Capital Structure Theory With Corporate Taxes Included in the

Analysis Proposition I (world with taxes)

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Value of the levered firm (V_L) = Value of the unlevered firm (V_U) + PV of interest tax shield (T_C*B)

$= V_U + T_c * (r_B*B)/r_B$

$V_L = V_U + T_c * B$

Note that we discount the interest tax shield as a perpetuity. This is because zero growth is assumed in the MM model.

r_b*B: interest expense per year

T_c*$(r_B$*B): interest tax shield per year

$T_c * (r_B*B)/r_B$: present value of interest tax shields

$= T_c * B$

Example:

	Unlevered Firm	Levered Firm
NOI	$500,000	$500,000
interest paid	0	- $150,000
taxable income	$500,000	$350,000
tax @ 35%	- $175,000	- $122,500
NI	$325,000	$227,500
interest + NI	$325,000	$377,500

$V_U = \$325,000 / .10 = \$3,250,000$

$V_L = V_U + T_c*B = \$3,250,000 + (.35*\$2,500,000) = \$4,125,000$

Note: The levered firm has $2.5 million of debt financing. This is the same levered firm as in the previous "no tax world" example.

According to MM with taxes, the optimal capital structure is close to 100% debt.

Reference Lecture Slides 44 and 47 for numerical illustrations!