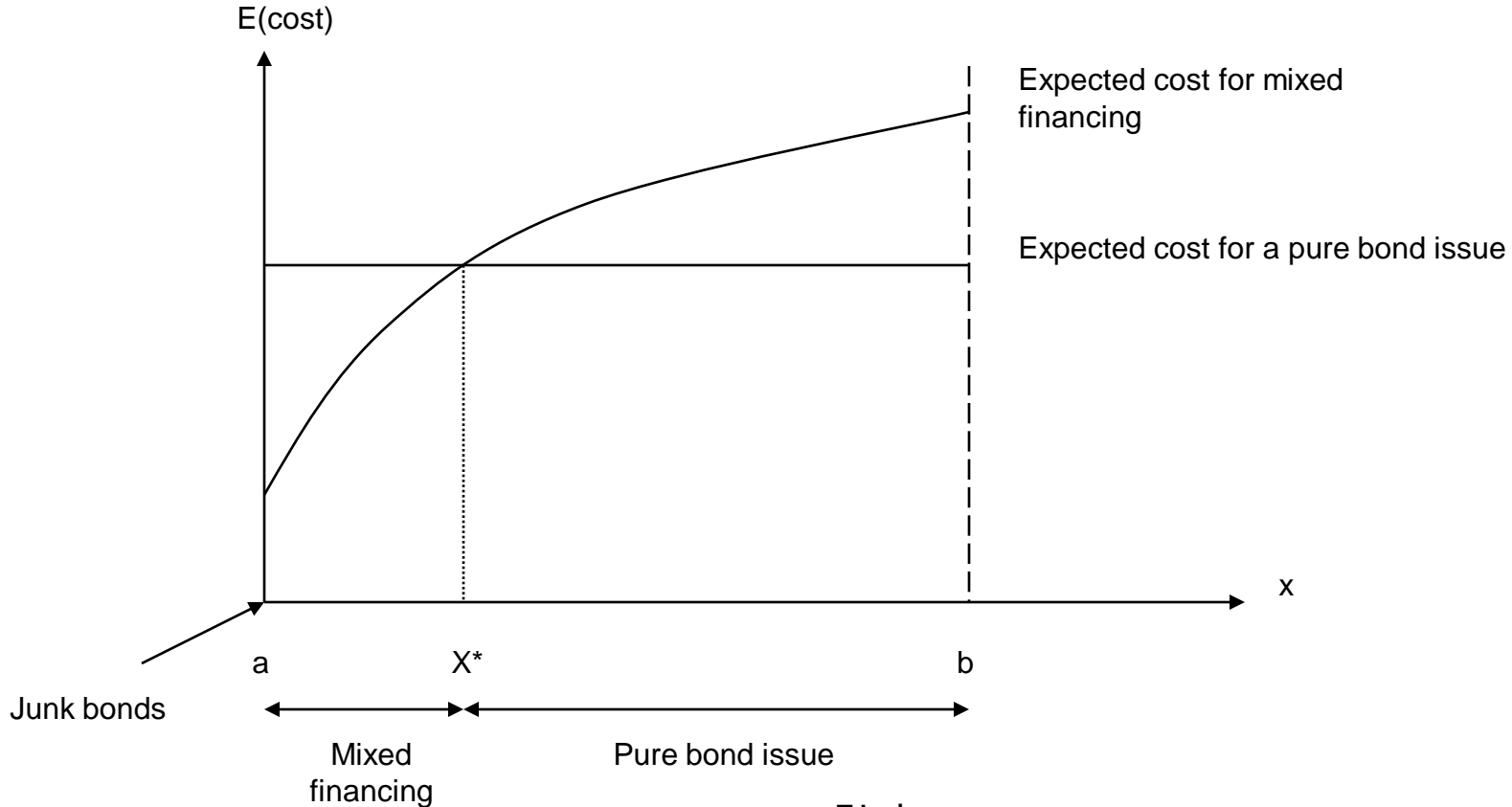
- $C_o(x)$  = cost of the pure bond issue

$$C_o(x) = (1 + M) R_M(x)$$

$$C_o(x) = \frac{r}{x} + \frac{M}{x} r$$

# 3-THE TRADE-OFF BETWEEN MIXED FINANCING AND A PURE BOND ISSUE

- The expected cost for each financing





# CONCLUSIONS

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- The riskiest firm «  $a$  » chooses a bond issue without signal (junk bonds)
- firms  $[a, x^*]$  choose a mixed financing with bank signal
  - Part of the bank debt in the whole financing is increasing with firm quality
- firms  $[x^*, b]$  choose a pure bond issue with rating and fixed costs  $M$



# REFERENCES

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- Holmstrom, B., Tirole, J., 1997. Financial intermediation, Loanable Funds and the Real Sector. Quarterly Journal of Economics 112 (3), 663-691.
- Lobeze, F. et Statnik, J.-C., 2007. la complémentarité entre dette bancaire et dette obligataire: une interprétation en termes de signaux. Finance.