4. Risk Management
Effect of Strike price $K$

- 440 - strike long put, Premium: 21.54
- 420 - " "
- 400 - " "

Calculations:
- $440 - 380 - 21.54 \times (1.05) = 37.38$
- $420 - 380 - 8.77 \times (1.05) = 30.79$
- $400 - 380 - 2.21 \times (1.05) = 17.68$
Reason to Hedge

- Tax
- Bankruptcy & distress costs
- Costly external financing
- Increase debt capacity
- Managerial risk aversion
- Non-financial risk management
Reasons not to hedge

- Transaction costs, commissions, and bid-ask spread
- Need to assess the strategy
- Need to manage transactions
- Need for more complicated reporting
**Effect of Tax**

Suppose tax rate 40%.

**Before Tax**

\[
\text{\textit{profit}} \quad \begin{array}{c}
\text{\$9} \\
\uparrow \\
\$10 \\
\uparrow \\
\$11.2
\end{array}
\]

\[\text{E(profit)} = (-1)(.5) + (1.2)(.5)\]

\[\quad = \$ .1\]

**After Tax**

\[
\text{\textit{profit}} \quad \begin{array}{c}
\text{\$9} \\
\downarrow \\
\$10 \\
\downarrow \\
\$11.2
\end{array}
\]

\[\text{E(profit)} = (-1)(.5) + (1.2)(.6)(.5)\]

\[\quad = -\$ .14\]

Correct function.
After hedging with forward

\[ \$10.1 \text{ exercise price} \]

Because of tax, \$1 loss = \$1 profit (before tax).

\[ E(\text{profit}) = \$0.06 \]

\[ E(\text{profit}) = \$-0.1 \]

Before

After