

ACCT 101, Session 7: Liabilities; Sustainability Reporting

Dr. Richard M. Crowley

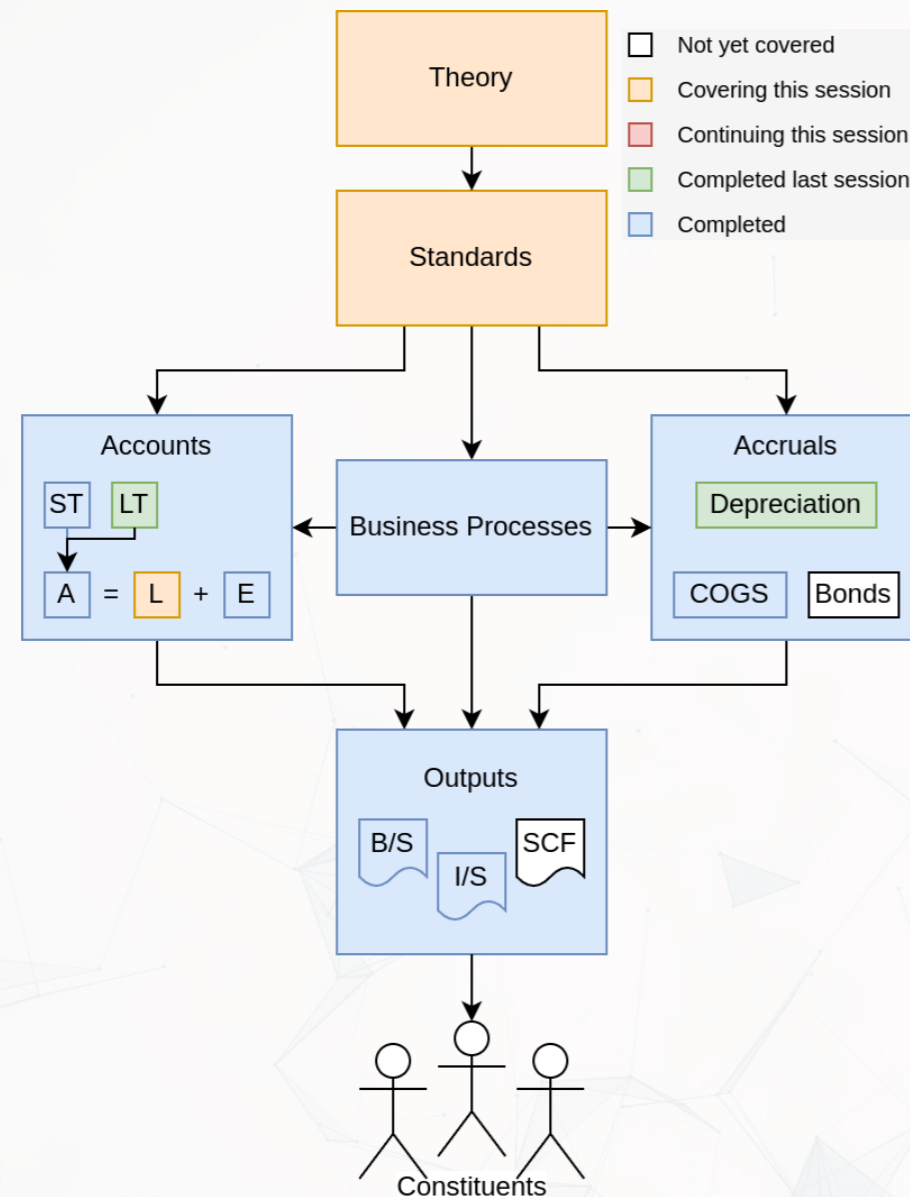
rcrowley@smu.edu.sg

<https://rmc.link/>



Front matter

Learning objectives



Current liabilities (Chapter 8)

1. Account for current liabilities
2. Become familiar with “time value of money”
 - We’ll need this for Bonds

Sustainability reporting

1. Understand the components of a sustainability report
2. Recognize challenges and benefits of sustainability reports
3. Identify sustainability as a core business value

Current Liabilities

Review of liabilities

Obligation of the enterprise arising from past events, the settlement of which is expected to result in an outflow from the enterprise of resources embodying economic benefits. (FRS 37:10)

- Current liability: Something you owe within the span of one year (the current accounting term)
- Non-Current liability: Something you owe after the current accounting term

Example current liabilities: Accounts payable, Unearned revenue, Salaries payable, Taxes payable, Notes payable, Interest payable, _____ payable

Sales tax payable

- Also known as GST
- Generally paid quarterly
 - Can pay monthly as well
- Retailers collect this from customers to pass to tax authorities (IRAS)



INLAND REVENUE
AUTHORITY
OF SINGAPORE

Example: Sales tax

Date	Account	DR	CR
20YY.MM.D1	Cash	20,000	
	Revenue		18,600
	Sales tax payable		1,400
<i>Recorded sales and sales tax for the day</i>			
20YY.MM.D2	Sales tax payable	1,400	
	Cash		1,400
<i>Paid sales tax to IRAS</i>			

Notes payable terms

- *Creditor*: the lender
- *Debtor*: the party that owes money
- *Term*: length of time of the note
- *Maturity date*: when the note is due
- *Principal*: amount of money borrowed
 - We'll record this at the start
- *Interest*: additional payments for borrowing
 - We'll record these as they occur
 - Or when doing adjusting entries
- *Maturity value*: amount owed at maturity
- Interest is usually all paid at the end
 - The interest rate will be given as the *annual* rate

Notes payable debtor

Received a \$2,000 note payable with 9% interest due in 3 months payable to our supplier.

Example: Note payable

Date	Account	DR	CR
20Y8.12.01	Cash	2,000	
	Notes payable		2,000
<i>Received a \$2,000 note payable from supplier</i>			
20Y8.12.31	Interest expense	15	
	Interest payable		15
<i>Recorded accrued interest owed on note payable; $2,000 \times 9\% \times 1/12$</i>			
20Y9.02.28	Notes payable	2,000	
	Interest expense	30	
	Interest payable	15	
	Cash		2,045
<i>Paid off note payable, including interest of $2,000 \times 9\% \times 3/12$ (1 month recorded prior)</i>			

The other side: Notes receivable

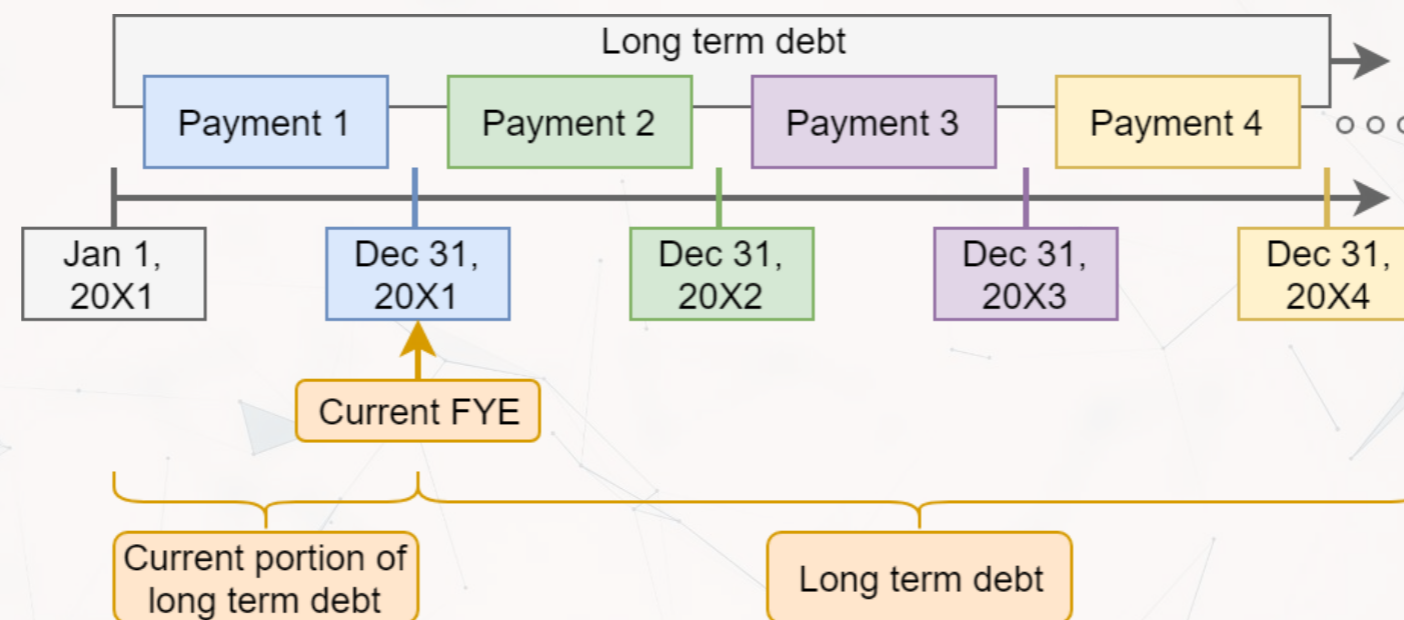
Gave \$2,000 with 9% interest due in 3 months payable to our customer as a note receivable.

Example: Note receivable

Date	Account	DR	CR
20Y8.12.01	Notes receivable	2,000	
	Cash		2,000
<i>Gave \$2,000 to a customer as a note receivable from supplier</i>			
20Y8.12.31	Interest receivable	15	
	Interest revenue		15
<i>Recorded accrued interest revenue on note receivable; $2,000 \times 9\% \times 1/12$</i>			
20Y9.02.28	Cash	2,045	
	Interest revenue		30
	Interest receivable		15
	Notes receivable		2,000
<i>Got paid for note receivable, with interest of $2,000 \times 9\% \times 3/12$ (1 month recorded prior)</i>			

Current long term debt

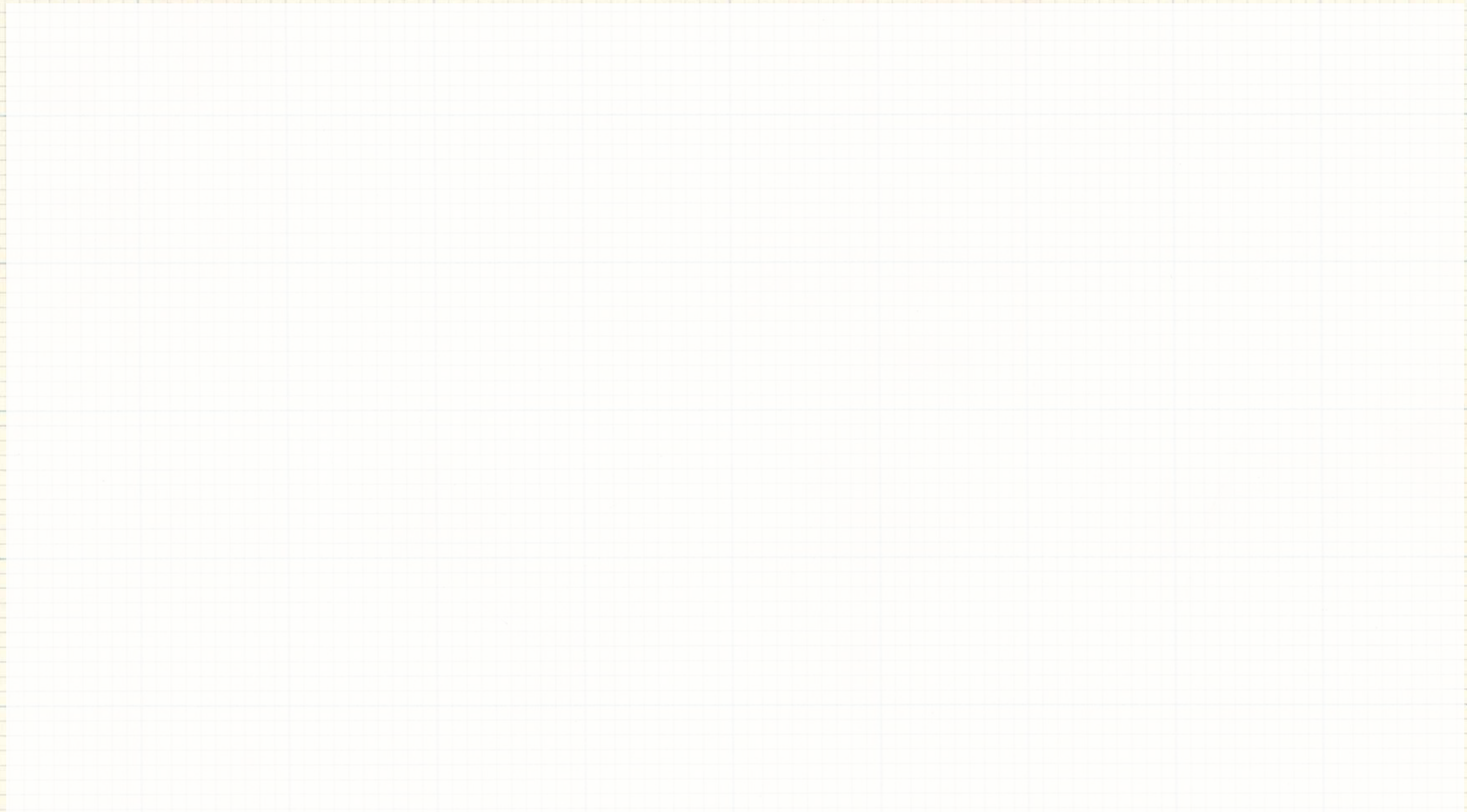
- We consider any payment owed in the coming fiscal year as a current liability
 - This includes payments on long term debt
- We shift these payments to short term debt when we do our balance sheet
 - Call it “current portion of long term debt”



Check

Coffee Co. gives \$1,000 to Latte Inc. on November 1st, 20X8 as a note with 6% interest over 6 months. Record the journal entries for *both companies*, i.e., the note receivable and the note payable. Assume December 31st is both companies' fiscal year end.

- Hints:
 - Money changes hands on November 1
 - Interest accrues on December 31
 - The note is paid back on April 30th



Check: Note payable

Date	Account	DR	CR
20X8.11.01	Cash	1,000	
	Notes payable		1,000
<i>Received a \$1,000 note payable from Coffee Co.</i>			
20X8.12.31	Interest expense	10	
	Interest payable		10
<i>Recorded accrued interest owed on note payable; $1,000 \times 6\% \times 2/12$</i>			
20X9.04.30	Notes payable	1,000	
	Interest expense	20	
	Interest payable	10	
	Cash		1,030
<i>Paid off note payable, including interest of $1,000 \times 6\% \times 4/12$ (2 months recorded prior)</i>			

Check: Note receivable

Date	Account	DR	CR
20X8.11.01	Notes receivable	1,000	
	Cash		1,000
<i>Gave a \$1,000 note to Latte Inc.</i>			
20X8.12.31	Interest receivable	10	
	Interest revenue		10
<i>Recorded accrued interest revenue on note receivable; $1,000 \times 6\% \times 2/12$</i>			
20X9.04.30	Cash	1,030	
	Interest revenue		20
	Interest receivable		10
	Notes receivable		1,000
<i>Got paid for note receivable, with interest of $1,000 \times 6\% \times 4/12$ (2 months recorded prior)</i>			

Time value of money

Source

This section is based on:

Corporate Finance: An Introduction

by Ivo Welch

Pearson: Boston, MA. 2009.

It's a good finance textbook!

The perfect market

- No taxes
- No transaction costs
 - Can find buyers/sellers costlessly
 - Can deliver costlessly
- Everyone has identical beliefs
- Many buyers and sellers (liquid)

We'll use these assumptions in this class

Basic perspectives: Why we have *time value of money*

1. You can earn interest on \$1 today, so it's worth more than \$1 tomorrow.
2. Inflation means that \$1 tomorrow can buy less than \$1 today.
3. \$1 today gives me the option to spend today or tomorrow, but \$1 tomorrow can only be spent tomorrow. If that option to use the \$1 today is valuable to me, \$1 today is worth more than \$1 tomorrow.

All three of these are equivalent: a dollar today is worth more than a dollar tomorrow

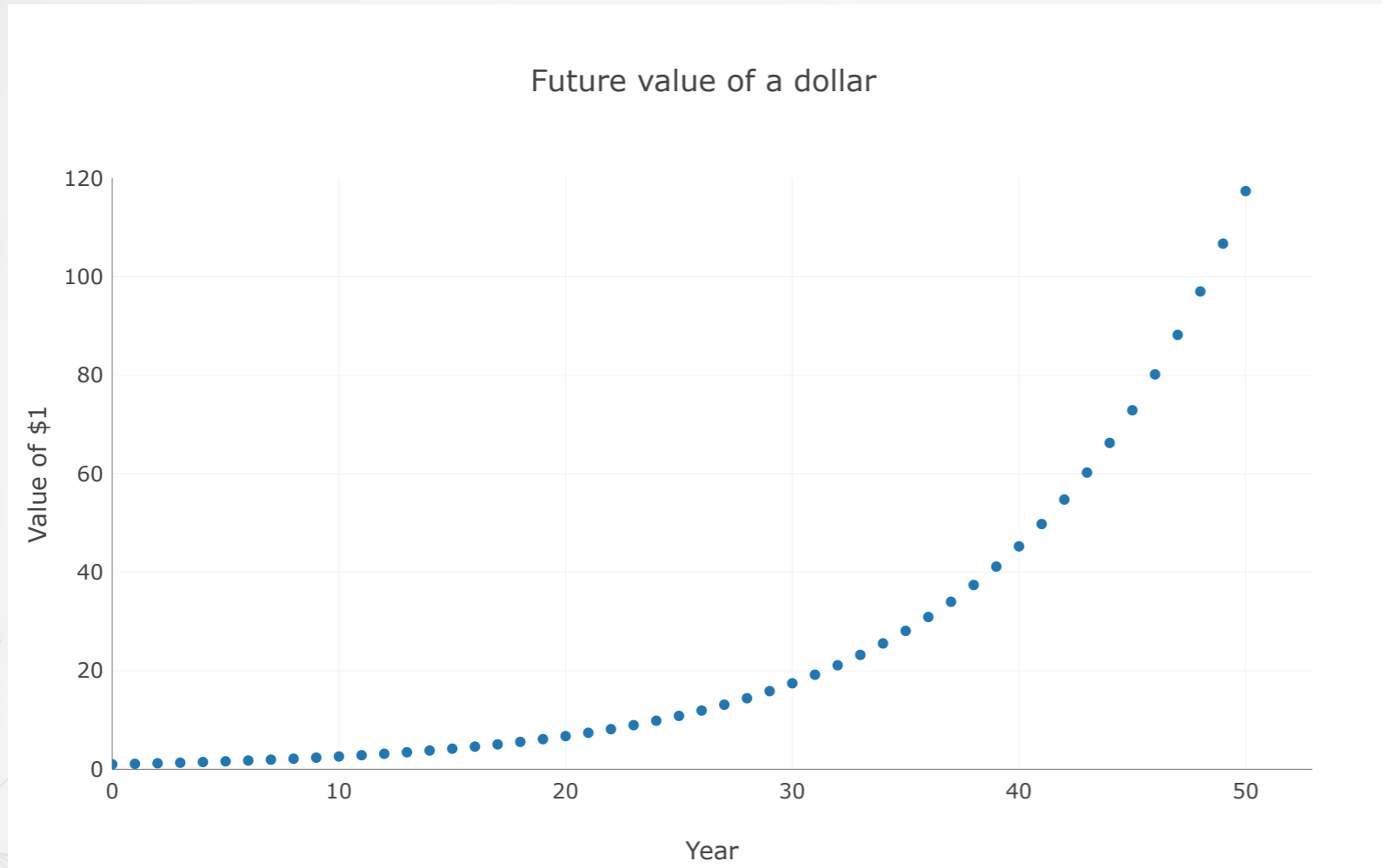
Consequences

- When we talk about returns, we'll talk about *compounded* returns
 - If \$1 today is \$1.10 next year...
 - then \$1.00 in two years is \$1.21, not \$1.20
 - Return scales with capital
- More explicitly: if the interest rate, r is 10%, and the principal, P_0 is \$1, then:
 - Tomorrow P_0 is worth $P_1 = P_0 \cdot (1 + r) = 1 \cdot 1.10 = 1.10$
 - Flipping the equation implies: $P_0 = \frac{P_1}{(1+r)} = \frac{1.10}{1.1} = 1$

Extension: Going forward

- What is \$1 worth in two years? Three years? ...
 - $P_2 = (1 \cdot 1.1) \cdot 1.1 = 1.21$
 - $P_3 = ((1 \cdot 1.1) \cdot 1.1) \cdot 1.1 = 1.331$
 - ...
 - $P_{50} = (\dots (1 \cdot 1.1) \cdot 1.1 \dots) \cdot 1.1 \approx 106.72$
 - ...
 - $P_n = P_0 \cdot (1 + r)^n$

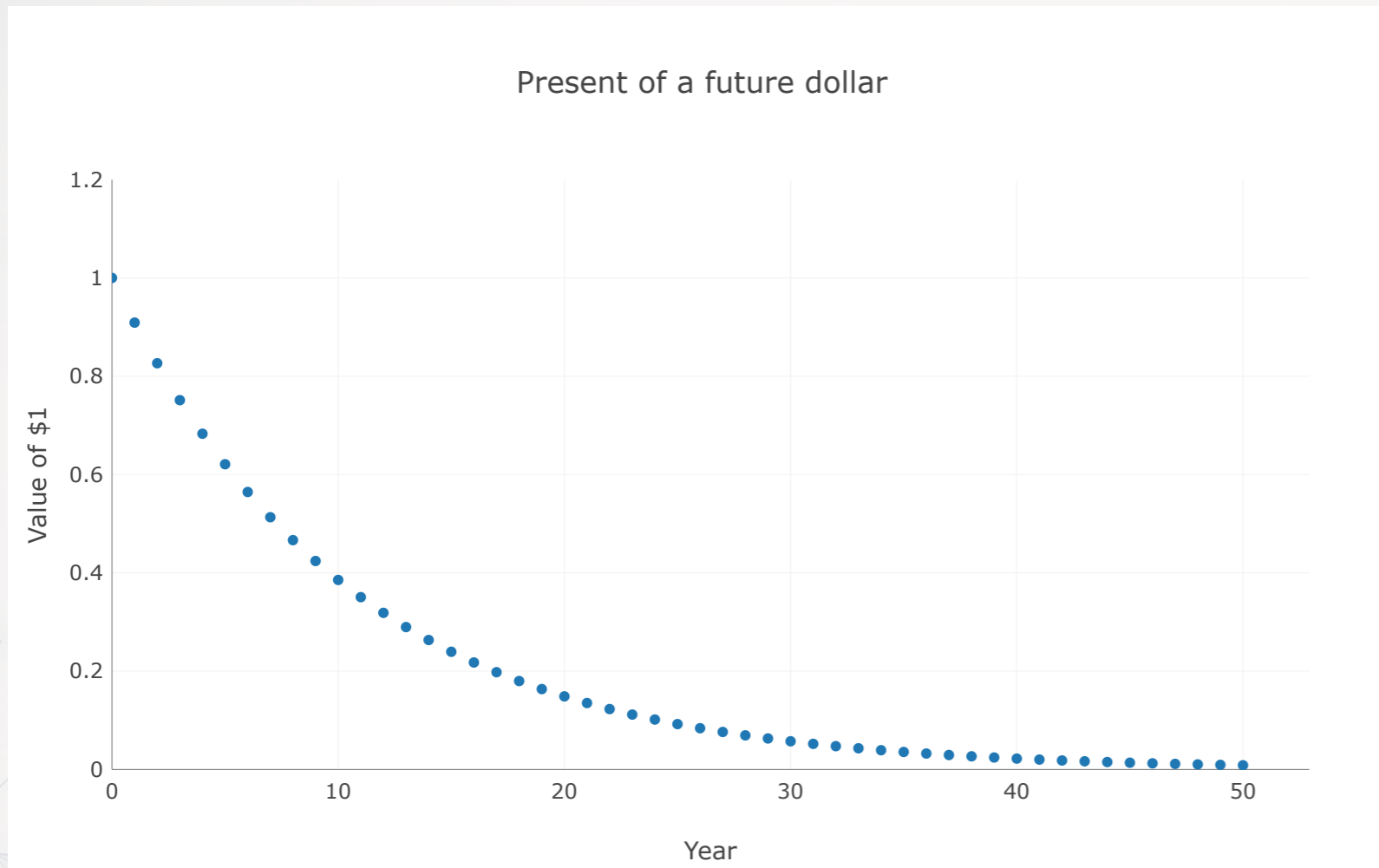
Extension: Going forward



Extension: Going backward

- What is the current value of \$1 in two years? Three years? ...
 - $P_0'' = (1/1.1) / 1.1 = 0.83$
 - $P_0''' = ((1/1.1) / 1.1) / 1.1 = 0.75$
 - ...
 - $P_0^{(50)} = (\dots (1/1.1) / 1.1 \dots) / 1.1 \approx 0.0085$
 - ...
 - $P_0^{(n)} = \frac{P_n}{(1+r)^n}$

Extension: Going backward



Check

1. What is \$10 worth in 20 years, if the interest rate is 5%?
2. What is \$10 received 20 years from now worth today, if the interest rate is 5%?

Answers:

1. $10 \times (1 + 0.05)^{20} = \26.53

2. $\frac{10}{(1+0.05)^{20}} = \3.76

Net Present Value

What is Net Present Value? (NPV)

- What we just did!
- Determine the price *today* of some future (expected) cash flows
- Numerator is the future cash flow, CF
- Denominator is the *discount factor*, R
 - That is, we discount cash flows by the return to get today's value

$$NPV_0 = CF/R$$

- What if there are multiple cash flows?

$$NPV_0 = \sum_{i=0}^n \frac{CF_i}{R_i}$$

NPV at time 0 (today) is the sum of all discounted cash flows

Discount factors

- The discount factor is the amount of *cumulated* return or interest you would expect to receive between two period of time.
- We often assume a fixed discount rate for each year of $1 + r$
- Let R_i denote the discount factor from time 0 to time i
 - $R_1 = 1 + r$
 - $R_2 = (1 + r) \cdot (1 + r)$
 - $R_3 = (1 + r) \cdot (1 + r) \cdot (1 + r)$
 - ...
 - $R_n = (1 + r)^n$

Simple Example

- A project costs \$500 today, and is expected to pay out the following:
 - \$100 in one year
 - \$600 in two years.
- If the interest rate is 10%, what is the NPV of the project?

- $NPV = \frac{-500}{(1+0.1)^0} + \frac{100}{(1+0.1)^1} + \frac{600}{(1+0.1)^2}$

- $NPV = -500 + 90.91 + 495.87$

- $NPV = 86.78$

- What if the interest rate was 5%?

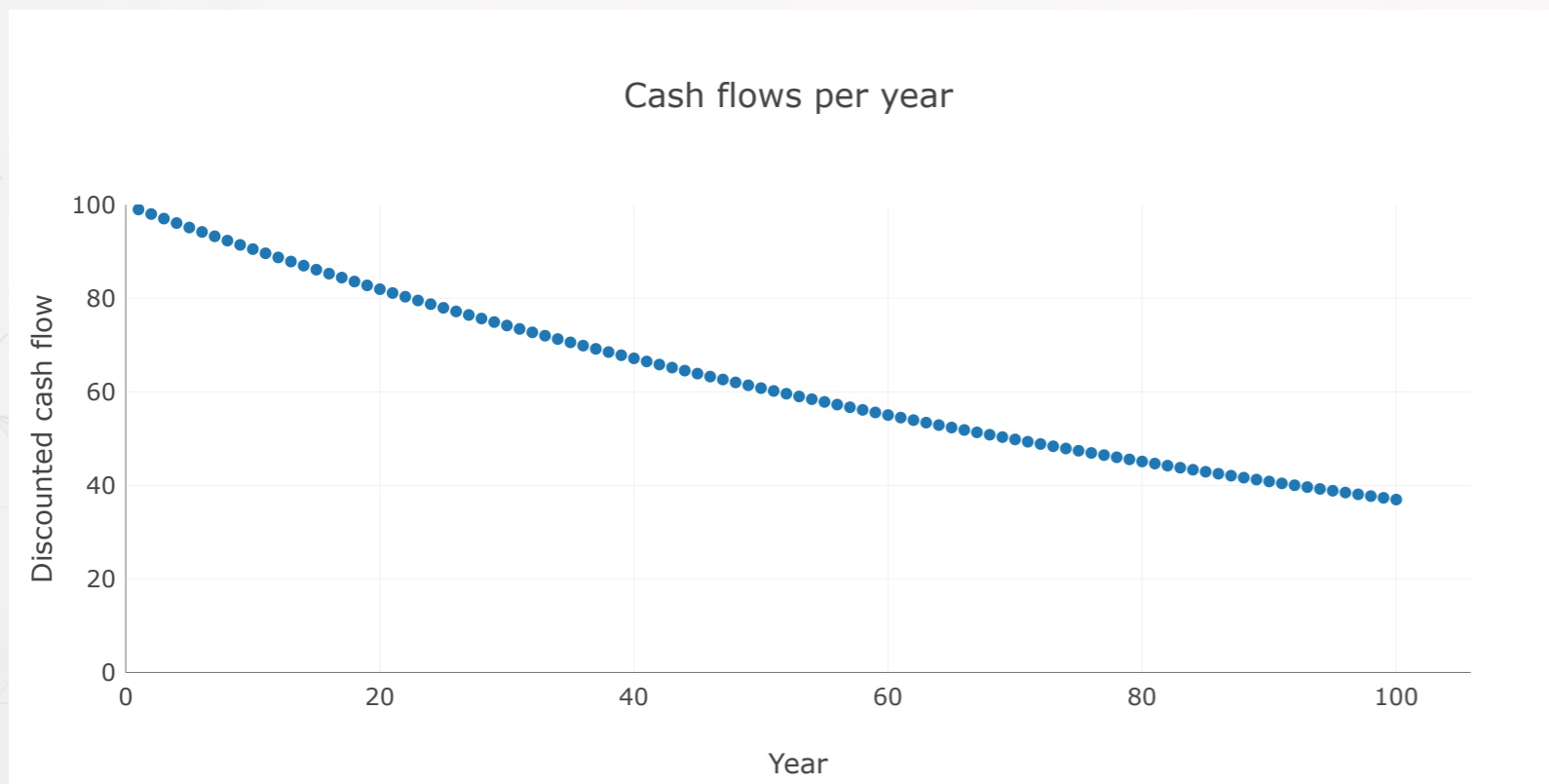
- $NPV = \frac{-500}{(1+0.05)^0} + \frac{100}{(1+0.05)^1} + \frac{600}{(1+0.05)^2}$

- $NPV = -500 + 95.24 + 544.22$

- $NPV = 139.46$

Calculating

- Easy to do a few cash flows with a calculator
- Easy to do any number of cash flows with spreadsheets
- What is the NPV of a project that pays out \$100 each year for 100 years, assuming the interest rate is 1%?
 - Value is 6302.8878767



What about for...

- 10 years? 100 years? 1,000 years? 10,000 years?
- Pretty hard by hand
- Trivial to brute force on a computer

```
R 1 NPV <- data.frame(Years=c(10, 100, 1000, 10000),
2           NPVs=c(sum(c(100/1.01^(1:10))),
3                 sum(c(100/1.01^(1:100))),
4                 sum(c(100/1.01^(1:1000))),
5                 sum(c(100/1.01^(1:10000))))))
6 html_df(NPV)
```

Years	NPVs
10	947.1305
100	6302.8879
1000	9999.5229
10000	10000.0000

What about by hand? Formulas!

- An *Annuity* is a repeated cashflow at a fixed discount rate for T periods

- $$\text{Annuity NPV} = \frac{CF}{r} \left[1 - \frac{1}{(1+r)^T} \right]$$

Revisiting the 10,000 figures

$$\begin{aligned} NPV &= \frac{100}{0.01} \cdot \left[1 - \frac{1}{(1 + 0.01)^{10,000}} \right] \\ &\approx 10,000 \cdot 1 \\ &\approx 10,000 \end{aligned}$$

- What about for 70 periods?

- $$NPV = \frac{100}{0.01} \cdot \left[1 - \frac{1}{(1+0.01)^{70}} \right]$$

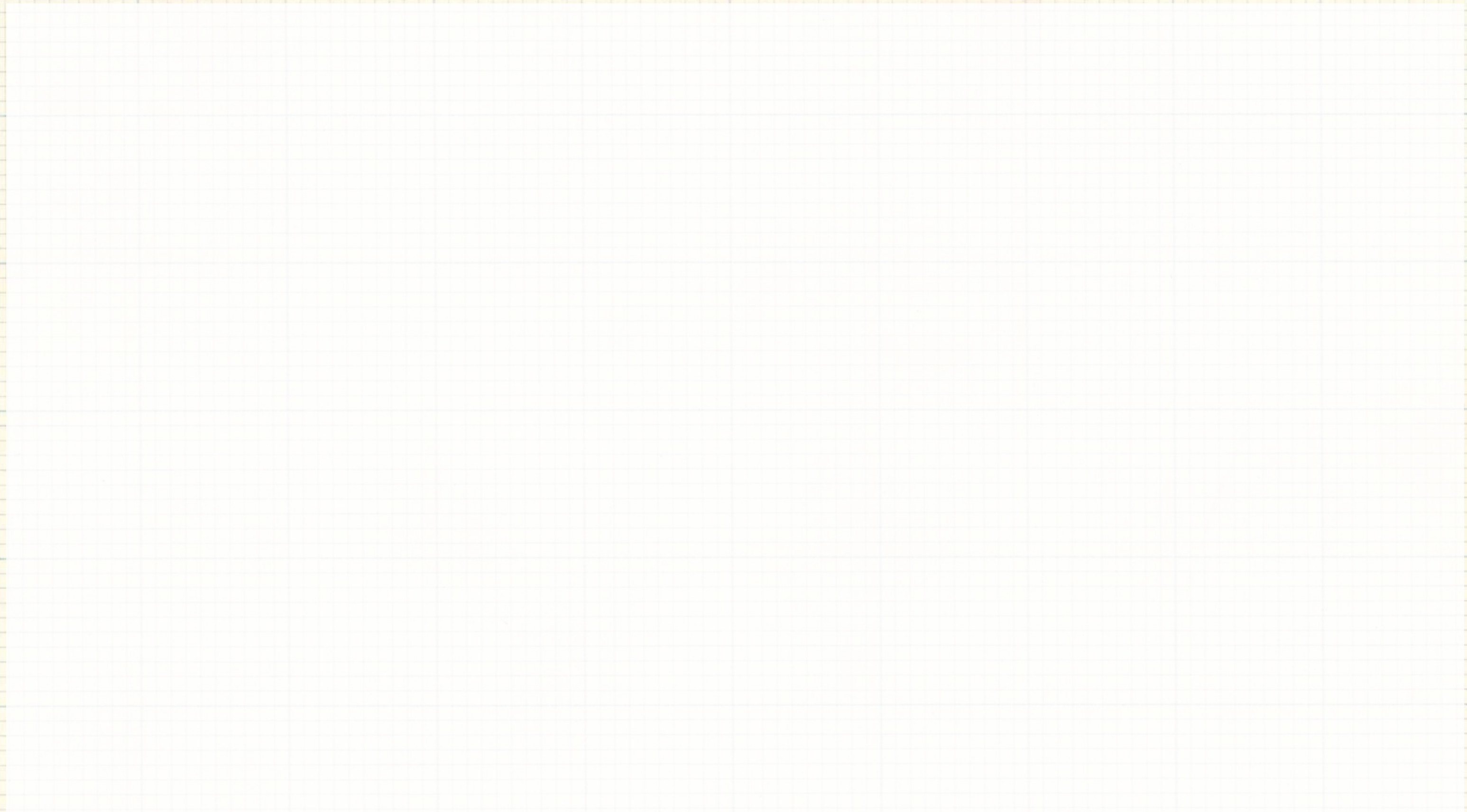
- $$NPV = 5,016.85$$

In class work

1. An investment costs \$100 today, and pays out \$10 per year for the next 10 years. In the 10th year, it also pays back the original \$100. If the interest rate is 10%, what is the NPV?
2. What if the interest rate was 8% instead of 10% in #1?



TEAMWORK



Question 1

An investment costs \$100 today, and pays out \$10 per year for the next 10 years. In the 10th year, it also pays back the original \$100. If the interest rate is 10%, what is the NPV?

Question 1

An investment costs \$100 today, and pays out \$10 per year for the next 10 years. In the 10th year, it also pays back the original \$100. If the interest rate is 10%, what is the NPV?

$$\begin{aligned} NPV &= -100 + \sum_{i=1}^{10} \frac{10}{(1 + 0.1)^i} + \frac{100}{(1 + 0.1)^{10}} \\ &= -100 + \frac{10}{0.1} \left[1 - \frac{1}{(1 + 0.1)^{10}} \right] + \frac{100}{(1 + 0.1)^{10}} \\ &= -100 + 61.45 + 38.55 \\ &= 0 \end{aligned}$$

Use NPV and the *annuity* formula!

Question 2

- An investment costs \$100 today, and pays out \$10 per year for the next 10 years. In the 10th year, it also pays back the original \$100. If the interest rate is 10%, what is the NPV?
 - The NPV would be 0.

What if the interest rate was 8%?

Question 2

What if the interest rate was 8%?

$$\begin{aligned} NPV &= -100 + \sum_{i=1}^{10} \frac{10}{(1 + 0.08)^i} + \frac{100}{(1 + 0.08)^{10}} \\ &= -100 + \frac{10}{0.08} \left[1 - \frac{1}{(1 + 0.08)^{10}} \right] + \frac{100}{(1 + 0.08)^{10}} \\ &\approx -100 + 67.10 + 46.32 \\ &\approx 13.42 \end{aligned}$$

Use NPV and the *annuity* formula!

Sustainability

CSR or ESG?

CSR

- Corporate *S*ocial *R*esponsibility
- The precursor to ESG

ESG

- *E*nvironmental, *S*ocial, & *G*overnance
- Blends governance, CSR, and a broader focus on climate and its risks

ESD

- *E*ducation for *S*ustainable *D*evelopment
- [Up]Skilling future leaders

ESD: UNESCO

ESD is a lifelong learning process and an integral part of quality education. It enhances the cognitive, socio-emotional and behavioural dimensions of learning and encompasses learning content and outcomes, pedagogy and the learning environment itself.

The three pillars of ESG

Environmental

- Climate change, effluents and waste, clean energy, energy consumption, carbon emissions, biodiversity degradation, water, ...

Social

- Diversity, human rights, everyone's health & safety, child & enforced labour, product responsibility, anti-corruption, ...

Governance

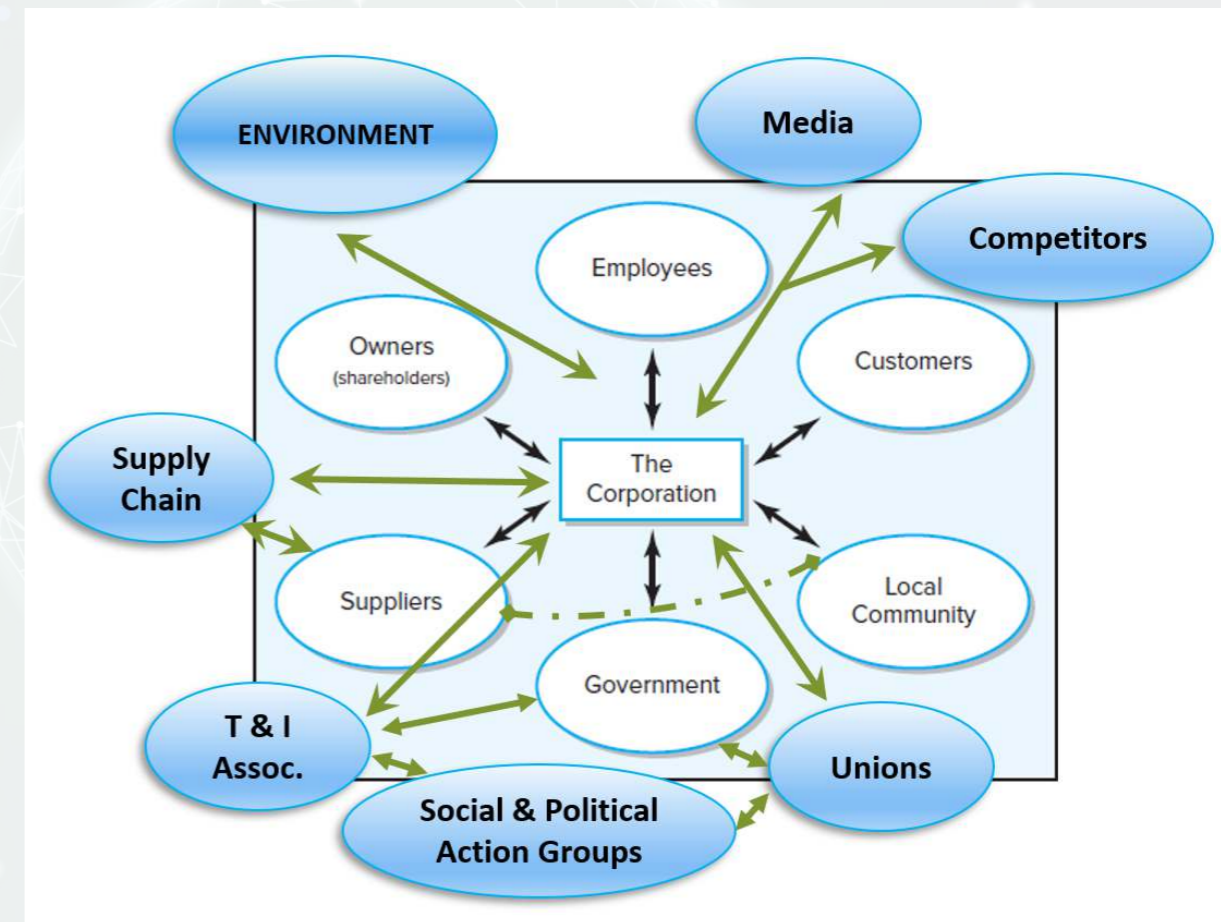
- Management structure, employee relations, executive compensation, Board diversity, ethical culture, Board and management competence

TCFD

The above comes from the Task Force on Climate-related Financial Disclosures (TCFD)

How firms should act

1. Guided by strong *moral* and *ethical* standards in daily interactions with **all** stakeholders
2. Carefully balance *shareholders'* needs with the needs of **other stakeholders**
3. Constantly consider the **environmental impact** of its business operations



U.N. SGDs

The World's Largest Lesson | Global Goals



U.N. SDGs



Sustainability reporting

What must be reported?

Factors to consider

What needs to be reported often varies by jurisdiction, company size, ownership structure, and industry. In Singapore, rules are determined by [SGX](#)

- In Singapore, the following must be reported by *public* companies:
 - Starting FY 2025 (public firms) or 2030 (large private firms): Greenhouse gas emissions from their own or controlled operations (*Scope 1*) and from purchasing electricity, heat, or steam (*Scope 2*)
 - Starting FY 2026 (30 STI index firms): Greenhouse gas emissions from the rest of their supply chain (*Scope 3*)
 - Starting FY 2029 (public firms) or 2032 (large private firms): Scope 1 and 2 need an audit

Material risks must be disclosed already

- Some adjustments to disclosures to align with ISSB starting in 2025 (STI firms) / 2028 (large public firms) / 2030 (everyone else)

Materiality and ESG

Materiality goes two ways

Company \Rightarrow World

- What is the impact of the firm on...
 - The local environment
 - Climate
 - Nearby communities
- What risks does the company's actions pose on the environment and local communities?

World \Rightarrow Company

What environmental risks does the company face? Does climate change pose a risk for the company's operations?

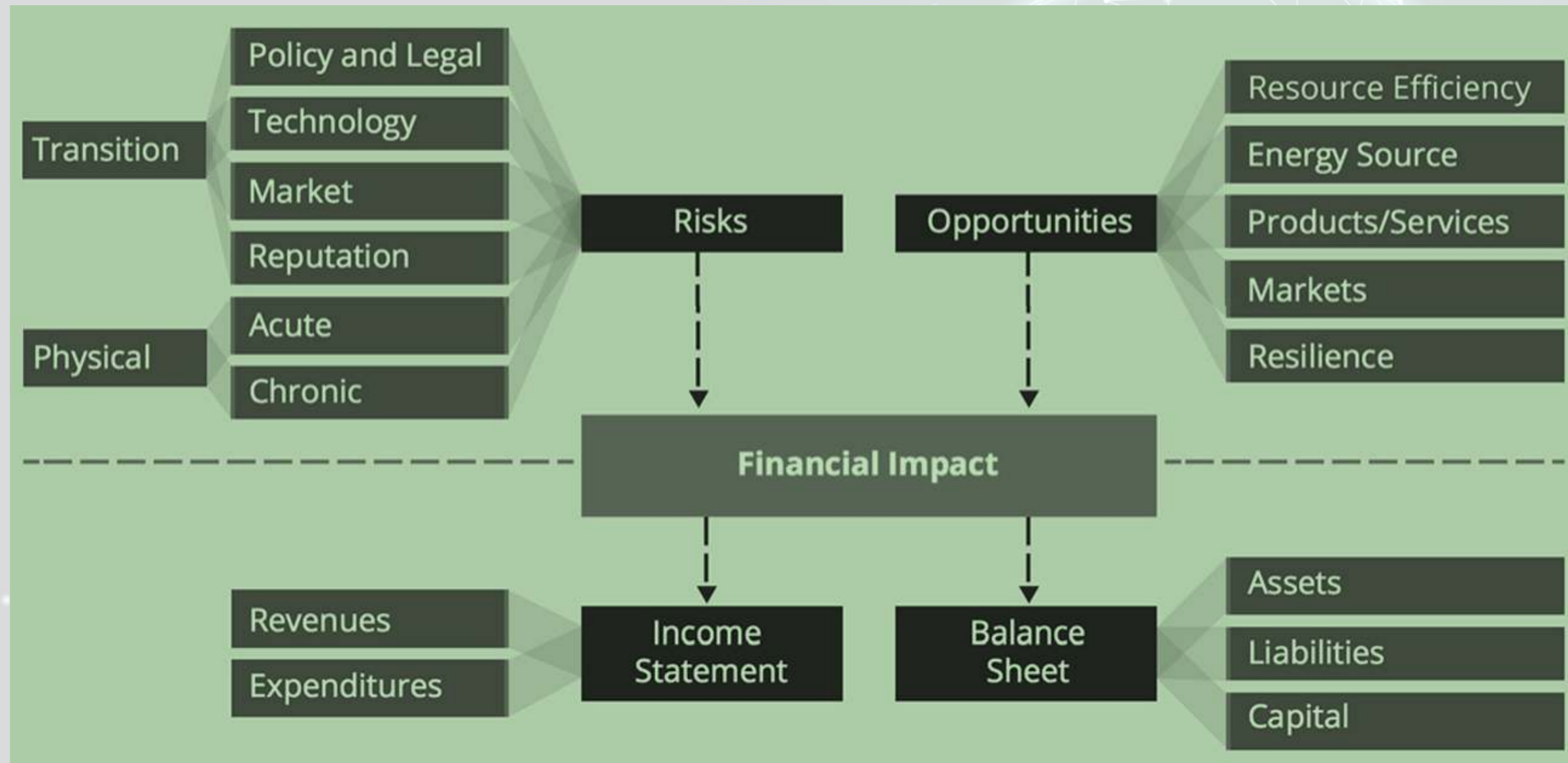
Reporting frameworks



! Singapore

SGX' reporting choices are generally in line with TCFD

TCFD reporting



Risks and Opportunities: Company to World

Singapore airlines

A lumber farm in the Nordics



Risks and Opportunities: World to Company

Singapore airlines

A lumber farm in the Nordics

Additional information for Singapore

- You can find more details on sustainability in Singapore at this links:
 - [NEA: Climate Change](#)
 - [Green Plan 2030](#)
 - [Ministry of Sustainability and the Environment](#)
 - [SGX Sustainability Reporting](#)

End matter

Wrap up

- Later this week:
 1. Grab your project topic at 10am on Thursday – look for the announcement on eLearn!
- For next week
 1. Recap the reading for this week
 2. Read the pages for next week
 - Liabilities (Chapter 9)
 3. Submit last week's homework
 - Available on eLearn
 - Submit on eLearn
 4. Practice on eLearn
 - Practice on Time value of money
 - Automatic feedback provided
- Survey on the class session at rmc.link/101survey7

Packages used for these slides

- kableExtra

- knitr

- revealjs

