

Example 2 . “Limit the issuance of the new debt. Moral hazard problem worsens at higher level of debt.”

Case 1. Suppose you have \$50 and are going to finance your project \$50 with your money and \$50 with debt.

$$\begin{aligned}L &= 50 \times (1 + 0.10) = 55. \\ \gamma_A &= \text{MAX}(0, Y - L) \\ &= \text{MAX}(0, 110 - 55) = 55 \\ \gamma_B &= 0.5\text{MAX}(0, 0 - 55) \\ &\quad + 0.5\text{MAX}(0, 220 - 55) \\ &= 82.5\end{aligned}$$

- the equity gain from investing in project B rather than project A? $82.5 - 55 = 27.5$
- As debt increases, project B is even more interesting.

Case 2. Suppose you have \$50 and you are now can borrow more. You can borrow \$150. Then, you can do 2 projects.

$$\begin{aligned}L &= 150 \times (1 + 0.10) = 165. \\ \gamma_A &= 220 - 165 \\ &= 55 \\ \gamma_B &= 0.5 \times \text{Max}(0, 0 - 165) \\ &\quad + 0.5 \times \text{Max}(0, 440 - 165) \\ &= 137.5\end{aligned}$$

- the equity gain from investing in project B rather than project A? $137.5 - 55 = 82.5$