# DCF: Personal Income Tax
# Personal income tax and leverage

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# The pros and the cons 2

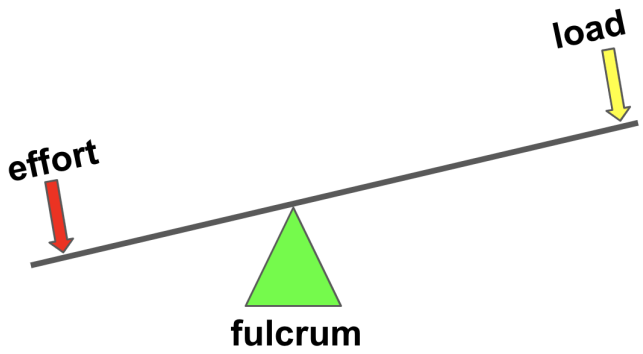
Why should we incorporate personal income tax?

- Personal income tax influences consumption and hence values.
- German CPAs take personal tax into account since 1997.

CPAs in other countries are more hesitant. Typically:
"Incorporation of personal income tax is not necessary because it cancels."

# Unlevered and levered






A typical lever (Source: Wikicommons)

In Chapter 2 (Corporate Income Tax) we used the terms

- *unlevered* = not indebted,
- *levered* = indebted.

This was appropriate because

- low debt implies high tax burden,
- high debt leverages low tax burden.

# Continue former designation? 4

Now we are looking at personal income tax. Does the tax burden depend on indebtedness?

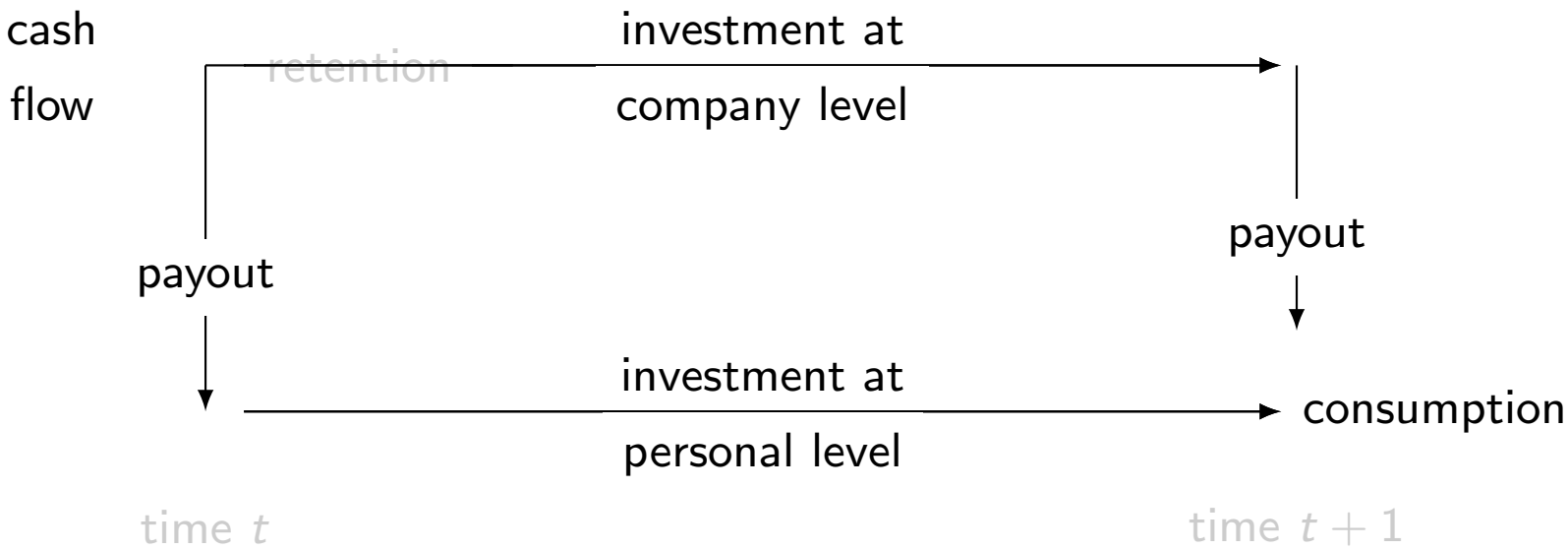
**No**, if risk-free interest and dividends are taxed with the same rate (which we will assume for the moment): The personal tax of the shareholder—given the distribution—is independent of debt.

But now, the distribution policy plays an important role.

# New interpretation

Our focus lies on the tax burden of shareholders. And here we notice that

- full distribution implies high tax burden,
- partial distribution **leverages** low tax burden.



# Debt and leverage



The levered and the unlevered firm in this chapter are completely self-financed (no debt):

| Corporate Income Tax | |
|---|---|
| unlevered | not indebted |
| levered | indebted |
| further assump. | full distribution |

The levered and the unlevered firm in this chapter are completely self-financed (no debt):

| Personal Income Tax | |
|---|---|
| unlevered | **full distribution** |
| levered | **partial distribution** |
| further assump. | self-financed |

That is to say that the unlevered firms of Chapters 2 and 3 are the same, but not the levered companies.

# New interpretation of variables



| | |
|---|---|
| $\widetilde{V}_t^{\mathrm{u}}$ | Market value with full distribution |
| $\widetilde{V}_t^{\mathrm{l}}$ | Market value with partial distribution |
| $\widetilde{\widetilde{CF}}_t^{\mathrm{u}}$ | Free cash flow with full distribution |
| $\widetilde{\widetilde{CF}}_t^{\mathrm{l}}$ | Free cash flow with partial distribution |
| $\widetilde{\widetilde{Tax}}_t^{\mathrm{u}}$ | Personal income tax with full distribution |
| $\widetilde{\widetilde{Tax}}_t^{\mathrm{l}}$ | Personal income tax with partial distribution |

# Positive dividends



With corporate income tax negative cash flows meant nothing more than that the financiers infused the company with further equity. (If this was no longer possible we spoke of insolvency.)

But negative payments do not make any sense in the case of dividends. Thus we will presuppose that the levered and the unlevered firm's cash flows are large enough so that the dividends cannot turn negative.

# Summary



Levered and unlevered for personal income tax means partial and full distribution.

The levered firm has a tax advantage.