A Theory of Debt Maturity: The Long and Short of Debt Overhang

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Discussion by Michal Szkup

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  - First pointed out and analyzed by Myers (1977);

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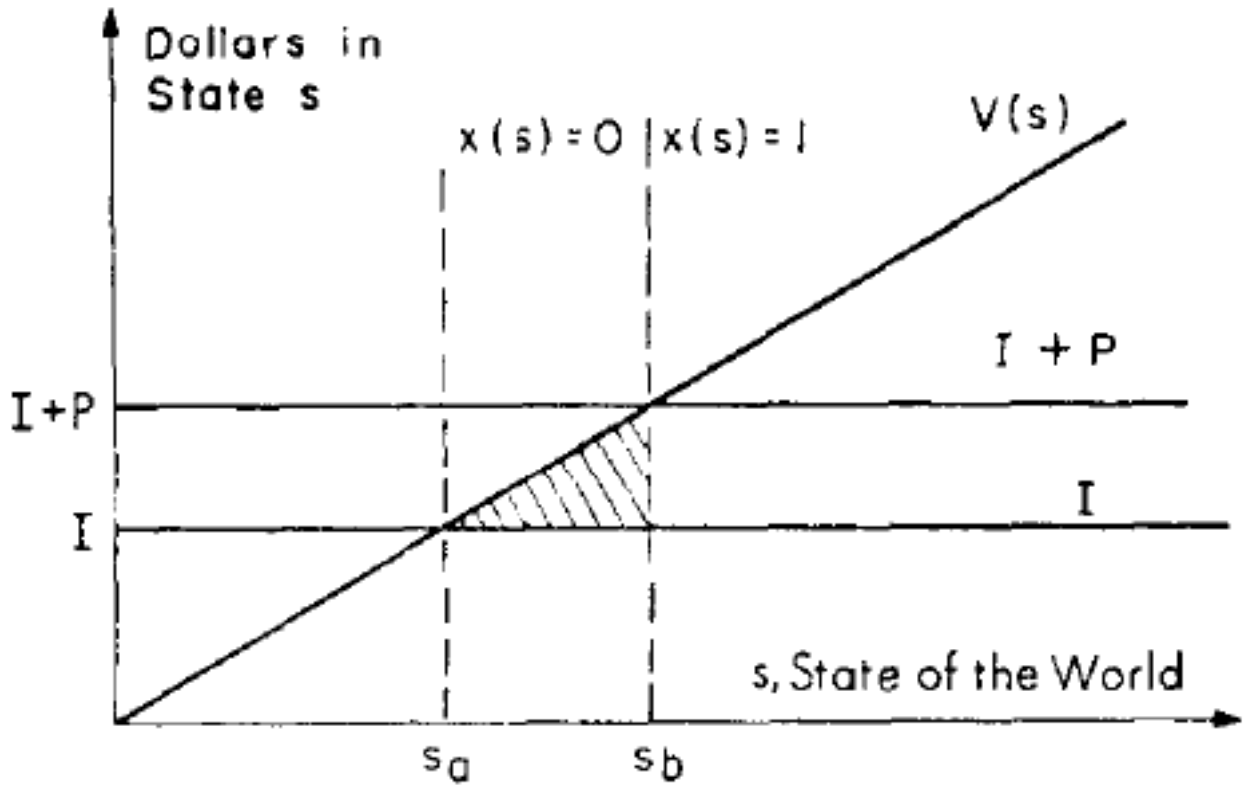
- Therefore for $V(s) \in [I, I + P)$ profitable investment is forgone


Dollars in
State s
x(s) = 0
x(s) = 1
V(s)
I + P
I+P
I
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s, State of the World
s_a
s_b

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  - argues that this is because short-term debt can also lead to the debt overhang
  - shows that in some cases short-term debt might impose stronger debt overhang than the long-term debt

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- There is a covenant saying that any new financing is *junior* to the existing long-term debt.

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- If the firm defualts the debt holders receive the value of the assets in place;

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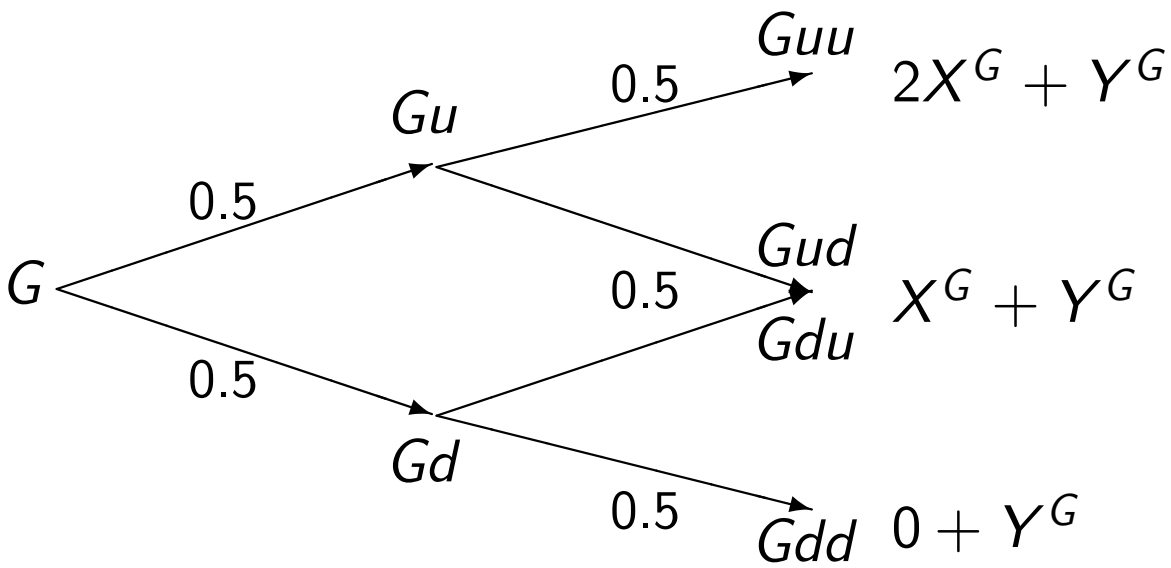
- Payoffs in state G:



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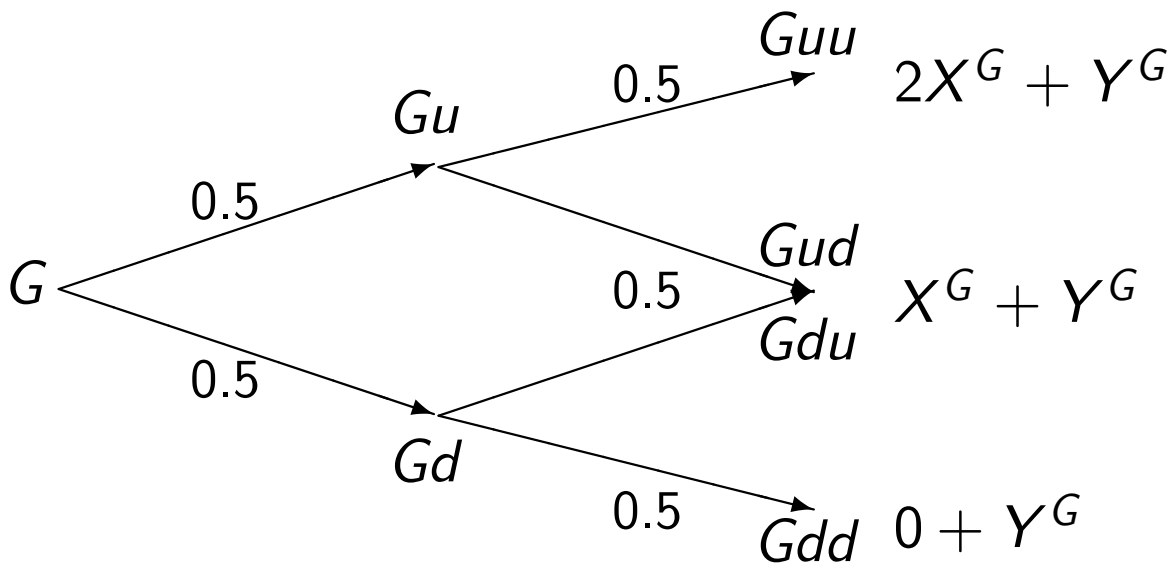

- We assume that $X^G > 2F_1 + F_2$ and $Y^G > F_2$.

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- The standard debt overhang problem.

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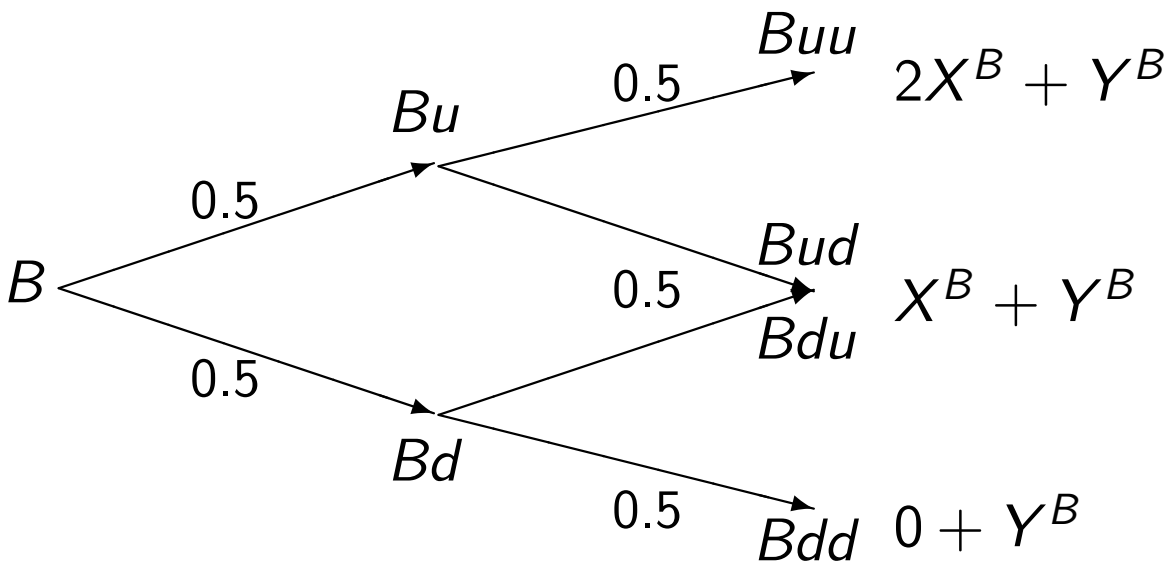

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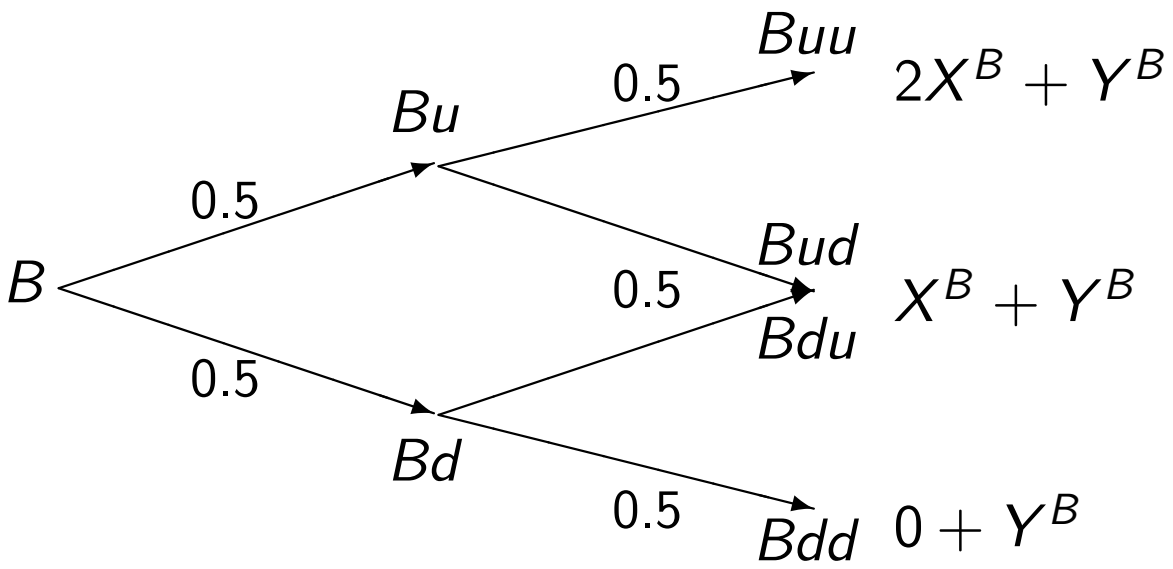

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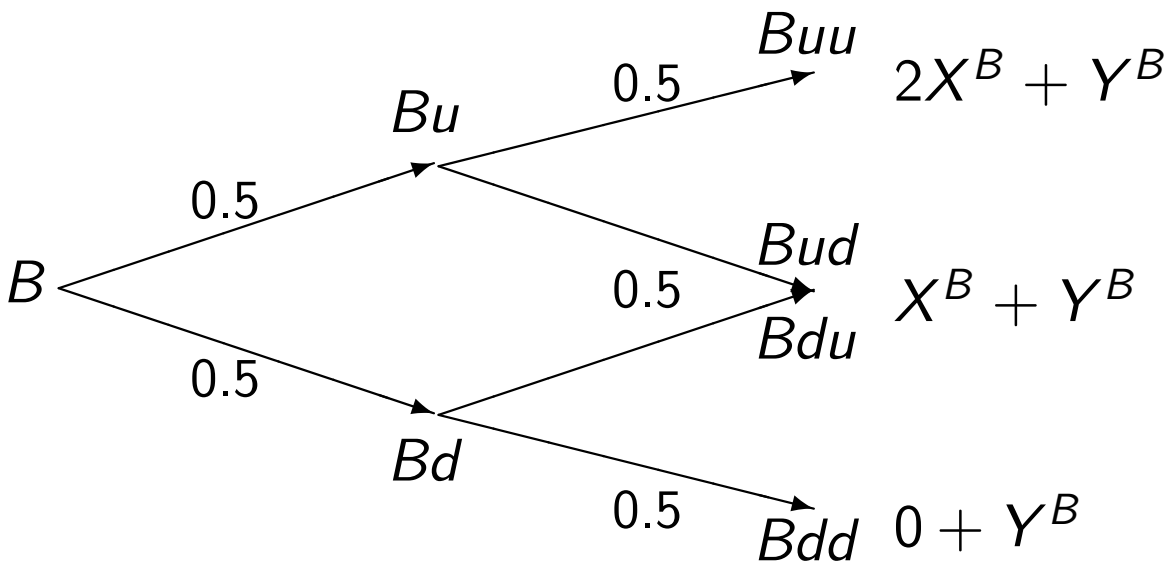

- We assume that $X_B < 2F_1 + F_2$ and $\frac{3}{2}X_B > F_1 + F_2$
- Furthermore: $X_B + Y_B > 2F_1 + F_2$

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- The the transfer to debt holders is $\frac{1}{2}F_1 + \frac{1}{2}F_2 - \frac{1}{4}X_B$ or $\frac{1}{2}\left(F_1 + \frac{F_2}{2}\right) + \frac{Y_B}{4} - \frac{X_B}{4}$

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- The firm then invests iff γ_B is greater than that transfer.

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- Short-term debt holders is a "hard claim" and is similar to down-and-out option

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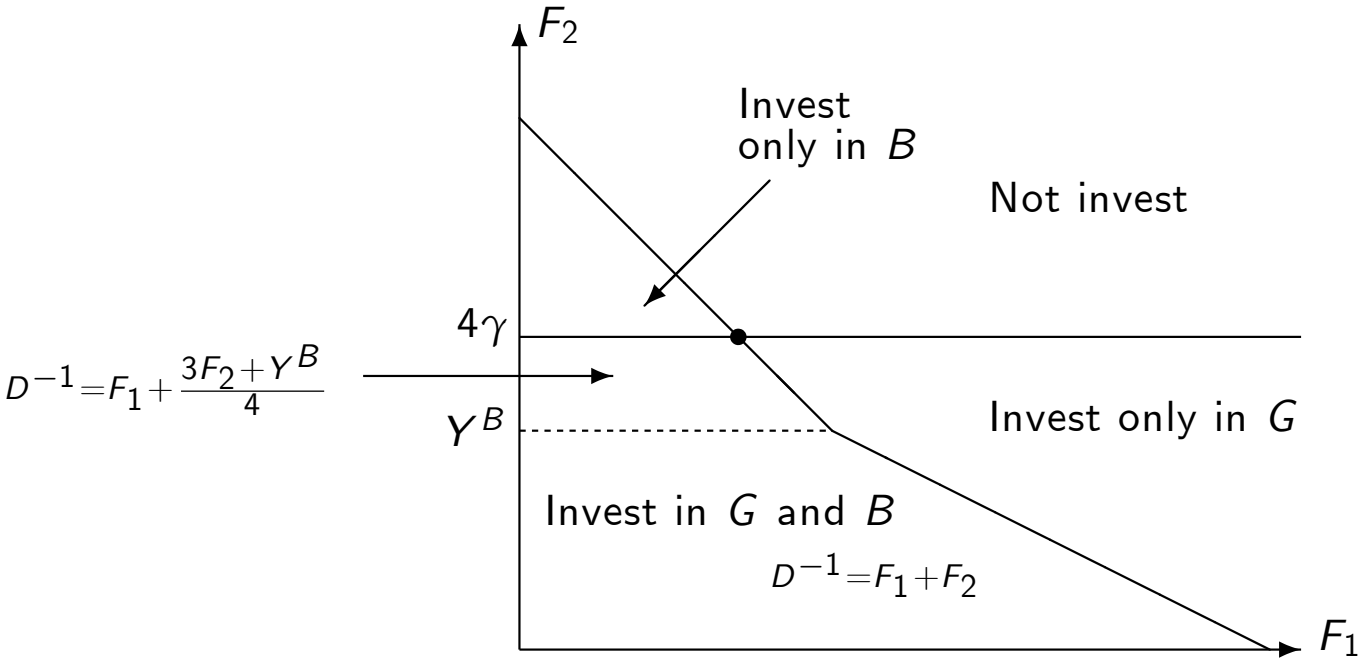

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  - Risky long-term debt can imposes debt overhang both when asset-in-place are of high and low value
  - Risky short-term debt imposes no overhang when assets in place-in-place are of high values
  - But has strong overhang effect when their value is low

Appendix - different timings

R&Inv / state	*Gu*	*Gd*	*Bu*	*Bd*
$t=0\ t=1$	0	$\frac{1}{2}F_2$	0	$\frac{2}{3}F_2+\frac{2}{3}F_1+\frac{1}{3}Y_B-\frac{1}{2}X_B$
$t=1\ t=1$	0	$\frac{1}{2}F_2$	0	$F_1+F_2-\frac{1}{2}X_B$

R&Inv / state	*G*	*B*
$t=1\ t=0$	$\frac{1}{4}F_2$	$\frac{1}{2}F_1+\frac{1}{2}F_2-\frac{1}{4}X^B$
$t=0\ t=0$	$\frac{1}{4}F_2$	$F_1+F_2-X_B$

where we assumed that there is default without new investment in the case $(0,0)$