# Discounted Cash Flow: Free Cash Flow

Michael R. Roberts
William H. Lawrence Professor of Finance
The Wharton School, University of Pennsylvania

# Last Time

## Discounted Cash Flow (DCF)

- Decision making
  - NPV rule
  - IRR
  - Payback
- Practical approach

# This Time

## Discounted Cash Flow (DCF)

- Free Cash Flow

# Free Cash Flow

# Recall: Two components to NPV

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1. Free Cash Flows

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2. Discount Rate

# Recall: Two components to NPV

1. Free Cash Flows
2. Discount Rate

FCF = (Revenue

FCF = (Revenue – Costs

FCF = (Revenue – Costs – Depreciation)

$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_C)$$

Unlevered Net Income
Net Operating Profit After Taxes (NOPAT)
Earnings Before Interest After Taxes (EBIAT)

$$FCF = (Revenue - Costs - Depreciation) \times (1 - t_C)$$

$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_C) + \text{Depreciation}$$

$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_C) + \text{Depreciation} - \text{Capital Expenditures}$$

$$\begin{aligned} \text{FCF} = &(\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_C) \\ &+ \text{Depreciation} - \text{Capital Expenditures} \\ &- \text{Change in Net Working Capital} \end{aligned}$$

FCF = (Revenue – Costs – Depreciation) x (1 – $t_C$)
+ Depreciation – Capital Expenditures
– Change in Net Working Capital

Lesson: FCF is the residual cash flow left over after **all** of the project's requirements have been satisfied and implications accounted for.

FCF = (Revenue – Costs – Depreciation) x (1 – $t_C$)
+ Depreciation – Capital Expenditures
– Change in Net Working Capital

Lesson: FCF is the cash flow that can be distributed to the financial claimants (e.g., debt and equity) of the project or company

$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_C) + \text{Depreciation} - \text{Capital Expenditures} - \text{Change in Net Working Capital}$$

Lesson: FCF is **not** the same as accounting cash flow from the statement of cash flows (SCF) but we can derive FCF from the SCF.

$$\text{FCF} = (\text{Revenue} - \text{Costs} - \text{Depreciation}) \times (1 - t_C) + \text{Depreciation} - \text{Capital Expenditures} - \text{Change in Net Working Capital}$$

Lesson: FCF is more precisely unlevered free cash flow to distinguish it from free cash flow to equity (FCFE) or levered free cash flow.

FCFE = (Revenue – Costs – Depreciation) x (1 – $t_C$)
+ Depreciation – Capital Expenditures
– Change in Net Working Capital
– Interest x (1 – $t_C$)
+ Net Borrowing

$$FCFE = FCF - Interest \times (1 - t_C) + Net\ Borrowing$$

$$FCFE = FCF - Interest \times (1 - t_C) + Net\ Borrowing$$

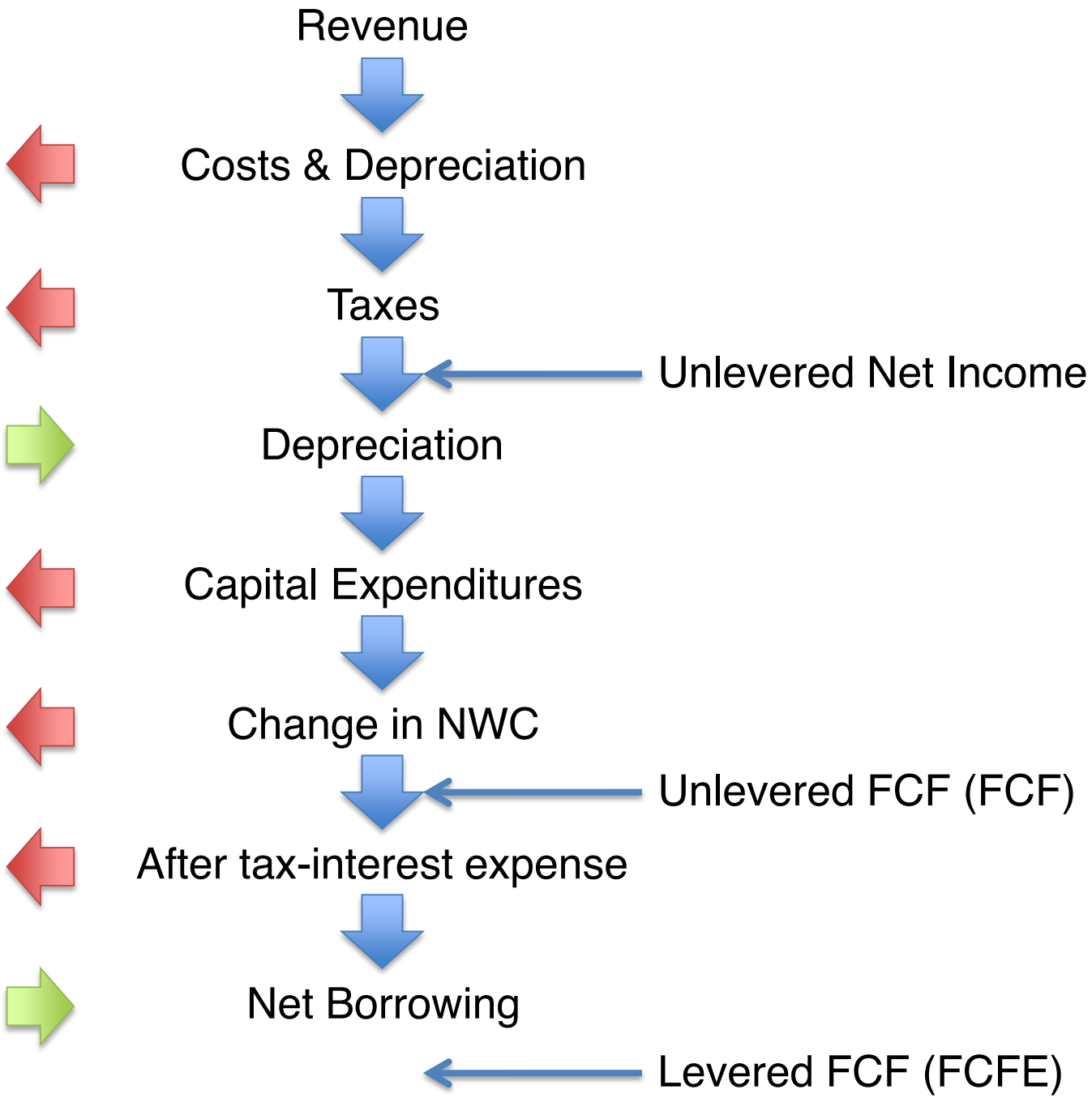
Lesson: FCFE is residual cash flow left over after **all** of the project's requirements have been satisfied, implications accounted for, *and* all debt financing has been satisfied

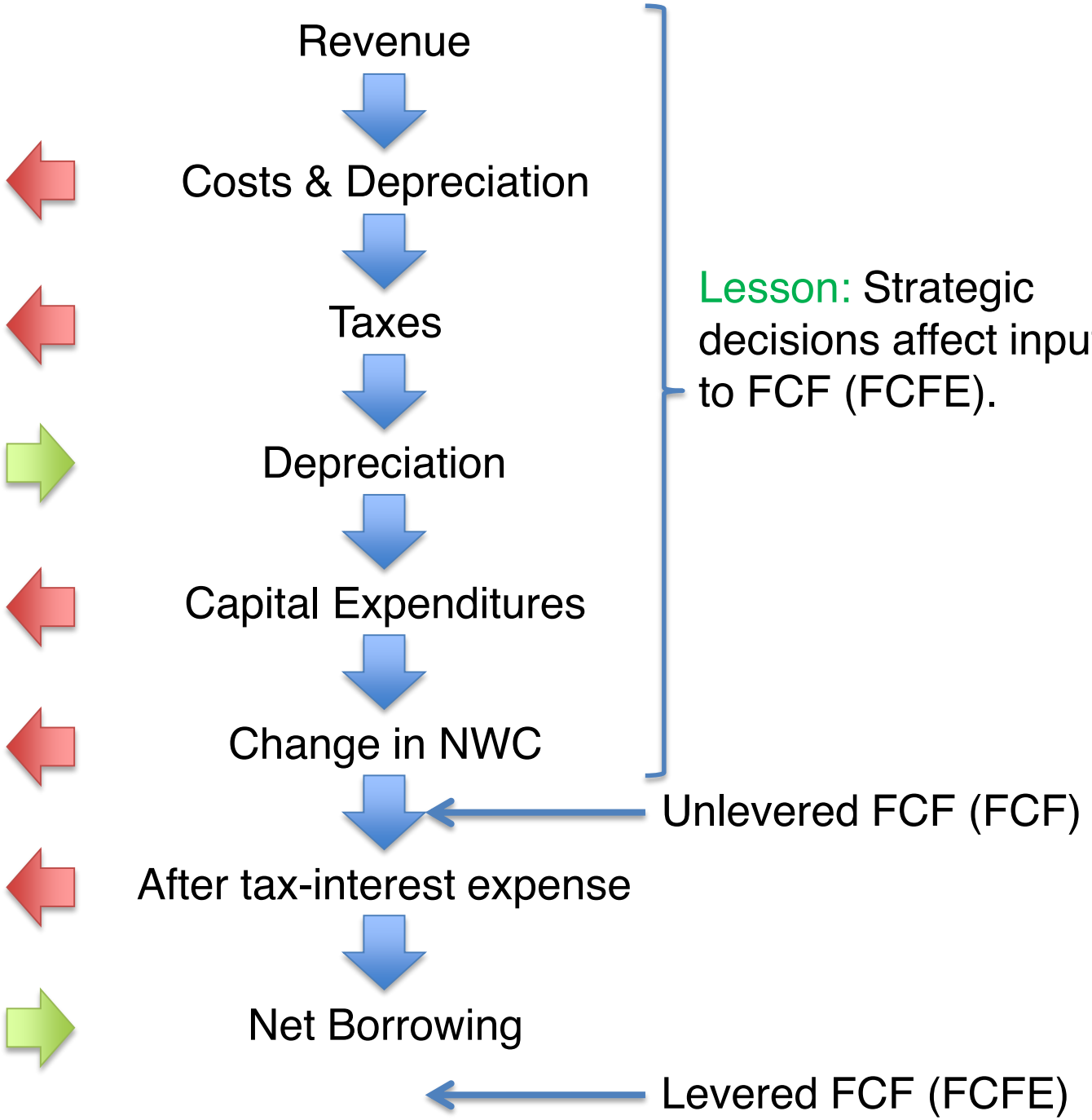
$$FCFE = FCF - Interest \times (1 - t_C) + Net\ Borrowing$$

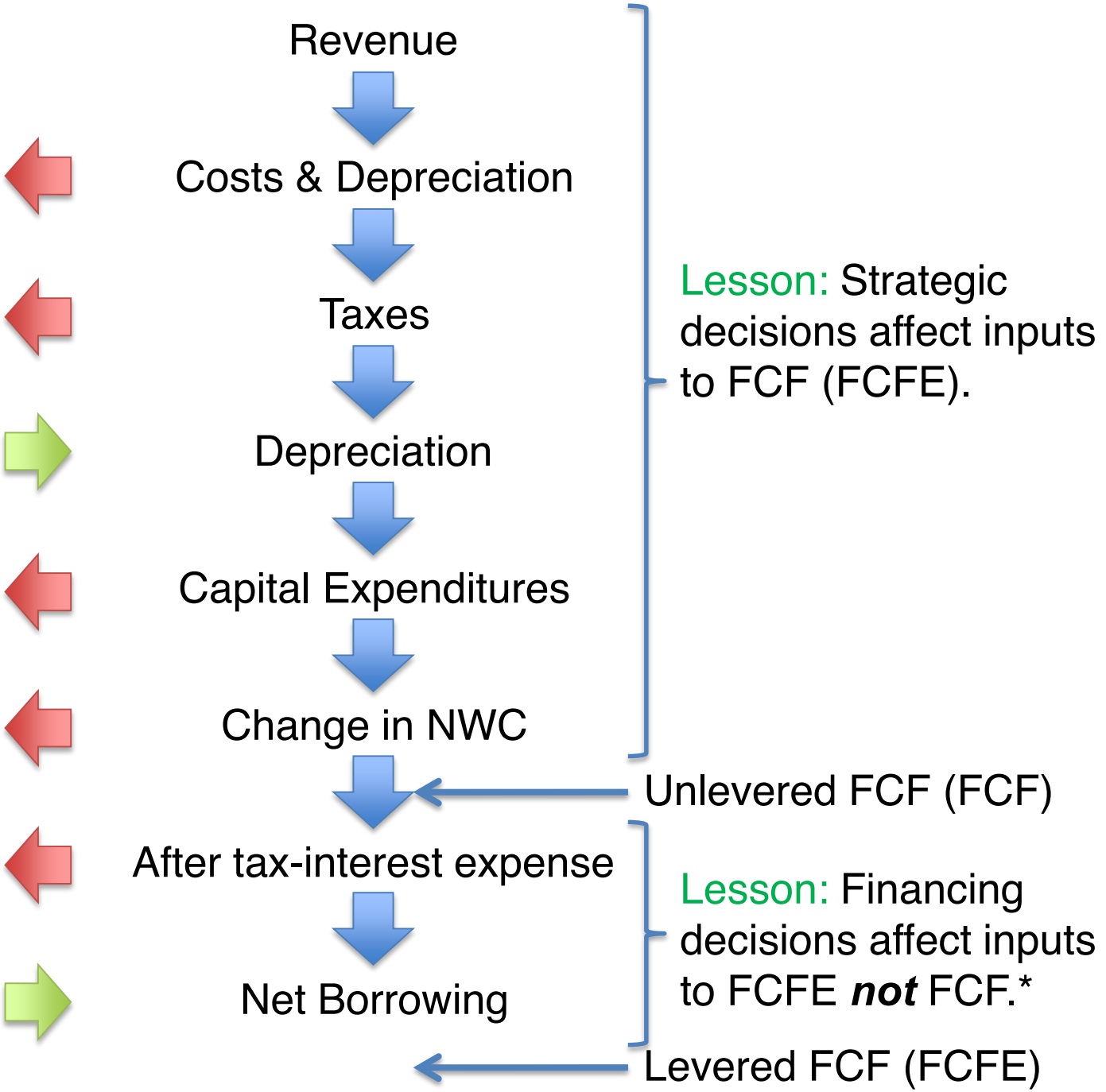
Lesson: FCFE is the cash flow that can be distributed to the shareholders (i.e., equity) of the project or company

$$FCFE = FCF - Interest \times (1 - t_C) + Net\ Borrowing$$

Lesson: FCF is more precisely levered free cash flow because it is affected by the choice of leverage (i.e., debt)







# Summary

# Lessons

- NPV is a decision rule that quantifies the value implications of decisions
  - Positive NPV implies value increasing
  - Negative NPV implies value decreasing

# Coming up next

- Discounted Cash Flow (DCF)
  - Forecast Drivers