



# Financial Modeling



MUBADALA



EMERGING MARKET  
FINANCIAL TRAINING

1

# Accounting 101 for Modeling





## Accounting Foundations

- Core Financial Statements (IS, BS and CFS)
- Supplementary Financial Statements (OCI, SOCE, Notes)
- Audit Reports (Audit Opinions, Key Audit Matters, Emphasis of Matter)
- Performance Measures (Efficiency, Profitability, Solvency)

## Accounting Intermediate

- Investment Accounting
- On Balance Sheet Finance (Amortised Costs)
- Off Balance Sheet Finance (Leases and Securitisation)
- Pension Obligations
- Types of Equity Dilution



# Overview of an Audit Report: Part 1

## Independent audit report

1. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### First or 'opinion' paragraph/ section

Provides unqualified audit opinion

- True or fair view (IFRS) and/or Fairly presented (IFRS and US)
- Clean opinion

Also provides qualified opinion, giving limitations or exceptions to accounting standards and explanatory paragraphs regarding exceptions

### Second or 'basis of opinion' paragraph/ section

Describes the basis for providing the opinion

Accounting Standards under which the Audit was conducted

Confirmation of independence and ethical standards of auditors

'Going concern' conclusions

### Third or 'scope' paragraph/ section

Details the nature of the audit process



# Types of Audit Opinions

## Unqualified opinion

→ Clean opinion

FINANCIAL STATEMENTS  
**CORRECT**

Financial statements are free from any material errors and omissions

## Qualified opinion

FINANCIAL STATEMENTS  
**FAIRLY PRESENTED**

There are some major exceptions to the accounting rules but, overall, financial statements are fairly presented

## Adverse opinion

FINANCIAL STATEMENTS  
**WRONG**

There are material and pervasive issues in the financial reports

Financial statements are misrepresented or misstated

## Disclaimer of opinion

FINANCIAL STATEMENTS  
**INSUFFICIENT EVIDENCE**

Auditors are unable to express an opinion



## Independent audit report

4. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Fourth or 'Key Audit Matters' paragraph/ section

Highlight for the users/ reader of the report

- The existence of significant events that should be disclosed
- Any areas that involved significant judgment
- Emphasis of Matter

### Fifth paragraph/ section

Describes the materiality thresholds for the usability of the financial statements

Directors responsibilities towards the financial statements

Auditors' responsibilities towards the audit

### Sixth paragraph/ section

Any other reporting responsibility (legal and/or regulatory)



## Definition:

Key Audit Matters (KAM) are based on topics which are discussed with those (on the company's side) responsible for governance. The auditor then assesses these matters and identifies which ones require significant attention during the audit

## Identification Criteria required by the auditor to consider:

- Areas that are deemed to be susceptible to higher risks of material misstatements.
- Any area that requires significant auditor's judgement.
- The effect on the audit of significant events or transactions that have taken place during the period.



# Emphasis of Matter

An EOM paragraph aims to highlight to the users a crucial matter that has already been disclosed in the financial statements, which the auditor deems essential for their comprehension.

In other words.....



***you know that note in the financial statements, the one about the uncertainty surrounding the legal dispute? We, the auditors, think it's really important, so make sure you read it!***





# Emphasis of Matter – Example of Boeing 737 MAX Grounding

**Liabilities related to the 737 MAX Grounding – Refer to Notes 13 and 21 to the financial statements**

*Critical Audit Matter Description*

In 2019, following two fatal 737 MAX accidents, the Federal Aviation Administration (FAA) and non-U.S. civil aviation authorities issued orders suspending commercial operations of 737 MAX aircraft (the “737 MAX Grounding”). Deliveries resumed in the U.S. in late 2020 following rescission by the FAA of its grounding order. The 737 MAX remains grounded in certain non-U.S. jurisdictions. In addition, multiple legal actions have been filed against the Company following the fatal accidents and various governmental and regulatory investigations and inquiries continue relating to the accidents and the 737 MAX aircraft.

During 2019, the Company recorded an initial liability in connection with estimated payments, concessions and other in-kind consideration it intends to provide to customers for disruptions related to the 737 MAX Grounding and associated delivery delays. This liability totaled \$5.5 billion at December 31, 2020 and is reflected in the financial statements in Accrued liabilities. This represents the Company’s best estimate of future concessions and other consideration to its customers, and is necessarily based on individual negotiations with customers and the substance of such negotiations.

Significant judgment is involved in management’s ability to assess and reasonably estimate potential additional financial statement effects or a range of loss, if any, resulting from the outcome of 737 MAX-related litigation and the results of the various ongoing governmental and regulatory investigations and inquiries related to the 737 MAX.

The subjectivity of the liability associated with providing consideration to customers resulting from the 737 MAX Grounding and the complexity of assessing the outcome of the ongoing litigation and investigations related to the 737 MAX required a high degree of auditor judgment and increased audit effort.

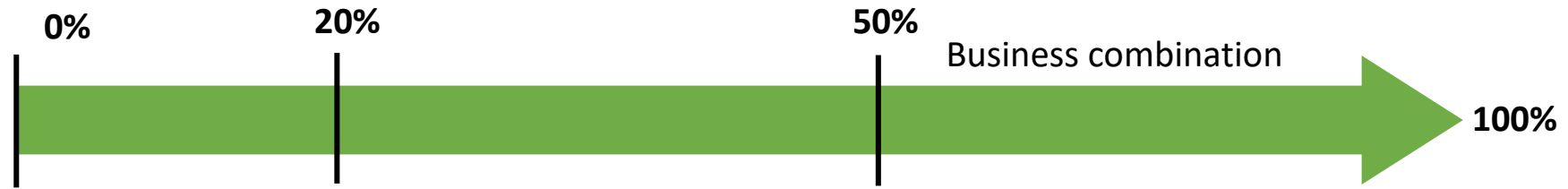


# What are the Auditors trying to tell you?

1. During 2019, Boeing recorded a liability of \$5.5 billion related to estimated payments, concessions, and other consideration that it intends to provide to customers for disruptions caused by the Grounding and associated delivery delays.
2. This liability, which reflects Boeing's best estimate of future concessions and consideration to customers, is based on individual negotiations with customers and the substance of such negotiations.
3. However, the liability is subjective, and the complexity of assessing the outcome of the ongoing litigation and investigations requires a high degree of auditor judgment and increased audit effort.



# Investment Accounting



## A firm issues a 3 year bond:

- Face Value = \$40,000
- Coupon = 8% p.a, payable semi
- The firm receives \$39,468 (before incurring issue costs)
- Issue costs = \$500
- What is the Effective Interest Rate on this bond?

## Calculate the following:

- Interest expense recorded in the Income Statement (every year)
- Value of the bond liability in the Balance Sheet (every year)





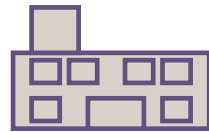
# Leases: Operating vs Finance

## Operating lease

## Finance lease

**Owner = Lessor**

Cash ↑  
Rental income ↑



Asset on lessor's  
balance sheet

**User = Lessee**

Cash ↓  
Rental expense ↑

Assets ↓ Receivables ↑  
Cash ↑ Receivables ↓  

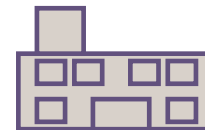
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Interest income ↑

Assets ↑ Liabilities ↑  

---

Depreciation ↑ Interest ↑  
Cash ↓



Asset on lessee's  
balance sheet

*.....new changes introduced since 2019*



1. Current treatment of operating leases can be retained in two circumstances:
  - Short term leases
  - Low value assets
2. The New Approach
  - Initial Measurement of Asset Value
  - Subsequent Measurement of Asset Value



E.g. Securitisation of trade  
receivables

↓  
**but**

**Key questions remain:**

1. Transfer of risks?
2. Equity relief?

—————→ **Why is it done?**



## Basic earnings per share: Computation

$$\text{EPS} = \frac{\text{EAT} - \text{Preference dividends}}{\text{Weighted average number of ordinary shares}}$$

- Basic earnings per share: Weighted average number of common shares
- Restatement of prior year EPS
  - Bonus issues/scrip dividends/rights issue





## Complex capital structure: Dilutive securities

- Convertible debt
- Convertible preference shares
- Share options/warrants

## Diluted earnings per share: Computation

$$\text{Diluted EPS} = \frac{\text{Adjusted income available for ordinary shares}}{\text{Weighted average ordinary and potential ordinary shares}}$$



## Calculate the Basic and Diluted EPS

- Net income: \$25,000
- Ordinary shares: 5,000 shares outstanding for the entire year
- Preference shares: 2,000 \$100 8% shares outstanding for the entire year
- Convertible bonds: 200 \$1,000 7% bonds issued during the previous year for \$120,000. Each is convertible into 50 shares.
- Tax rate: 30%



## Calculate the Basic and Diluted EPS

- Net income: \$25,000
- Ordinary shares: 5,000 shares outstanding for the entire year
- Preference shares: 2,000 \$100 8% shares, each convertible into two shares, outstanding for the entire year
- Tax rate: 30%



# Foundations for Modeling





# Effective Models: Foundations

Analysis Framework

What are the main drivers?

Build a suitable model

Develop assumptions



# Effective Models: Foundations

Analysis Framework



- **Macro**
- **Industry**
- **Business**
- **Management**

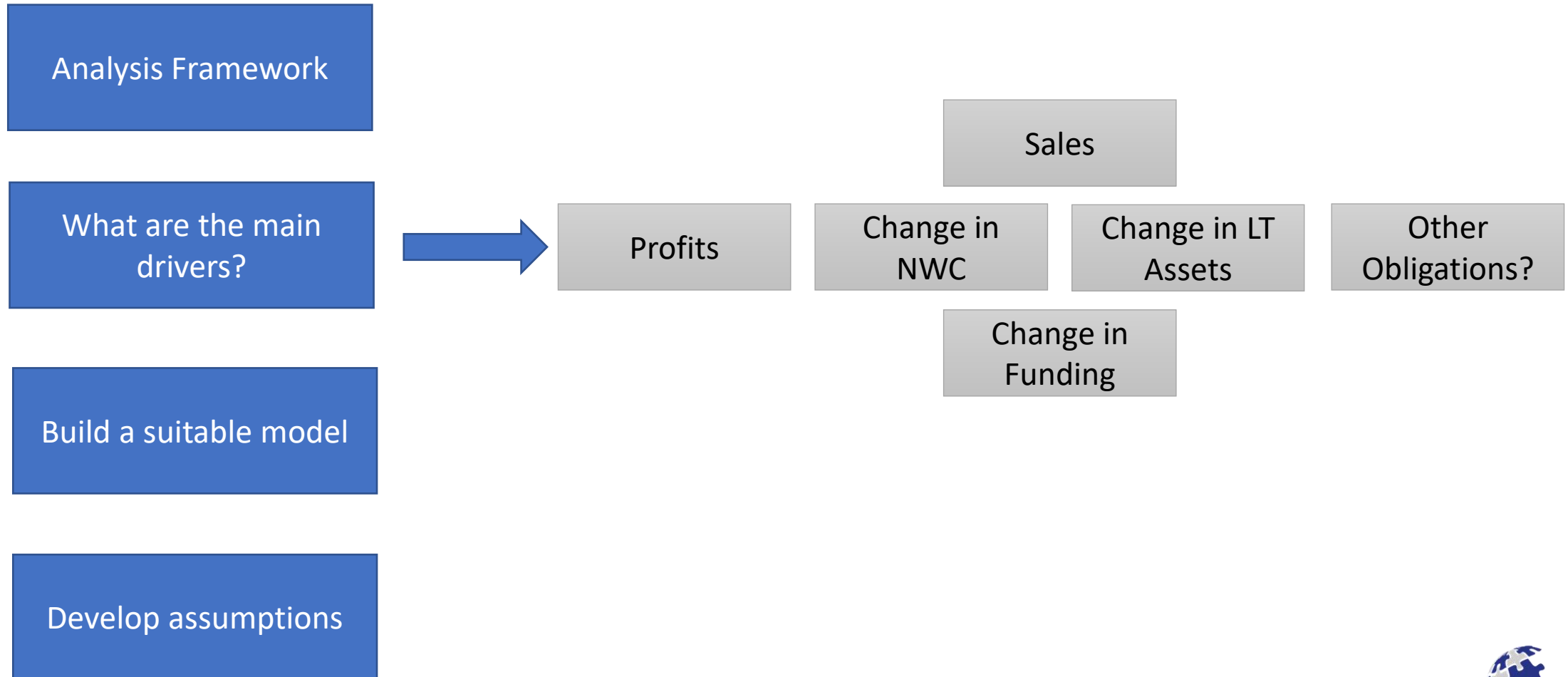
What are the main drivers?

Build a suitable model

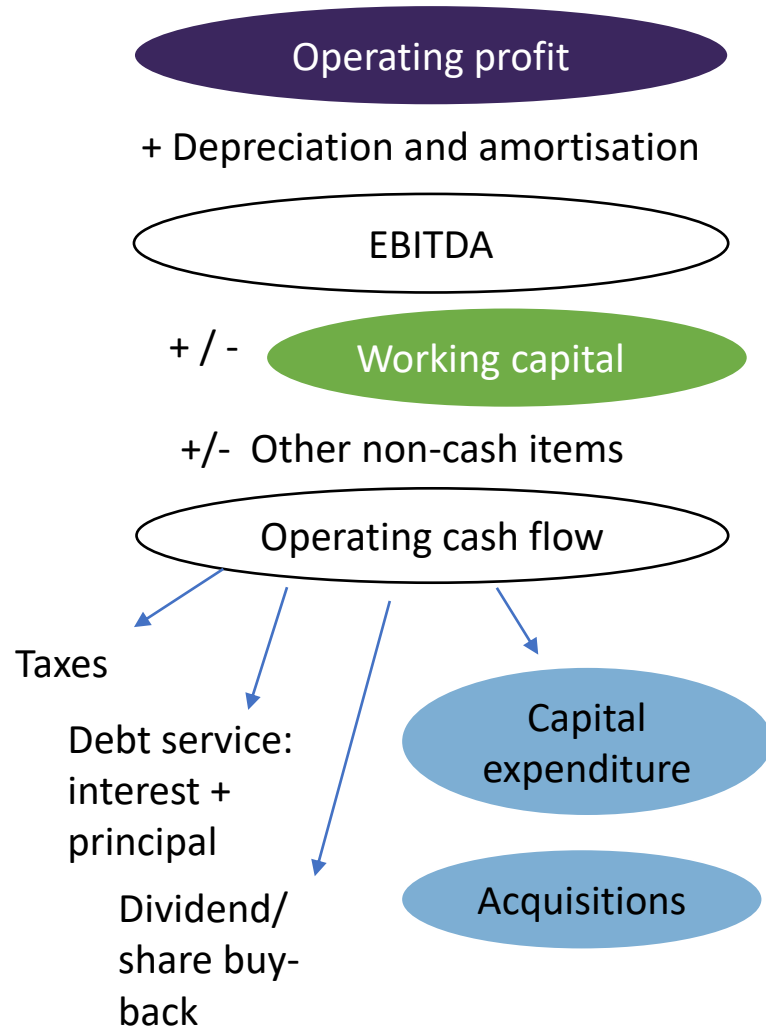
Develop assumptions



# Effective Models: Foundations



# Linking Profits to Cash Flow



- Margin pressures: Lower prices/higher marketing costs to retain or gain market share
- Inability to transfer increasing raw material/energy costs

- Increase of trade receivable days to support revenue
- Loss of ability to negotiate supplier terms

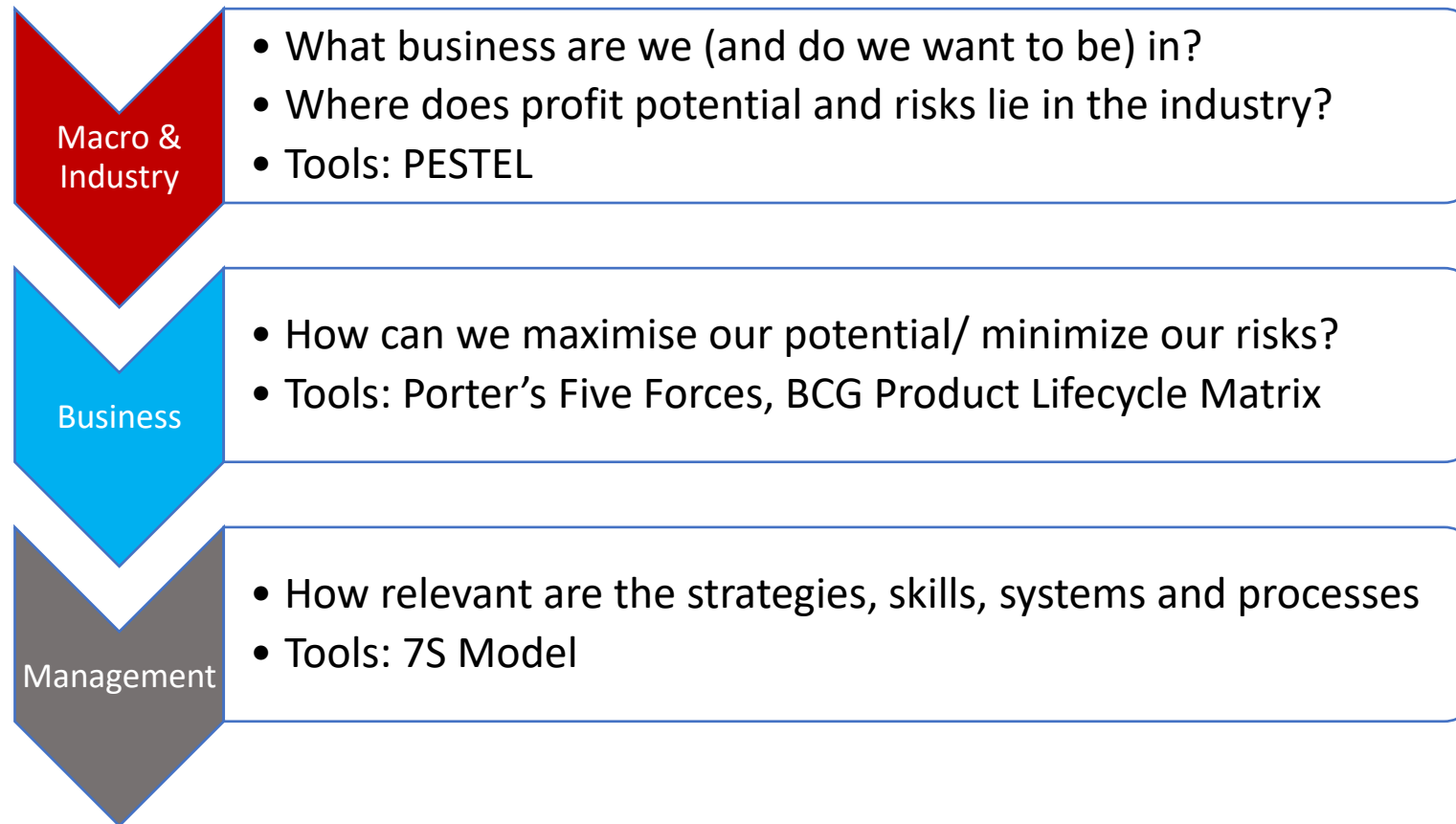
- Higher capital expenditures required to fuel growth, improve products, increase efficiency or change/shift product mix
- M&A activity may be required to reduce competition or as alternative to capital expenditure



# Analytical Framework



# Qualitative Analysis





# Sources of Qualitative Information

You are an analyst seeking to study the qualitative drivers for an sector/ industry. What are the possible sources through which you could gather relevant information?

1. ....
2. ....
3. ....
4. ....
5. ....



# Sources of Qualitative Information

- Economic Reports and Surveys
- Industry Reports
- Annual Reports
- Management Meetings
- Trade Publications
- Market Indicators and Surveys



# The Annual Report

The Annual Report is the primary public document used to disclose the company's business and financial performance?

## **Question:**

What are the various topics that you would expect to see in a Company's Annual Report?



# Exercise: Qualitative Analysis

**Please refer to the handouts:**

1. Starbucks Qualitative Exercise
2. Starbucks FY 22 Annual Report

Please work in your groups and be prepared to share your findings with the class.



**STARBUCKS CORPORATION**  
**CONSOLIDATED STATEMENTS OF EARNINGS**

*(in millions, except per share data)*

Fiscal Year Ended	Oct 2, 2022	Oct 3, 2021	Sep 27, 2020
Net revenues:			
Company-operated stores	\$ 26,576.1	\$ 24,607.0	\$ 19,164.6
Licensed stores	3,655.5	2,683.6	2,327.1
Other	2,018.7	1,770.0	2,026.3
<b>Total net revenues</b>	<b>32,250.3</b>	<b>29,060.6</b>	<b>23,518.0</b>
Product and distribution costs	10,317.4	8,738.7	7,694.9
Store operating expenses	13,561.8	11,930.9	10,764.0
Other operating expenses	461.5	359.5	430.3
Depreciation and amortization expenses	1,447.9	1,441.7	1,431.3
General and administrative expenses	2,032.0	1,932.6	1,679.6
Restructuring and impairments	46.0	170.4	278.7
<b>Total operating expenses</b>	<b>27,866.6</b>	<b>24,573.8</b>	<b>22,278.8</b>
Income from equity investees	234.1	385.3	322.5
<b>Operating income</b>	<b>4,617.8</b>	<b>4,872.1</b>	<b>1,561.7</b>
Net gain resulting from divestiture of certain operations	—	864.5	—
Interest income and other, net	97.0	90.1	39.7
Interest expense	(482.9)	(469.8)	(437.0)
<b>Earnings before income taxes</b>	<b>4,231.9</b>	<b>5,356.9</b>	<b>1,164.4</b>
Income tax expense	948.5	1,156.6	239.7
<b>Net earnings including noncontrolling interests</b>	<b>3,283.4</b>	<b>4,200.3</b>	<b>924.7</b>
<b>Net earnings/(loss) attributable to noncontrolling interests</b>	<b>1.8</b>	<b>1.0</b>	<b>(3.6)</b>
<b>Net earnings attributable to Starbucks</b>	<b>\$ 3,281.6</b>	<b>\$ 4,199.3</b>	<b>\$ 928.3</b>
<b>Earnings per share — basic</b>	<b>\$ 2.85</b>	<b>\$ 3.57</b>	<b>\$ 0.79</b>
<b>Earnings per share — diluted</b>	<b>\$ 2.83</b>	<b>\$ 3.54</b>	<b>\$ 0.79</b>
Weighted average shares outstanding:			
Basic	1,153.3	1,177.6	1,172.8
Diluted	1,158.5	1,185.5	1,181.8



**STARBUCKS CORPORATION**  
**CONSOLIDATED BALANCE SHEETS**  
*(in millions, except per share data)*

	Oct 2, 2022	Oct 3, 2021
<b>ASSETS</b>		
Current assets:		
Cash and cash equivalents	\$ 2,818.4	\$ 6,455.7
Short-term investments	364.5	162.2
Accounts receivable, net	1,175.5	940.0
Inventories	2,176.6	1,603.9
Prepaid expenses and other current assets	483.7	594.6
Total current assets	7,018.7	9,756.4
Long-term investments	279.1	281.7
Equity investments	311.2	268.5
Property, plant and equipment, net	6,560.5	6,369.5
Operating lease, right-of-use asset	8,015.6	8,236.0
Deferred income taxes, net	1,799.7	1,874.8
Other long-term assets	554.2	578.5
Other intangible assets	155.9	349.9
Goodwill	3,283.5	3,677.3
<b>TOTAL ASSETS</b>	<b>\$ 27,978.4</b>	<b>\$ 31,392.6</b>
<b>LIABILITIES AND SHAREHOLDERS' EQUITY/(DEFICIT)</b>		
Current liabilities:		
Accounts payable	\$ 1,441.4	\$ 1,211.6
Accrued liabilities	2,137.1	2,321.2
Accrued payroll and benefits	761.7	772.3
Current portion of operating lease liability	1,245.7	1,251.3
Stored value card liability and current portion of deferred revenue	1,641.9	1,596.1
Short-term debt	175.0	—
Current portion of long-term debt	1,749.0	998.9
Total current liabilities	9,151.8	8,151.4
Long-term debt	13,119.9	13,616.9
Operating lease liability	7,515.2	7,738.0
Deferred revenue	6,279.7	6,463.0
Other long-term liabilities	610.5	737.8
Total liabilities	36,677.1	36,707.1
Shareholders' deficit:		
Common stock (\$0.001 par value) — authorized, 2,400.0 shares; issued and outstanding, 1,147.9 and 1,180.0 shares, respectively	1.1	1.2
Additional paid-in capital	205.3	846.1
Retained deficit	(8,449.8)	(6,315.7)
Accumulated other comprehensive income/(loss)	(463.2)	147.2
Total shareholders' deficit	(8,706.6)	(5,321.2)
Noncontrolling interests	7.9	6.7
Total deficit	(8,698.7)	(5,314.5)
<b>TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY/(DEFICIT)</b>	<b>\$ 27,978.4</b>	<b>\$ 31,392.6</b>



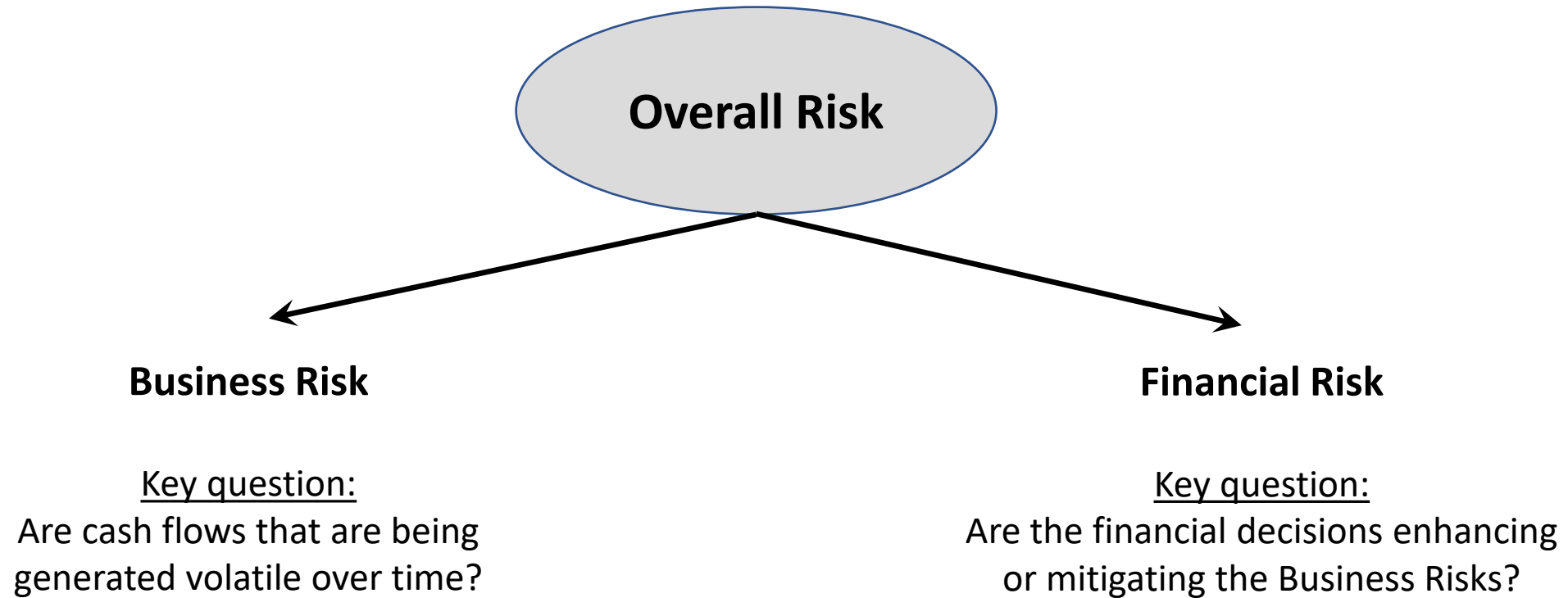


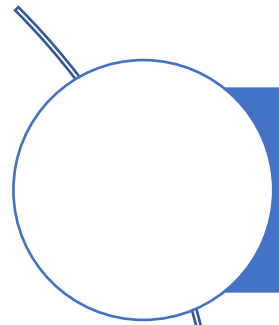
**STARBUCKS CORPORATION**  
**CONSOLIDATED STATEMENTS OF CASH FLOWS**  
*(in millions)*

<b>Fiscal Year Ended</b>	<b>Oct 2, 2022</b>	<b>Oct 3, 2021</b>	<b>Sep 27, 2020</b>
<b>OPERATING ACTIVITIES:</b>			
Net earnings including noncontrolling interests	\$ 3,283.4	\$ 4,200.3	\$ 924.7
Adjustments to reconcile net earnings to net cash provided by operating activities:			
Depreciation and amortization	1,529.4	1,524.1	1,503.2
Deferred income taxes, net	(37.8)	(146.2)	(25.8)
Income earned from equity method investees	(268.7)	(347.3)	(280.7)
Distributions received from equity method investees	231.2	336.0	227.7
Net gain resulting from divestiture of certain operations	—	(864.5)	—
Stock-based compensation	271.5	319.1	248.6
Non-cash lease cost	1,497.7	1,248.6	1,197.6
Loss on retirement and impairment of assets	91.4	226.2	454.4
Other	(67.8)	(6.0)	24.5
Cash provided by/(used in) changes in operating assets and liabilities:			
Accounts receivable	(326.1)	(43.0)	(2.7)
Inventories	(641.0)	(49.8)	(10.9)
Income taxes payable	(149.6)	286.1	(1,214.6)
Accounts payable	345.5	189.9	(210.8)
Deferred revenue	(75.8)	(6.1)	31.0
Operating lease liability	(1,625.6)	(1,488.1)	(1,231.4)
Other operating assets and liabilities	339.6	609.8	(37.0)
Net cash provided by operating activities	4,397.3	5,989.1	1,597.8
<b>INVESTING ACTIVITIES:</b>			
Purchases of investments	(377.9)	(432.0)	(443.9)
Sales of investments	72.6	143.2	186.7
Maturities and calls of investments	67.3	345.5	73.7
Additions to property, plant and equipment	(1,841.3)	(1,470.0)	(1,483.6)
Net proceeds from the divestiture of certain operations	59.3	1,175.0	—
Other	(126.3)	(81.2)	(44.4)
Net cash used in investing activities	(2,146.3)	(319.5)	(1,711.5)
<b>FINANCING ACTIVITIES:</b>			
Repayments of commercial paper	175.0	(296.5)	—
Proceeds from issuance of short-term debt	36.6	215.1	1,406.6
Repayments of short-term debt	(36.6)	(349.8)	(967.7)
Proceeds from issuance of long-term debt	1,498.1	—	4,727.6
Repayments of long-term debt	(1,000.0)	(1,250.0)	—
Proceeds from issuance of common stock	101.6	246.2	298.8
Cash dividends paid	(2,263.3)	(2,119.0)	(1,923.5)
Repurchase of common stock	(4,013.0)	—	(1,698.9)
Minimum tax withholdings on share-based awards	(127.2)	(97.0)	(91.9)
Other	(9.2)	—	(37.7)
Net cash provided by/(used in) financing activities	(5,638.0)	(3,651.0)	1,713.3
Effect of exchange rate changes on cash and cash equivalents	(250.3)	86.2	64.7
Net increase/(decrease) in cash and cash equivalents	(3,637.3)	2,104.8	1,664.3
<b>CASH AND CASH EQUIVALENTS:</b>			
Beginning of period	6,455.7	4,350.9	2,686.6
End of period	\$ 2,818.4	\$ 6,455.7	\$ 4,350.9
<b>SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION:</b>			
Cash paid during the period for:			
Interest, net of capitalized interest	\$ 474.7	\$ 501.1	\$ 396.9
Income taxes	\$ 1,157.6	\$ 756.3	\$ 1,699.1

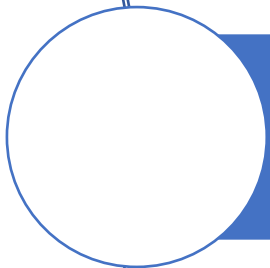


# What does this tell us?

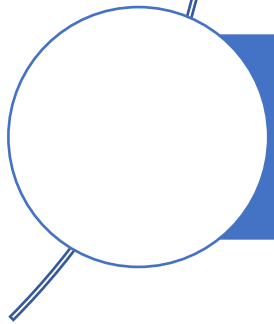




Financial Risks



Growth and Value Drivers



Introduction to Forecasting



Capital Structure

Financial Control

Financial Reporting



## Key Consideration: The level and appropriateness of Debt

### Question: How much debt can be serviced given the projected cash?

- Having forecasted the financials for ABC Ltd, you assess that they are likely to generate an annual adjusted cash flow of AED 18.7 mln (operating cash flow less other business expenses related to taxes, dividends and capex) over the next 5 years.
- Based on these projections, you would like to assess the maximum debt that the company should be taking on assuming:
  - *Scenario 1: There are no covenants from the banking group*
  - *Scenario 2: The banking group insists on a minimum coverage ratio of 1.2x*
- The company's cost of debt is assumed to be unchanged at 6%, and its tax rate at 30%



# Debt Capacity: Inputs

## Cash flow available to service debt (existing and new debt)

EBITDA

+/- Change in net working capital (NTA/NWI)

- Taxation

- Capital expenditure

- Dividends

+/- Other principal sources and uses

**Cash available to service debt**

**Discount rate:** After tax cost of borrowing reflecting new capital structure

Discount rate = Interest rate (1 - Tax rate)

**Number of years:** Average tenor of existing and new debt





# Where can it go wrong?



## Country

- Chronic and growing public sector deficits
- Weakening external debt-servicing capacity
- Signs of asset price bubbles

## Economy

- Falling GDP growth
- Unemployment rates increasing
- Rising inflation or deflation
- Depreciation in exchange rates

## Industry

- Consistently poor capacity utilization in identified industry
- Poor industrial growth rate in identified industry
- Adverse industry regulations



# Where can it go wrong?



## Operations

- Steady decline or rapid increase in sales
- Significant changes in NWC
- Frequent cash shortages

## Management

- Poor sponsor reputation
- Lack of management vision
- Frequent changes in ownership and key positions

## Financial

- Declining gross profit margin
- Rising levels of bad debt losses
- Rising levels of total assets, relative to sales/profits

## Investing

- Seemingly speculative inventory purchases
- Major procurement without proper rationale/financing
- Working capital needs funded by asset sales

## Perception

- Less positive media exposure
- Equity market collapse
- Recall of sold products
- A decrease in awareness of the client's brand and/or logo



# Where can it go wrong?



## Financial Risks

- Inappropriate levels and cost of Debt
- Debt Repayment profile
- Balance Sheet Mismatch Risks
- Market (e.g, FX, Interest Rate) Risks
- Capital Market Access Risks

**Higher Risk of Financial Distress**

=

**Higher Probability of Default on Debt**

=

**Loss Absorption by Equity Investors**



**There are a variety of methodologies that help us evaluate default risk:**

- Rating agency ratings – Moody's, S&P, etc
- Quantitative calculators – e.g. Moody's analytics (KMV), Altman Z-Scores
- Asset swap, credit and credit default spreads (CDS)
- Fundamental Credit Analysis



# Altman Z-Score

- Scoring model to 'predict' probability of default (or bankruptcy)
- Scoring range of 1 to 4
- A low (Z) score (< 1.8) suggests a higher likelihood of default
- A high (Z) score (> 3) suggests credit safety
- Formulaic approach using a combination of:
  - Financial ratios
  - A weight assigned to each financial ratio

$$\text{Z-Score} = 1.2(\text{R1}) + 1.4(\text{R2}) + 3.3(\text{R3}) + 0.6(\text{R4}) + 1(\text{R5})$$

R1 = Working Capital/Total Assets

R2 = Retained Earnings/Total Assets

R3 = EBIT/Total Assets

R4 = MV of Equity/Total Liabilities

R5 = Total Sales/Total Assets



# Financial Risks: Creative Accounting

## Company

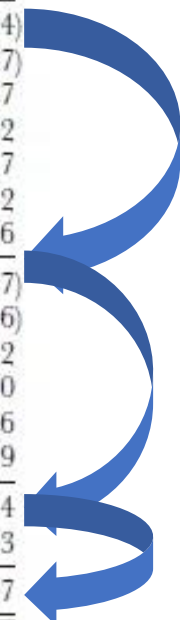
- A company with its accountant will have some discretion in how it reports revenues, costs, assets, etc.
- Management often seeks to show performance and financial condition in an optimistic, promising way

- What discretion or loopholes are available to management?
- Are there signs the company may be reporting results illegally?
- Are there signs management is misrepresenting financial condition
- Should analysts adjust reported information to account for true financial condition?





(Amounts in thousands, except percentages)	Year Ended December 31,	
	2016	2017
<b>Net loss</b>	\$ (429,690)	\$ (933,494)
Income tax (benefit) provision	16	(5,727)
Interest and other (income) expense net	33,400	7,387
Depreciation and amortization	88,952	162,892
Adjustments for Impact of Straight-lining of Rent <sup>(a)</sup>	188,746	272,927
Stock-based compensation expense <sup>(b)</sup>	22,660	295,362
Stock-based payments for services rendered by consultants <sup>(b)</sup>	1,594	7,326
<b>Adjusted EBITDA</b>	(94,322)	(193,327)
Other revenue <sup>(c)</sup>	(1,744)	(19,106)
Other operating expenses <sup>(d)</sup>	—	1,322
Sales and marketing <sup>(e)</sup>	42,653	139,180
Growth and new market development <sup>(f)</sup>	33,245	98,336
Pre-opening community expenses <sup>(g)</sup>	21,223	23,039
<b>Adjusted EBITDA before Growth Investments</b>	1,055	49,444
General and administrative expenses <sup>(h)</sup>	94,888	183,703
<b>Community Adjusted EBITDA</b>	\$ 95,943	\$ 233,147
<b>Membership and service revenue</b>	\$ 434,355	\$ 866,438
<b>Adjusted EBITDA Margin</b>	(21.6)%	(21.8)%
<b>Adjusted EBITDA before Growth Investments Margin</b>	0.2%	5.7%
<b>Community Adjusted EBITDA Margin</b>	22.1%	26.9%



Total Sales & Marketing \$143m so only \$4m for maintaining occupancy?



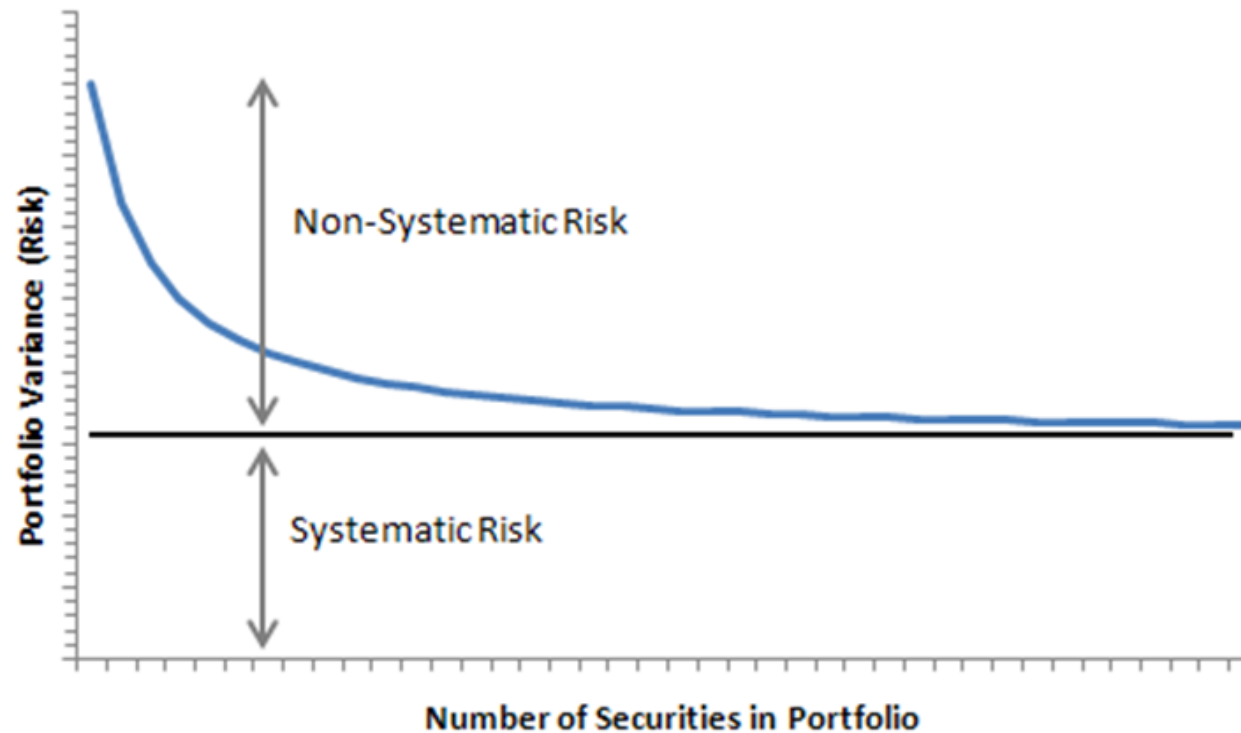
# Examples of Creative Accounting

- Premature or fictitious **revenue recognition**
- Premature recognition of **suppliers discount**
- Creativity down the profit & loss statement (non-operating income)
- Inappropriate use of **provisions**
- Increase of cash and/or profit through sale of assets: Invoice discounting; sale and lease back
- **Asset revaluation** (downwards) plus subsequent profit on disposal
- **Capitalized expenses** (that other companies treat as operating expenses) or accelerated revenue (or suppliers discounts)
- **Deferring costs** (further than is reasonable, delay in reporting accrued expenses)
- **Extended depreciation** (further than expected life of the asset)



# The Investor Perspective

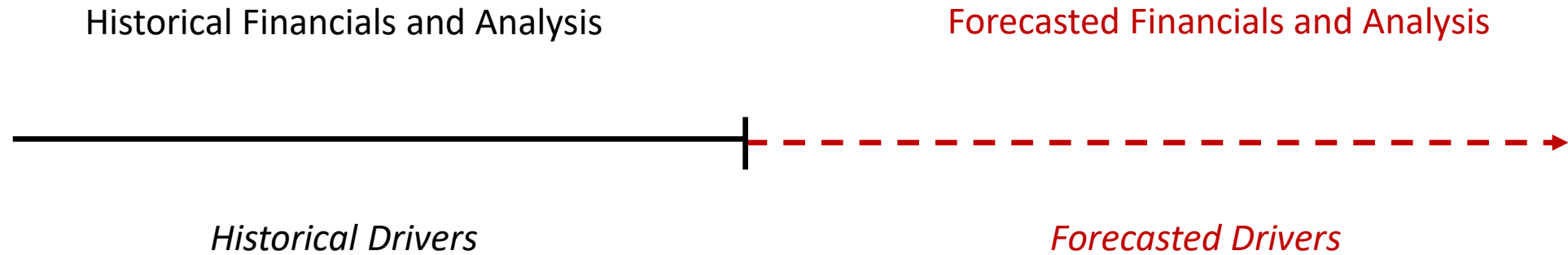
Question: What can investors do to manage the (business and financial) risks in their investee companies?



# Growth and Value Drivers



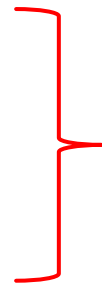
# Building Assumptions: Key Drivers



## **Incorporate:**

1. Macro-economic forecasts
2. Key Industry Drivers
3. Company specific position
4. Management Strategy

*Validate with industry benchmarks and other related financial variables*





# Selected Drivers

## Sales Revenues

- Division and geographic break-up, price vs volume, industry specific metrics (sales/sq feet)
- Consider industry factors, input prices, constraints, order books, etc

## Operating Profit

- Division and geographic break-up, opex/ sales and leverage, input price trends
- Consider industry factors, cost and pricing strategy, competition, business mix, etc

## Net Working Capital

- NWC/Sales, Days Ratios
- Consider historical efficiency, sales drivers, changes in industry environment, etc

## Capex and Depreciation

- Capex/Sales, Sales Turnover Ratios, Maintenance costs, Equipment costs, Useful life
- Consider historical trends, management strategy, capacity utilization, industry dynamics, etc

## Other Liabilities (Tax and Dividends)

- Tax Rates, Tax Credits/ Carry forwards/ Incentives, Dividend history and trends
- Shareholder configuration, Sector norms, payout rates, capital structure

## Long Term Debt

- Repayment profile of debt and lease commitments, CPLTD
- Consider prepayment requirements, capex and/or divestment plans



Please refer to the Excel Sheet for further instructions



# Normalising Earnings





# Cleaning Data: Normalizing Earnings

Historical Data

Forecasted Numbers



## Key Question:

- Have we cleaned the data to remove items that may not be 'representative'?
- Do we have a clear estimate of the 'recurring' earnings of the business?



---

**Recurring net income** is bottom line net profit adjusted for the post-tax impact of non-recurring items only

---

This is then used to calculate normalised earnings per share measures which are used in valuation

---

As for EBIT and EBITDA, there is subjectivity in deciding which items are non-recurring

---

All non-recurring items adjusted in EBIT and EBITDA are also non-recurring for net income



# Example: Non-Recurring Income

Net income	X
Add back: post-tax non-recurring expenses	X
Deduct: post-tax non-recurring income	<u>(X)</u>
<b>Recurring net income</b>	<b>X</b>

- Companies sometimes disclose the tax impact of non-recurring items
- If the tax impact has not been disclosed then use the companies **marginal tax rate** to estimate the tax effect of non-recurring items, if taxable

$$\text{Post-tax non-recurring item} = \text{Pre-tax non recurring item} * (1-MTR)$$



# Example: Cleaning Earnings

	Reported	Adj	Cleaned	
Sales	500.0		500.0	
Cost of sales	(280.0)		(280.0)	
<b>Gross profit</b>	<b>220.0</b>		<b>220.0</b>	
Operating costs	(115.0)		(115.0)	
Non-recurring costs	(15.0)	15.0	0.0	
<b>Operating profit</b>	<b>90.0</b>		<b>105.0</b>	← EBIT
Interest expense	(10.0)		(10.0)	
<b>Profit before tax</b>	<b>80.0</b>		<b>95.0</b>	
Tax expense (30%)	(24.0)	(4.5)	(28.5)	
<b>Profit after tax</b>	<b>56.0</b>	<b>10.5</b>	<b>66.5</b>	← Recurring net income



# Exercise: Normalizing Earnings

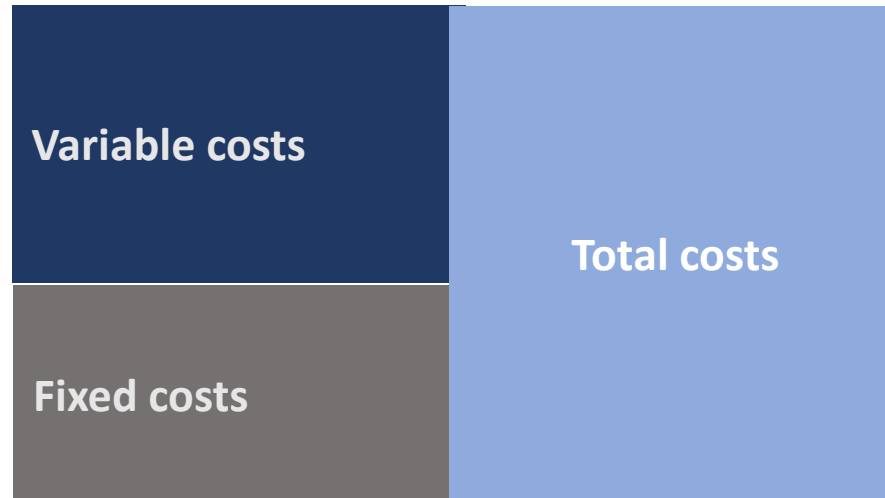
Please refer to the Excel Sheet for further instructions



# Related Concept: Operating Leverage

## Examining fixed vs. variable costs (FC/TC, VC/TC)

- Understand the advantages of low fixed costs when sales decline
- Understand the advantages of low variable costs when sales increase



# Break-even analysis

- **Break-even sales**

- The level of sales required for a business to cover its fixed costs and make neither a profit nor a loss:

$$\frac{\text{Fixed costs}}{\text{Gross margin (decimal)}}$$

- To estimate fixed costs, assume these are:

$$\text{Gross profit} - \text{Profit before tax}$$

- **Margin of safety**

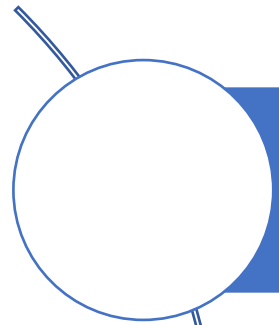
- The gap between current sales and break-even sales
- Expressed absolutely or as a percentage

$$\frac{\text{Sales} - \text{Break-even}}{\text{Sales}}$$

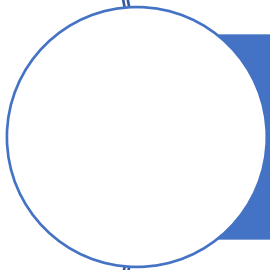
- Is the company able to pass cost increases to customers (variable costs)?
- Does the company have leverage in reducing costs when sales decline?
- Is lack of demand reducing pricing and margins?



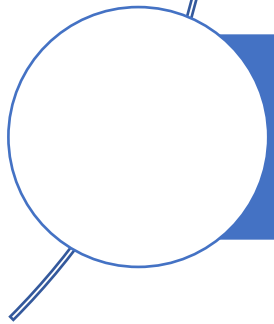
# Day 3 Agenda



Extracting and Cleaning Data



Developing Excel Skills for formats and functions



Modeling: Getting Started





# Master Case Study

Our objective is to:

1. Extract the financial data efficiently
2. Input the data into the relevant worksheet (historical financials)
3. Normalize the historical earnings



# Modeling Considerations



# Model Considerations

## Objective of the Model

- Valuation? Debt Repayment? Project Evaluation?

## Inputs and Outputs

- Primary and Secondary (Derived) Inputs
- Required Output Data and Visuals

## User-friendliness

- How easy is it to find information?
- How easy is it to understand the “logic”?
- How flexible is your model? A model is not an answer key, it is a tool. It should allow for changes in scenarios



# Model Components

- A set of financial statements – I/S, B/S, and CFS – including relevant details
  - Historical data
  - Forecast period
- To build the values for the forecast period, we need a set of Assumptions – one assumption for each line in the financial statements
- Ratios, summary tables, for analysis
- Cover worksheet



# Data Legends

- Models consists of historical data and your forecasts
- It is standard to distinguish between them visually to make it easy for a user to identify
- Example legend:

text / ### in black are calculation or forecast

text / ### in blue are historical or hard-coded

use “A” or “Actual” for past dates

use “P”, “F” or “Projected” or “Forecasted” for future dates

text / ### in a yellow box are assumptions



# Model Tips

Try to use only the visible field of a worksheet

Try to group logical inputs and outputs together

Try to keep your formulas simple to understand

Expenses can be shown as negative or positive – just be consistent

Cash flows should always be shown as positive if cash-generative and negative if cash-usage



# Worksheet Structure

## Everything on one worksheet

- Benefit is do not need to move from worksheet to worksheet
- Suitable for simple models
- Ensure the model is built in logical progression, running from top to bottom or from left to right
- If it's a larger model, may want to use "group" to collapse and expand sections (make sure your user knows how to use this functionality)

## One function one worksheet

- Benefit of keeping the model structure clear even if does requiring moving from 1 worksheet to another
- Keeps workings within field of vision on each worksheet
- Suitable for normal to large models
- Ensure the worksheets are appropriately named so your user knows where to find information
- Ensure your cover page provides a table of contents



# Building a Simple Model

**Building a model is iterative but in general the steps are as follows:**

- **Step 1:** build the I/S first (this is because certain I/S items feed into the B/S)  
Some I/S items may be dependent on B/S, link to the B/S item's cell address(es) anyway, it will update as the B/S is built
- **Step 2:** build the B/S footnote calculations before building the B/S – do not build cash!
- **Step 3:** build the CFS next – the ending balance feeds into the “cash” item on the BS
- **Step 4:** do you balance?
- **Step 5:** complete ratios & summary – remember this is the output and for now sanity checks your model

**This is a starting point. A fuller set of model building guidelines shall follow**





# Exercise: Building a Simple Model

Please refer to the Excel Sheet for further instructions



# Tips: When you do not balance

- Delete all values but year 1 before checking
- “Ctrl + ~” shows worksheet as formulas
  - Step 1: check that you deducted expenses if you showed them as positive values
  - Step 2: make sure you do not total something twice
  - Step 3: make sure you calculated changes in assets, liabilities & equities correctly (& capex is cash-negative)
- In general:
  - Make sure you picked up the correct assumption
    - Use “ctrl + [” to find first input - note this only works if first input is from assumptions
  - Check that forecast values are consistent with historic values
    - No dramatic switching from gain to loss, from positive to negative value, or vice versa
    - No dramatic rates of change that cannot be explained
  - It is possible to have more than 1 error



# More on Errors!

- Is it possible to balance but still have mistakes in your model? Yes!
- Harder to find such errors
- Tips:
  - Check for extreme changes, check margins & ratios
  - Change assumptions and see if your model still balances and makes sense!



# Exercise

Let us change the assumptions:

- Change the debt repayment schedule
- Debt repayment of USD 1000 per annum

What happened? Does it make sense?



# Solving the Issue

## Modeling solution:

### Add a revolving line of credit in the model

- In your model, you need to have the flexibility that when there is cash, it is recorded in cash, but when there is no or negative cash, there is a more sensible record
- Insert a “CP-RCF” item in current liabilities
  - If ending cash is positive, the value goes to cash (assets); if cash is negative, the value goes to CP-RCF (liabilities)

## Forecasting solution:

### Need a realistic debt issuance/repayment schedule in your forecast

- Commercial paper (CP) and or its back-stop, a revolving line of credit (RCF), are typically used by companies to daily cash flow short fall, in particular do to seasonal variations, OWC management, and unexpected needs in cash
- Companies should also have a strategy for medium- and long- term funding – and your model should reflect that



# CP-RCF in Balance Sheet

To accommodate the possibility of overdraft, the B/S needs a “CP-RCF” line (included in total liabilities)

year	T+1 (F)	T+2 (F)	T+3 (F)	T+4 (F)	T+5 (F)
<i>Assets:</i>					
cash	1,841.9	1,148.3	460.3	0.0	0.0
OWC	2,453.2	2,649.4	2,873.7	3,074.8	3,167.5
PPE	9,602.2	9,696.4	9,866.6	9,980.0	10,029.5
total assets	12,055.4	12,345.9	12,740.3	13,054.9	13,197.0
<i>Liabilities:</i>					
CP-RCF	0.0	0.0	0.0	211.6	425.2
long-term liabilities	313.0	433.0	633.0	833.0	1,033.0
debt	8,000.0	7,000.0	6,000.0	5,000.0	4,000.0
total liabilities	8,313.0	7,433.0	6,633.0	6,044.6	5,458.2
<i>Shareholders' equity:</i>					
shareholders capital	1,080.0	880.0	800.0	600.0	600.0
ending RE	4,504.2	5,181.1	5,767.6	6,410.3	7,138.8
total equity	5,584.2	6,061.1	6,567.6	7,010.3	7,738.8
balance? A-L-E = 0?	0.0	0.0	0.0	0.0	0.0



# Debt Calculations: B/S Footnote

- To accommodate for debt complexity, it may be more user-friendly to separate out the debt calculations on the B/S in a footnote
- Excerpt from B/S footnote calculations

year	T=0 (A)	T+1 (F)	T+2 (F)	T+3 (F)	T+4 (F)	T+5 (F)
Debt:						
CP-RCF	0.0	0.0	0.0	0.0	211.6	425.2
CP-RCF interest		0.0	0.0	0.0	9.8	29.6
LTD	8,000.0	8,000.0	7,000.0	6,000.0	5,000.0	4,000.0
LTD interest		744.0	697.5	604.5	511.5	418.5
total debt	8,000.0	8,000.0	7,000.0	6,000.0	5,211.6	4,425.2
total interest expense		744.0	697.5	604.5	521.3	448.1

- Notice that the I/S now needs to be updated for “total interest expense”



# What happened?

The screenshot shows a Microsoft Excel spreadsheet with a circular reference error. The error message box states: "There are one or more circular references where a formula refers to its own cell either directly or indirectly. This might cause them to calculate incorrectly. Try removing or changing these references, or moving the formulas to different cells." The formula bar for cell E11 shows "=BSIE52".

The spreadsheet data is as follows:

Year	T-1 (A)	T=0 (A)	T+1 (F)	T+2 (F)	T+3 (F)	T+4 (F)	T+5 (F)
Sales	4,446.0	4,857.7	5,246.3	5,666.0	6,062.6	6,487.0	6,928.1
COGS	1,467.2	1,603.0	1,678.8	1,813.1	1,818.8	1,946.1	2,009.2
SGA	622.4	680.1	786.9	849.9	970.0	1,102.8	1,177.8
Operating profit	2,356.4	2,574.6	2,780.5	3,003.0	3,273.8	3,438.1	3,741.2
Other income/(expense)	53.4	58.3	63.0	68.0	72.8	77.8	83.1
Interest expense	650.0	600.0	=BSIE52	697.5	604.5	581.3	534.8
PBT	1,759.7	2,032.9	2,099.5	2,373.5	2,742.1	2,934.7	3,289.6
Tax		505.0					
Net Income		1,254.7					

Modeling tips:

- 1 Scan the assumptions so you know how IS items' inputs
- 2 Build T+1 I/S, when satisfied with formulas, then copy out across remaining years
- 3 Where an IS item relies on a BS item, link to the BS cell address - the IS item value will update when you build the BS item
- 4 Ctrl + Z is the undo last command function (and Ctrl + Y is the redo)





# Circular References

- The following is a simpler example of a circular reference error

- Here is a simple finance example

	A	B
1	=B2	
2		=A1

- What is a circular reference?
- Why did changing the interest expense in cause a circular reference?

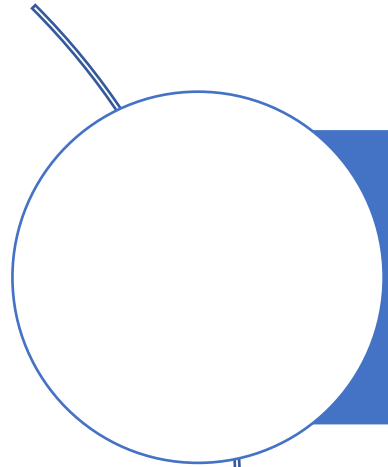
	A	B
1	Principal	= 100 + B2
2	interest	= B1 * 10%



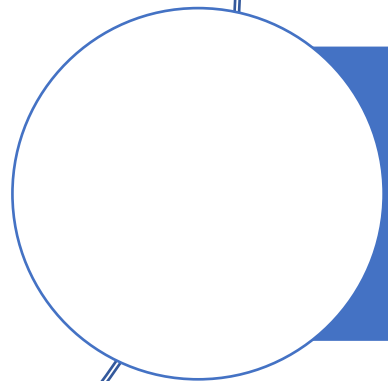
# Excel: Circular References

- Excel's method of working with circular reference is called "iteration"
- To use it go to File/Options/Formulas
- Tick "Enable iterative calculations"
- What happens now?





Assumptions and Financial Forecasts



Fundamentals of Valuation



# Master Case Study

Based on the historical financials, we shall now:

1. Develop a set of assumptions based on the historical data and our qualitative assessment of the case company
2. Build out a set of core forecasted financials for the case company

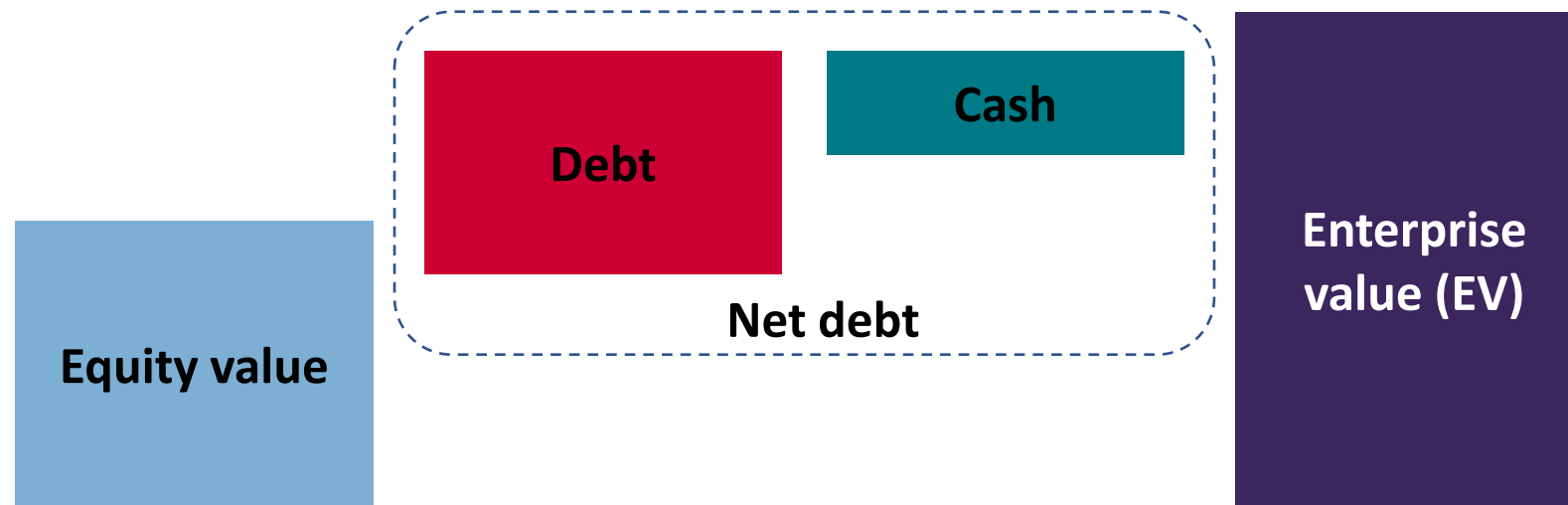


# Forecasting and Valuation



# What are we valuing?

- Usually, we value a firm. A firm is a group of assets (and associated liabilities) used to generate profit for its owners:
  - Equal to the value of the financing to support operations (at its simplest, debt, cash and/or equity)
- Valuation can be done at equity or enterprise level:
  - Equity value reflects only the claims due to equity holders
  - Enterprise value reflects the value of claims by all stakeholders



# Valuation Methodologies

## Relative valuation



References what other people think about the value of the asset we are looking at

- Using multiples
- Comparable company analysis (using public companies)
- Comparable transaction analysis (M&A based comps)

## Absolute valuation



Based on assumptions of future performance of the company

- DCF – PV of future operating cash flows available to stakeholders
- Implied private equity valuation – range based on target returns given a certain capital structure and exit timeframe



## Equity Valuation

Equity value = PV of cash available for distribution to equity holders

- Free Cash Flow To Equity (FCFE)
- Discounted at required return of equity

Only used to value financial institutions (no ability to distinguish operational and financial assets)

## Enterprise Value

Enterprise value = PV of cash flows from operations available for distribution to all capital providers

- Free Cash Flow To Firm (FCFF)
- Discounted at weighted average required return of all capital providers (WACC)

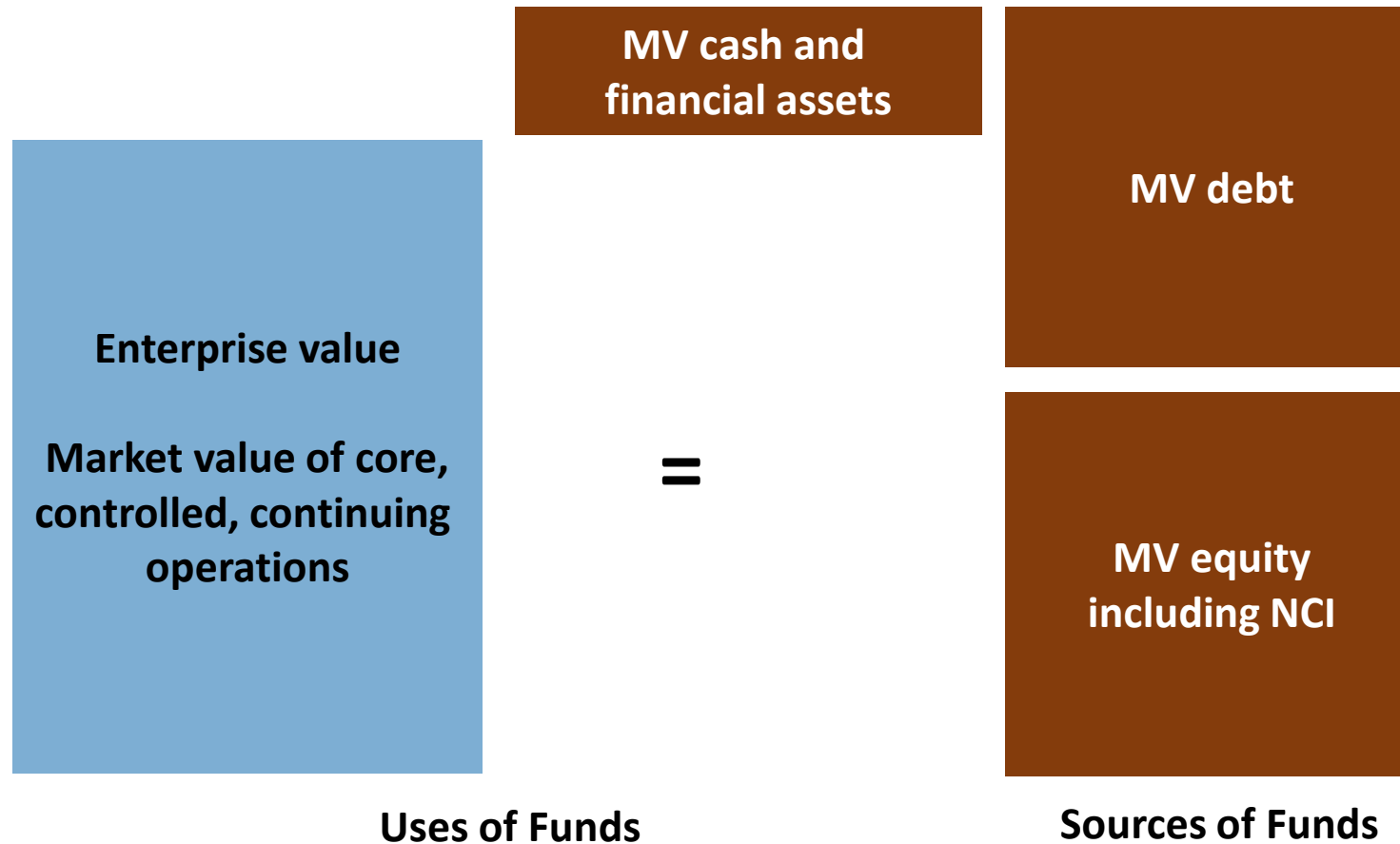
Will need to bridge from Enterprise/Firm Value to Equity value



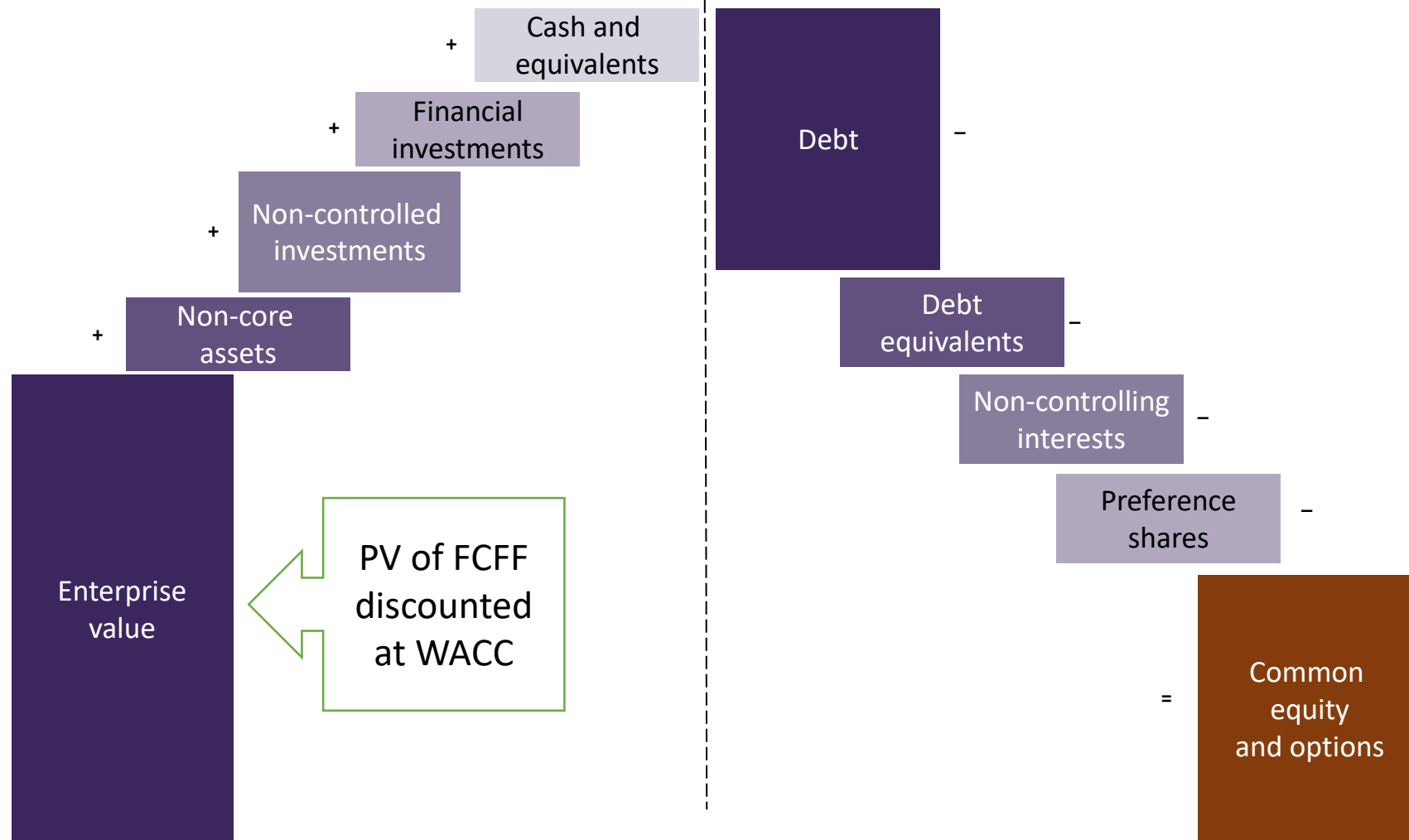


# Enterprise Value (EV): The Intuition

$$\text{Enterprise value} = \text{MV equity} + \text{MV debt} - \text{MV financial assets}$$



# Enterprise to Equity Value: Derivation



# Deriving FCFF/ Unlevered FCF

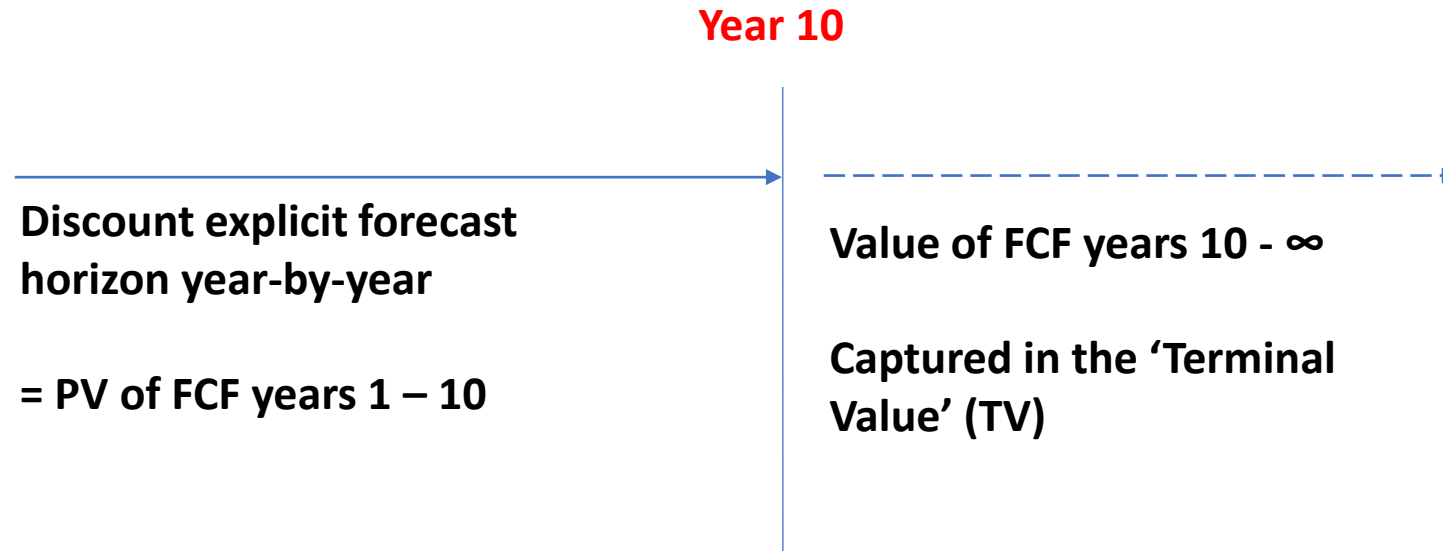
EBIT	43,200
Effective tax rate	23.0%
NOPAT [ EBIT x (1-t) ]	33,264
Capex (net of disposal proceeds)	(3,900)
Depreciation	1,640
Amortization	345
(Inc.) / dec. in net working capital	(750)
(Inc.) / dec. in other operating assets	(278)
Inc. / (dec.) in other operating liabilities	102
<hr/>	
<b>Unlevered FCF</b>	<b>30,423</b>

- **Do not** adjust FCF for non-cash **stock-based compensation**
- Forecast of **operating items only** is required:
  - Excludes any income from financial assets
  - Excludes claims of financing capital providers



# FCF Forecast

- Good DCF will be based on valid, justifiable forecasting assumptions
- Forecast horizon may be 5 to 10 years
- Need to forecast until reach sustainable mid-cycle position, viz, 'Steady state'



# Terminal Value Methods

## Growing perpetuity

- Assumes constant long-term growth rate (LTG) in FCF in perpetuity.
- Ensure integrity of final forecast FCF.
- Should reflect steady state

$$TV_N = \frac{\text{Steady state } FCF_N \times (1 + LTG)}{(WACC - LTG)}$$

- Requires discounting back from final year (N)
- May ignore link between reinvestment and growth

## EV multiple

- Use a multiple of final forecast EBIT(DA).
- Ensure integrity of final year forecast.
- The multiple must reflect steady state growth and margins
- Use a mature multiple

$$TV_N = \text{Steady state } EBIT(DA)_N \times \text{Multiple}$$

- Requires discounting back from final year (N)



# Discount Rate

**Discount rate = Hurdle rate**

**Value is only created if the FCF at least covers the cost of funding.**

- **FCFF are discounted by WACC:**

- WACC must be calculated using a capital structure which is appropriate to the length of your forecast period:
  - The 'long-term'/'target'/'targeted'/'optimal' capital structure. This may be different from the company's actual capital structure
  - Beta must also be calculated according to the target capital structure (expressed as D/E)
- Use up-to-date market values

- **Note: FCFE are discounted by 'Cost of Equity'**



# What is WACC?

$$\text{WACC} = \frac{(\text{Kd} \times \text{D}) + (\text{Ke} \times \text{E})}{(\text{D} + \text{E})}$$

WACC = Weighted average cost of capital (aka cost of capital). Weighted individual cost of each capital structure component

- Influenced by perceptions of risk and opportunity cost
- Driven by market expectations

$K_d$  = Cost of debt after tax =  $R_d \times (1 - t)$

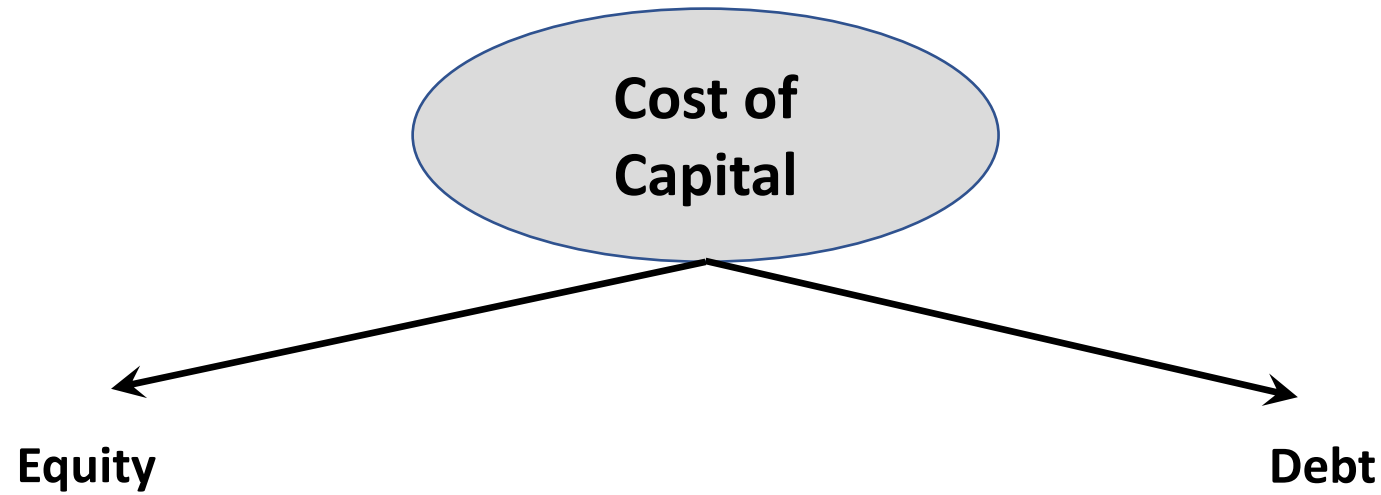
D = Market value of target debt amount

$K_e$  = Cost of equity

E = Market value of target equity amount



# Cost of Debt and Equity: Overview



Methods: CAPM (most common), Dividend Discount, Build-up method

$$\text{CAPM: } K_e = R_f + \beta (R_{\text{market}} - R_f)$$

Beta: estimator of stock's return vs equity market return

$$\text{Interest Rate } (R_d) = R_f + \text{Risk Premium}$$

Risk Premium: comparables, credit ratings, fundamental analysis

$$K_d = R_d * (1 - \text{tax rate})$$

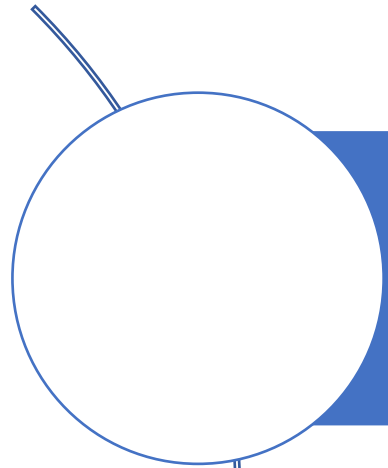




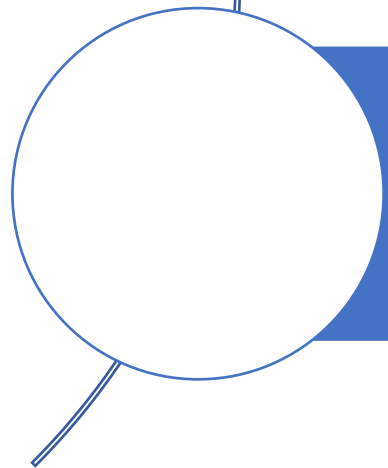
# Exercise: Valuation

Please refer to the Excel Sheet for further instructions





Valuation of a Company



Adjusting for Scenarios



# Master Case Study

Based on the forecasted financials, we shall now:

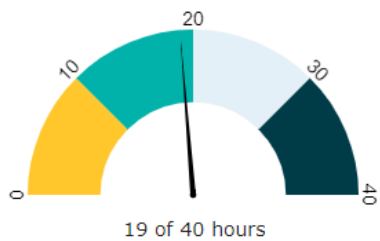
1. Develop estimates of the company's value
2. Consider how we may develop additional scenarios



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Please complete the course feedback via **iLAB** to capture the training hours.



# Appendix

1. Valuation Fundamentals
2. Excel Modeling Set-Up



# Useful Excel Shortcuts - General

key stroke	action
Ctrl + S	save
Ctrl + C	copy
Ctrl + X	cut
Ctrl + V	paste multiple times
Enter	paste once
Ctrl + R	copy right
Ctrl + D	copy down
Ctrl + Z	un-do the last command
Ctrl + Y	re-do the unwound command
F2	switch between formula bar and worksheet
F4	absolute and relative cell referencing

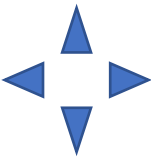






# Useful Excel Shortcuts – Error Finding

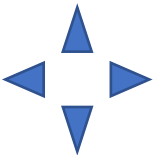


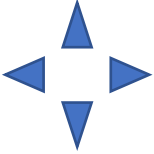


key stroke	action	what it does / context
F9	hover over a cell address or formula in the formula bar, then press F9	the value underlying the cell address or formula will be revealed. Be careful to hit “esc” when done otherwise the value will replace your address/formula
Ctrl + [	jumps to the first cell address in your formula	handy as your formulas are built across worksheets – putting the assumption input first in your formula maximises the utility of this shortcut. Hit “F5” then “enter” to return to original cell.
Ctrl + ~	changes display of worksheet from values to formulas	Ctrl + ~ again will revert back to normal view of values



# Useful Excel Shortcuts – Navigation

**Cursor keys:** 

**Page keys:**    
 

- Move from cell to cell:  (choose direction)
- Move to first & last cells in worksheet: Ctrl +   
Ctrl + 
- Move to edges of data blocks: Ctrl + 
- Move from worksheet to worksheet: Ctrl +  for previous  
Ctrl +  for next



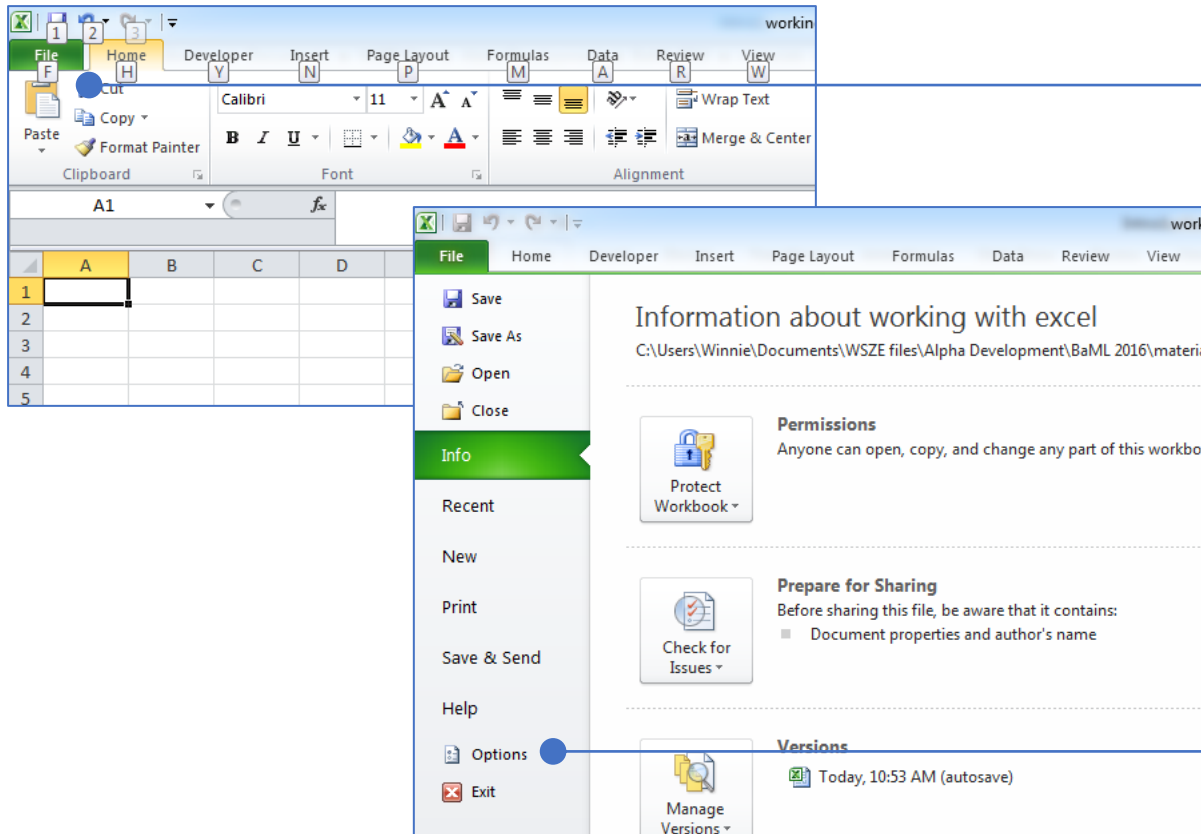


# Excel Default Settings

- Setting up excel for efficient modeling
- Go to File / Options

Excel shortcut tip:  
“Alt” (button) reveals  
the alpha-shortcut key to the tabs on the  
ribbon

To go to the “File” tab:  
Alt + F

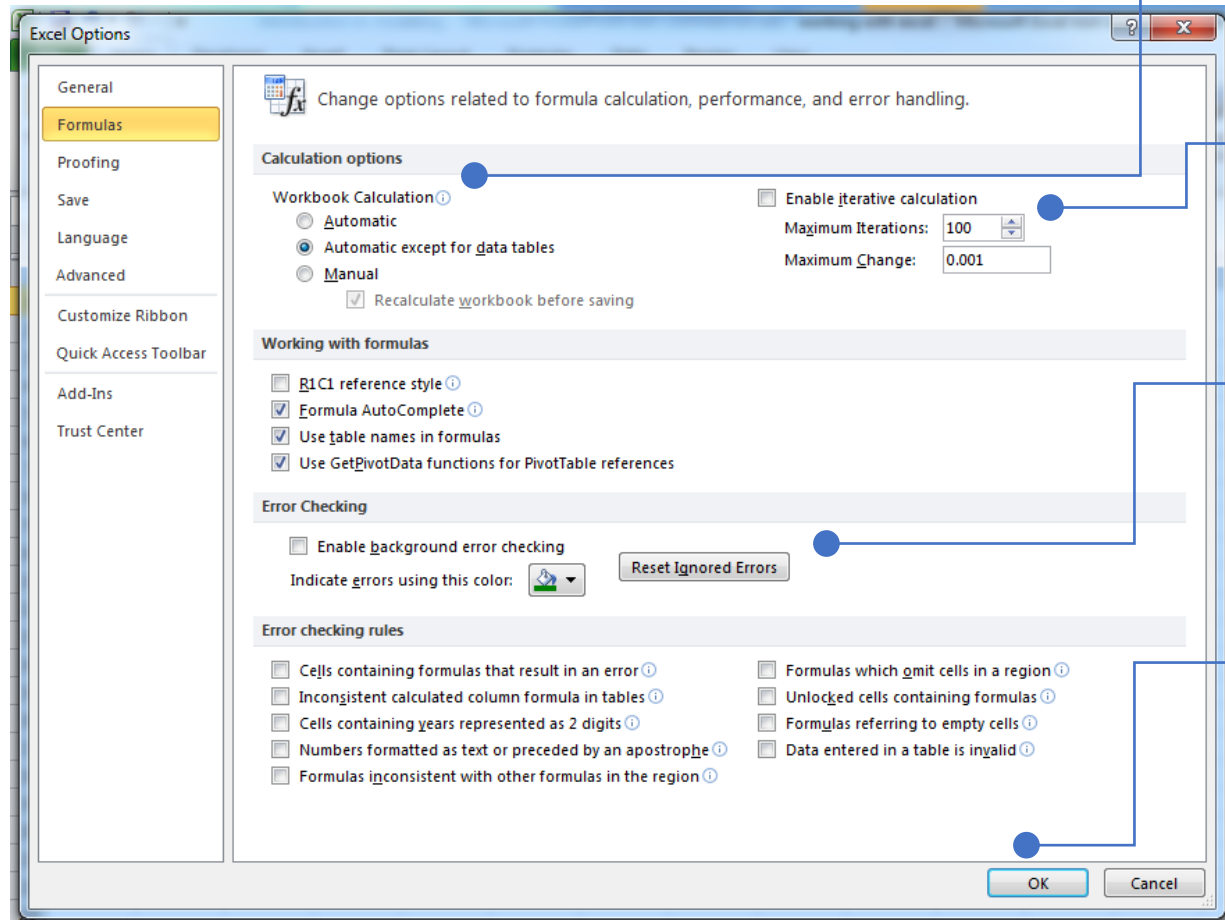


Choose “Options”



# Settings: Continued

- Choose General / Formulas
  - Select / deselect as shown in screen dump



1. Set “workbook calculation” to “automatic except for data tables”

2. De-select “Enable iterative calculation”

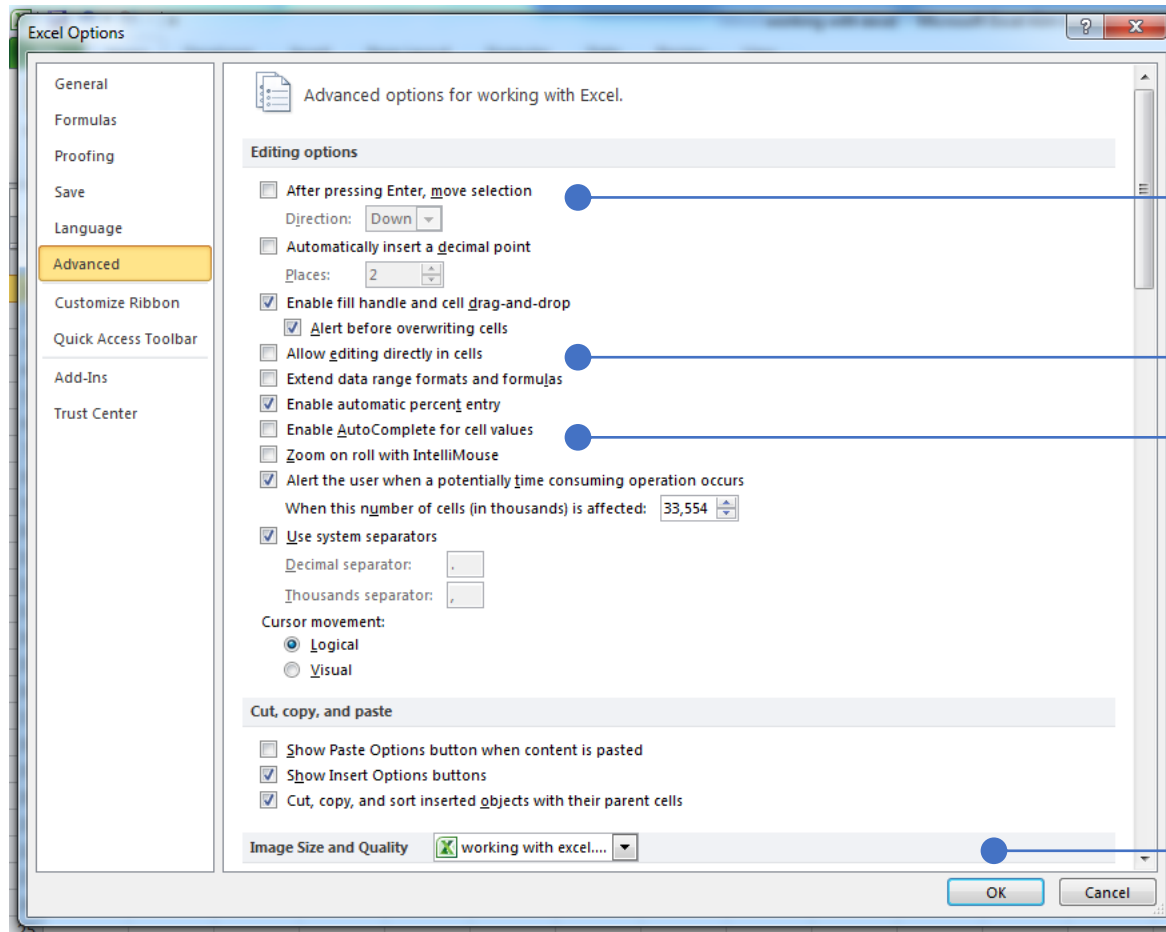
3. De-select “Enable background error checking”

4. “OK” for changes to take affect



# Settings: Continued

- And to General / Advanced
  - Select / deselect as shown in screen dump



1. De-select "After pressing Enter, move selection"

2. De-select "Allow editing directly in cells"

3. De-select "Enable AutoComplete for cell values"

4. "OK" for changes to take affect

