

Corpfm, Mod 9: Depreciation Tax Credit

Jacob: What is a depreciation tax credit?

Rachel: Suppose a firm buys machinery for \$40 million, which last 4 years. It expect to earn \$14.5 million a year from the machinery, and its cost of capital is 12% per annum.

If the tax rate is zero, the net present value (in \$000,000) is

$$-40 + 14.5 / 1.12 + 14.5 / 1.12^2 + 14.5 / 1.12^3 + 14.5 / 1.12^4 = \$4.04$$

If the tax rate is 35% and all cash flows are taxable income (either positive or negative), the net present value is

$$(1 - 35\%) \times (-40 + 14.5 / 1.12 + 14.5 / 1.12^2 + 14.5 / 1.12^3 + 14.5 / 1.12^4) = \$2.63$$

If the tax rate is 35% and the machinery is depreciated 25% each year, the net present value is

$$\begin{aligned} & -40 + (14.5 / 1.12 + 14.5 / 1.12^2 + 14.5 / 1.12^3 + 14.5 / 1.12^4) \times (1 - 35\%) \\ & + (10 / 1.12 + 10 / 1.12^2 + 10 / 1.12^3 + 10 / 1.12^4) \times 35\% = (\$0.74) \end{aligned}$$

If the tax rate is 35% and the machinery is depreciated 50% each of the first two year, the net present value is

$$\begin{aligned} & -40 + (14.5 / 1.12 + 14.5 / 1.12^2 + 14.5 / 1.12^3 + 14.5 / 1.12^4) \times (1 - 35\%) \\ & + (20 / 1.12 + 20 / 1.12^2) \times 35\% = \$0.46 \end{aligned}$$

The depreciation tax credit is the present value of the tax refunds created by the \$10 million or \$20 million tax depreciation.

Jacob: Why is this a tax credit? The net present value is greater with no taxes or with all cash flows taxed when they occur.

Rachel: Think of the net present value as no tax offset for buying the machinery and a tax on each year's income. This gives a low (negative) present value. The tax credit is the savings from depreciation.