PROJECT FINANCE FUNDAMENTALS | INFRASTRUCTURE & ENERGY

InfraView Titans

INTRODUCTION TO PROJECT FINANCE

PUBLIC-PRIVATE PARTNERSHIPS

FINANCIAL STRUCTURING & ANALYSIS

FINANCIAL MODEL

QUICK OVERVIEW OF A FINANCIAL MODELING TEST

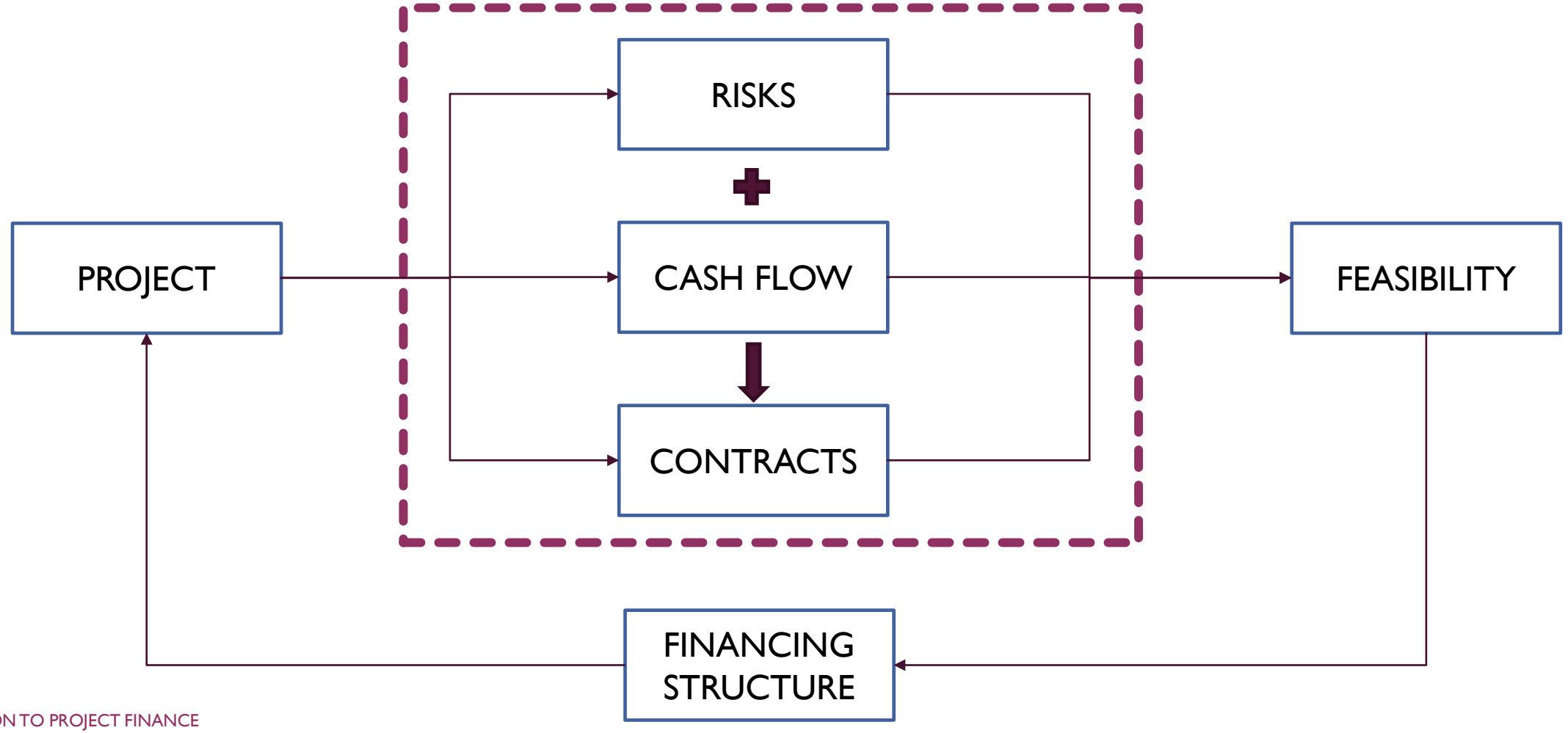
1. Define project finance in one sentence
2. Detail your definition
3. What kind of transactions are eligible for project finance?
4. What are the differences between corporate finance and project finance ?
5. Who are the key stakeholders involved in a project finance transaction?
6. What are their accountabilities?
7. Detail the contractual structure of a typical transaction
8. Detail the financial flows between stakeholders
9. What are the main risks?

I – INTRODUCTION TO PROJECT FINANCE

Q1: DEFINE PROJECT FINANCE IN ONE SENTENCE

Project Finance is the financing of an **SPV** with **ONE** objective: the **PROJECT** itself

Q2: DETAIL YOUR DEFINITION



Q3: WHAT KIND OF TRANSACTIONS ARE ELIGIBLE FOR PROJECT FINANCE?

PUBLIC ENTITY → **NEED** → PROJECT ← **DEVELOPMENT FINANCING** ← PRIVATE SECTOR/SPV

- **State**
- **County**
- **City**
- **Country**
- **Government Entity**

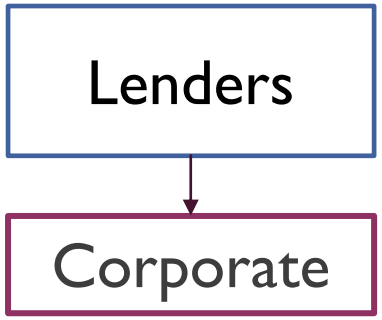
- **Transportation** (Highways, Airports, Railways, Ports…)
- **Power** (Renewable Energy, Coal…)
- **Environment** (Waste Management, Water, Desalinization…)
- **Telecom** (Fiber Optics…)
- **Social Infrastructure** (Hospitals, Schools, Student Accommodations, Jails, Stadiums…)



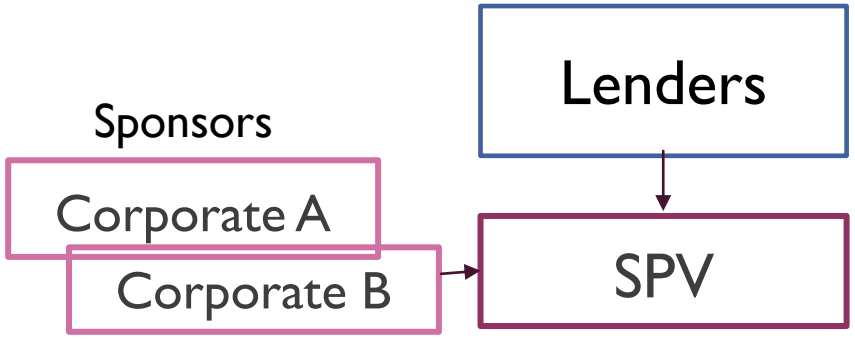



Q4: WHAT ARE THE DIFFERENCES BETWEEN CORPORATE FINANCE AND PROJECT FINANCE? (1/2)

Corporate Finance



Project Finance



Q4: WHAT ARE THE DIFFERENCES BETWEEN CORPORATE FINANCE AND PROJECT FINANCE? (2/2)

	Corporate Finance	Project Finance
Borrower	**Multi-purpose organization**	**Single-purpose vehicle**
Risk	**Focus on corporate credit rating**	**Focus on security package**
Financial Statements	**Focus on Balance Sheet and P&L**	**Focus on Cash-Flow**
Financial Structure	**Common structure**	**Complex, tailor-made**
Liability	**Direct lending/ Consolidated debt**	**Non-recourse/ Non-consolidated debt**

Q5: WHO ARE THE KEY STAKEHOLDERS INVOLVED IN A PROJECT FINANCE TRANSACTION?
Q6: WHAT ARE THEIR ACCOUNTABILITIES?

SPV

- Empty shell
- Single purpose
- Entity set up by Sponsors
- In charge of developing & delivering the project

Sponsors

Develop project via:

- Equity funding
- Obtaining government approvals and permits
- Structuring SPV
- Guarantees and project support
- Negotiating documents
- Securing financing from lenders
- Selecting advisors, contractor and operator

Lenders/Advisors

Main Advisors include:

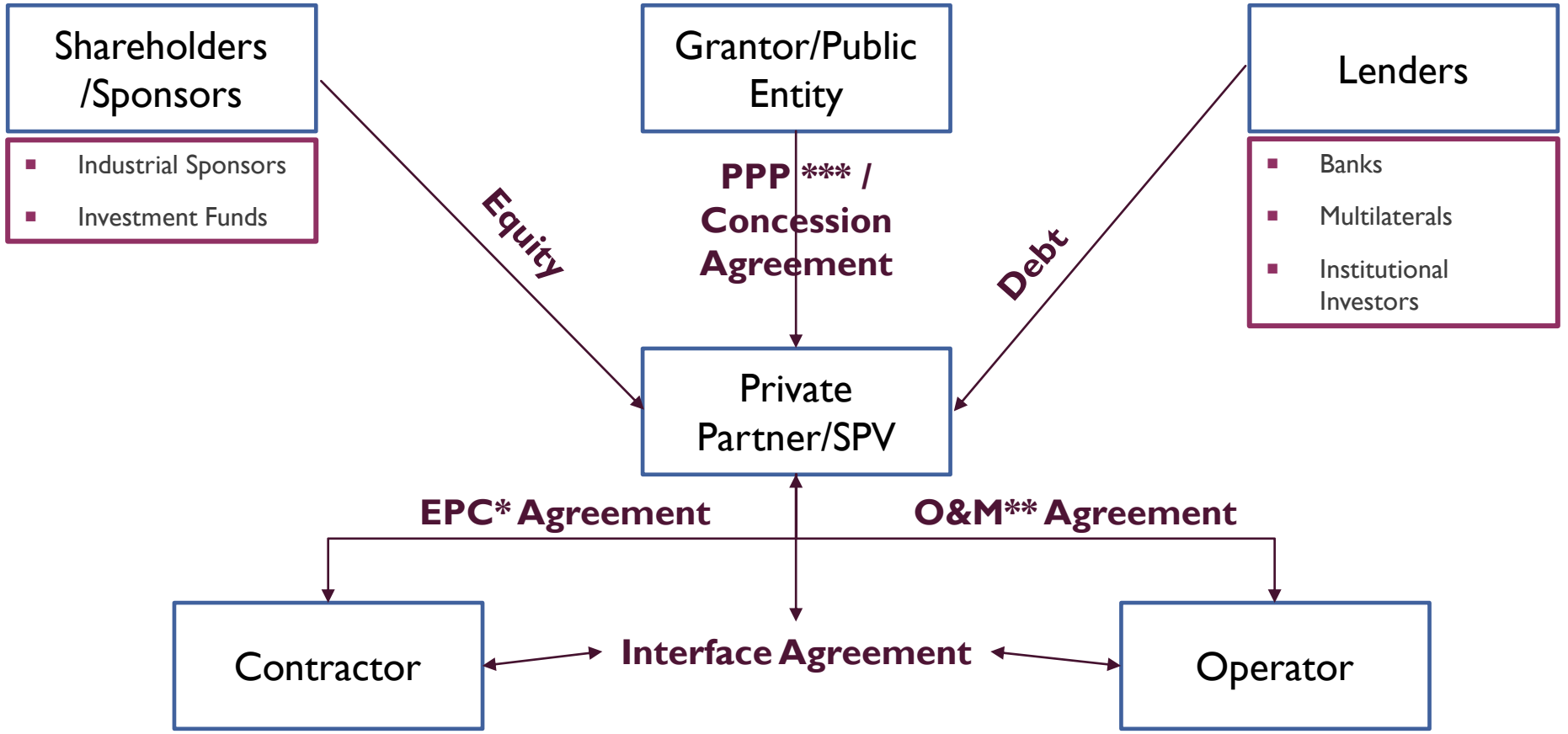
- Financial advisor/Lender(The arranger lender could also be the financial advisor, especially in large transactions):
  - Structuring the financing
  - Debt financing
- Legal advisor: Drafting and negotiating legal documentation
- Technical advisor: Forecasting parameters of Business Plan

Others

Include:

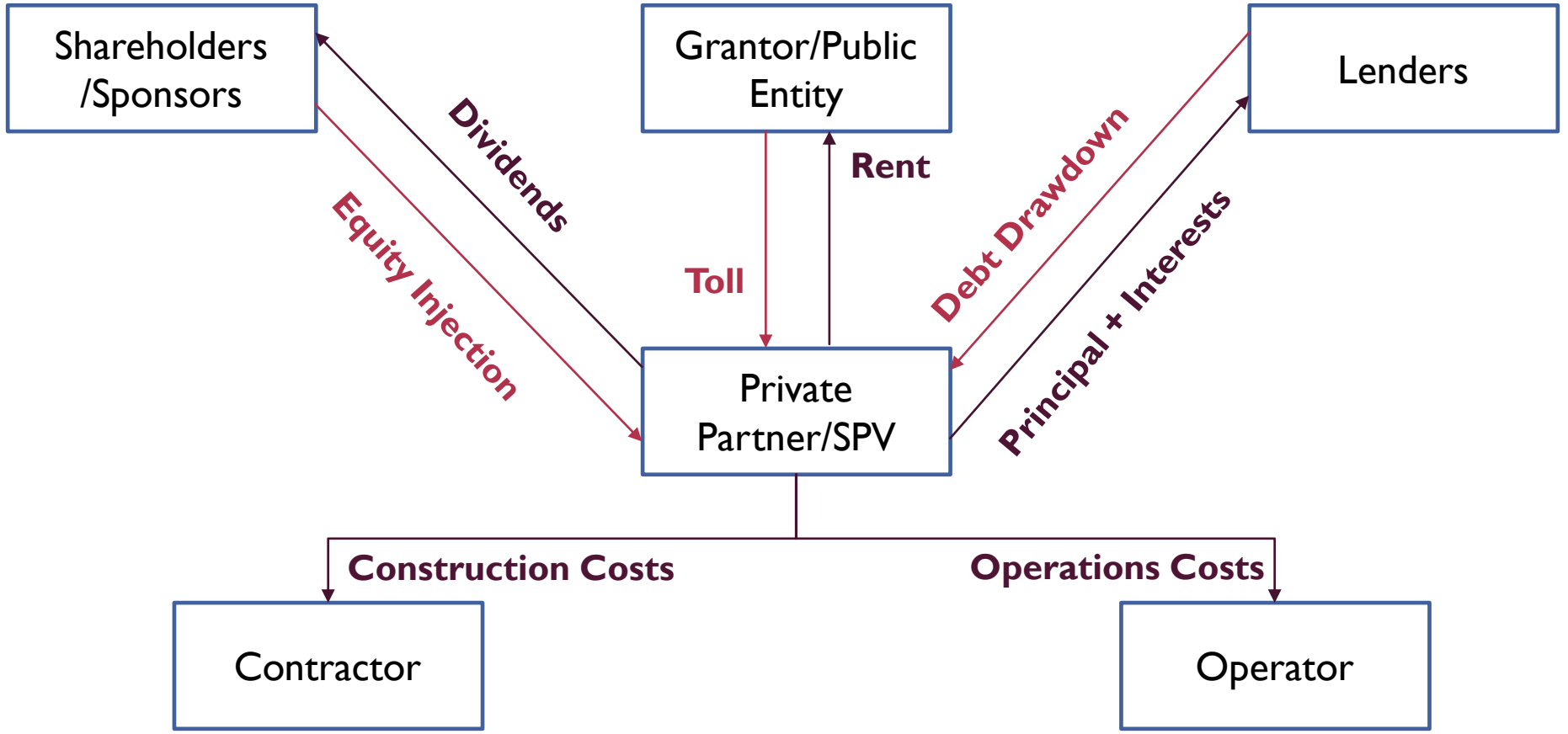
- Government entity (Grantor): Award the project to the preferred bidder (which will become the SPV)
- Contractor: Designs and Builds the project
- Operator: Operates and Maintain the project

Q7: DETAIL THE CONTRACTUAL STRUCTURE OF A TYPICAL TRANSACTION



* Engineering, Procurement & Construction
** Operation & Maintenance
*** Public-Private Partnership

Q8: DETAIL THE FINANCIAL FLOWS BETWEEN STAKEHOLDERS



Q9: WHAT ARE THE MAIN RISKS? (1/3)

Development Phase

- Counterparties
- Site
- Permits
- Capital
- Resources

Construction Phase

- Delays
- Costs overrun
- Quality

Operations Phase

- Supply Risk
- Demand Risk
- Force Majeure

- Political Risk (Conflicts, Commitment, Corruption…)
- Economic Risk (Inflation…)
- Financial Risk (Interest Rates, Exchange Rates…)

Q9: WHAT ARE THE MAIN RISKS? (2/3)

Project Risks

- Technical
- Economic
- Legal
- Force Majeure
- Credit

Bank Risks

- Refinancing
- Syndication

Q9: WHAT ARE THE MAIN RISKS? (3/3)

In Project Finance, **RISKS** are **mitigated** and **allocated** to the parties that can best bear them.

i.e. Construction risks are transferred to the contractor ; Operations risks to the operator …

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1. Define a public-private partnership (PPP)
2. But why PPP?
3. What makes PPP better than public procurement?
4. Name some pros and cons of PPP
5. What are the different types of agreements?
6. What is the main difference between a PPP and a concession?

II – PUBLIC-PRIVATE PARTNERSHIPS

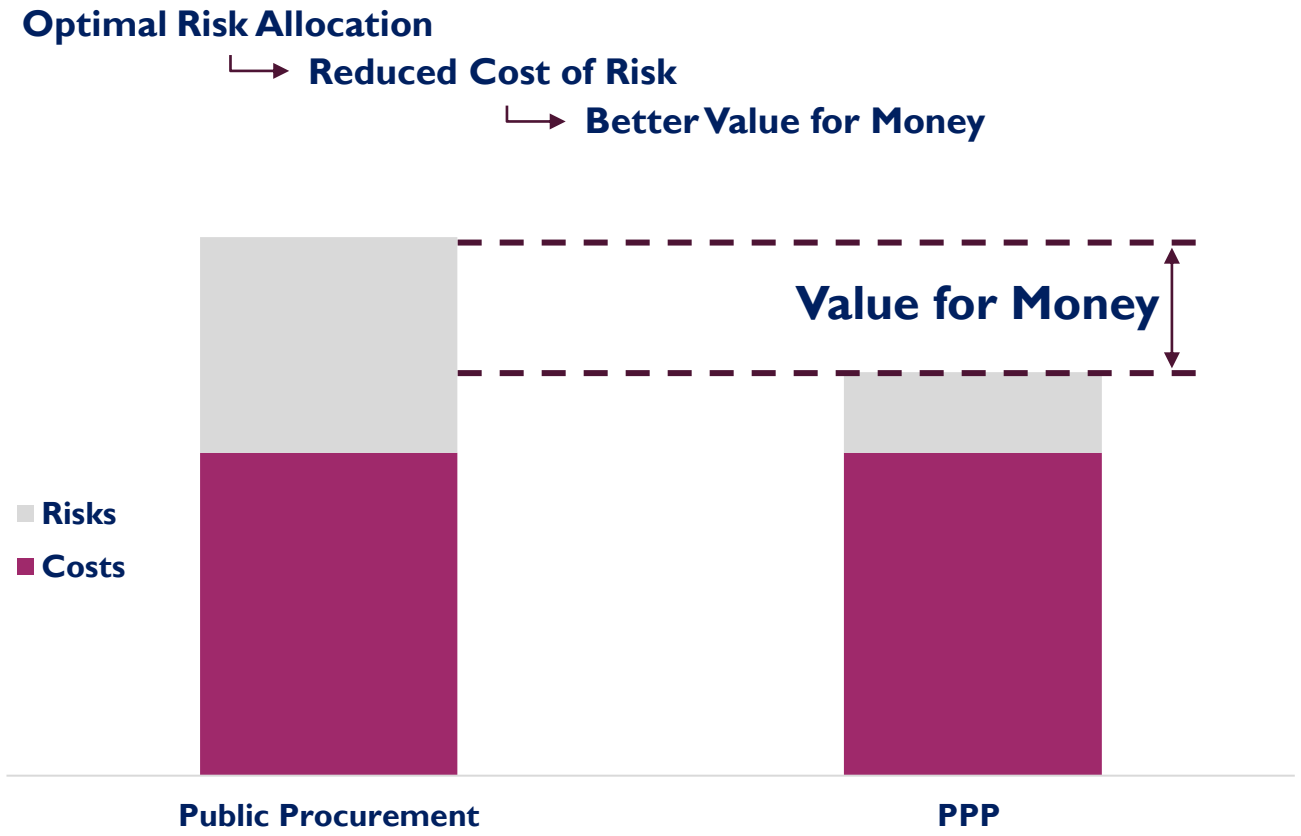
Q10: DEFINE A PUBLIC-PRIVATE PARTNERSHIP (PPP)

- **A Public-Private Partnership (PPP)** is an agreement between a Government entity and a private-sector company in which the private-sector company engages to finance, build, and operate large-scale public projects.

Q11: BUT WHY PPP?

- Rebuilding & creating productive infrastructure in the country.
- Social, political & economic transformation through sustainable infrastructure development.
- Infrastructure funding gap, high sovereign debt, and rising public expenditure.

Q12: WHAT MAKES PPP BETTER THAN PUBLIC PROCUREMENT?



Q13: NAME SOME PROS AND CONS OF PPP

	Public	Private
Pros	▪ Better quality of services ▪ competition and innovation ▪ Risk sharing ▪ Private financial resources	▪ Clear regulatory framework ▪ Long term investment with public support ▪ Risk sharing ▪ Stable cash flow
Cons	▪ Limited flexibility ▪ Public opinion	▪ Political regulatory risk ▪ Lack of commitment ▪ Limited capacity

Q14: WHAT ARE THE DIFFERENT TYPES OF AGREEMENTS?

	Public Procurement	PPP	Concession	Privatization
Financing	Public	Public/Private	Private	Private
Operations	Public	Private	Private	Private
Ownership	Public	Public	Public	Private

Q15: WHAT IS THE MAIN DIFFERENCE BETWEEN A PPP AND A CONCESSION?

	PPP	Concession
Volume Risk	Public	Private

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1. Detail a typical financial plan for a project finance transaction
2. What are the financing instruments?
3. What is the order of repayment?
4. Detail the cash flow cascade
5. What is the rationale behind the cash flow cascade?
6. What are some financial strusture characteristics ?
7. What is the financial metrics that the grantor use ?
8. What are the financial metrics that the shareholders use ?
9. What does the IRR indicate ?
10. What are the financial metrics that the lenders use ?
11. Could you name some sponsors ?
12. What are the alternative source of funding, especially in riskier countries ?

III – FINANCIAL STRUCTURING & ANALYSIS

Q16: DETAIL A TYPICAL FINANCIAL PLAN FOR A PROJECT FINANCE TRANSACTION

USES of Funds	SOURCES of Funds
▪ Capital Expenditures ▪ Debt fees (Commissions, Interests during construction …) ▪ VAT ▪ Reserve Accounts (DSRA/MRA…)	▪ Equity (Share capital, Shareholder's loan, Mezzanine…) ▪ Debt (different tranches) ▪ Subsidies

Q17: WHAT ARE THE FINANCING INSTRUMENTS?

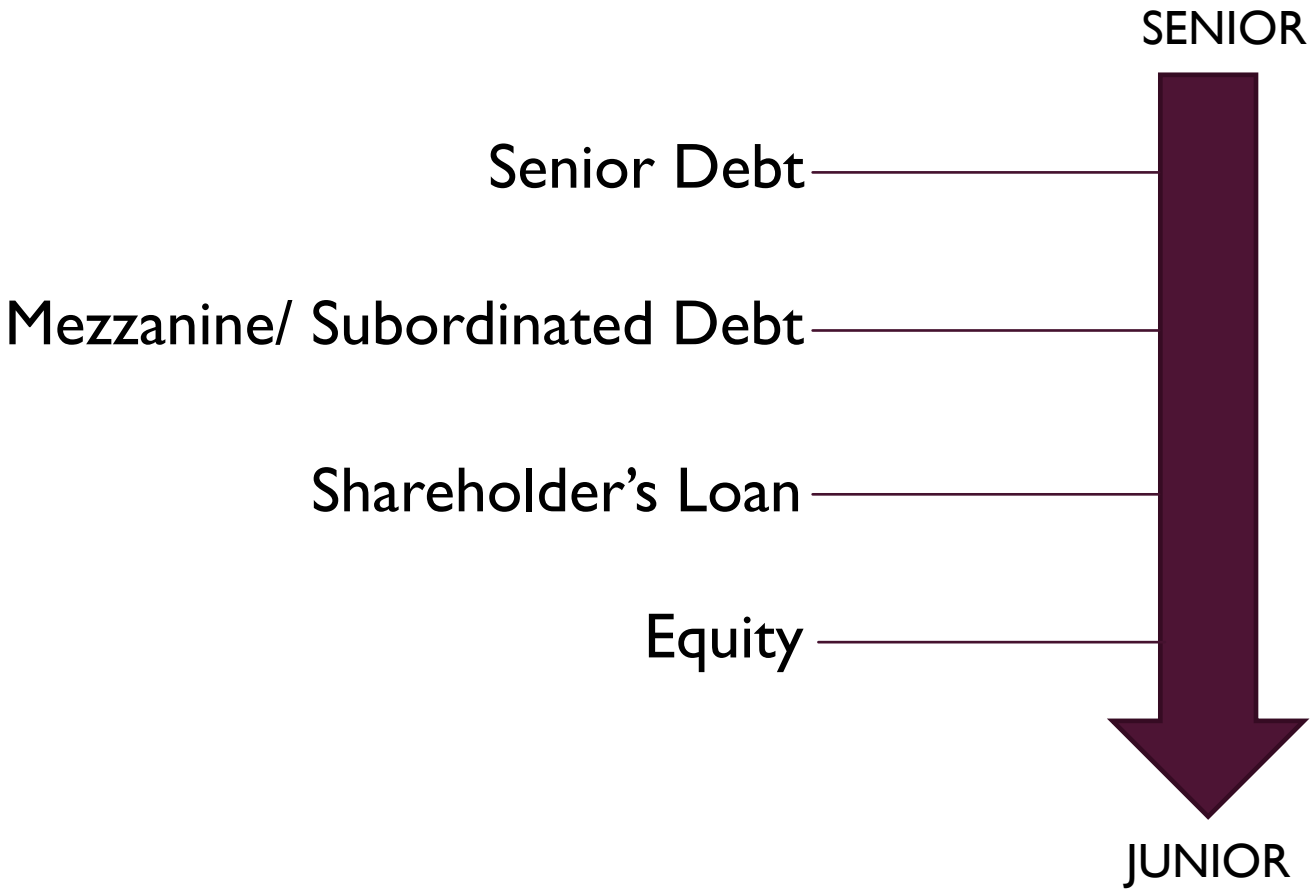
EQUITY

DEBT

- Share Capital
- Shareholders Loan
- Mezzanine

- Bank loan
- Bonds
- Private debt (Institutional Investors)

Q18: WHAT IS THE ORDER OF REPAYMENT?



- The senior debt is usually the largest portion of financing (in general >50% of the total financing)
- The senior debt is the first to be paid out is the project goes bankrupt
- Subordinated debt (Mezzanine or quasi-equity) is senior to equity but junior to senior debt

Q19: DETAIL THE CASH FLOW CASCADE
Q20: WHAT IS THE RATIONALE BEHIND THE CASH FLOW CASCADE?

Revenues/ Availability Payments

OPEX, Taxes

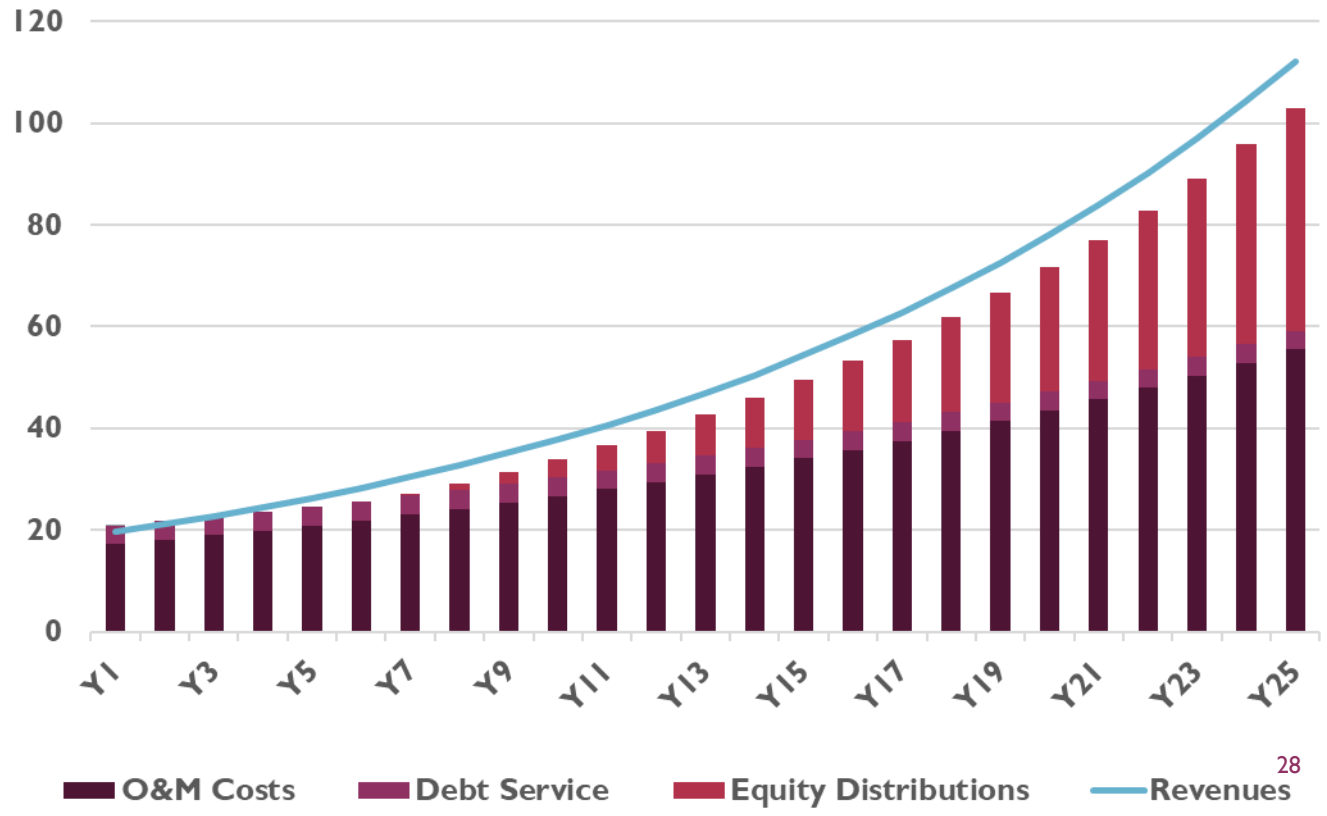
Cash Flow Available for Debt Service (CFADS)

Debt Service

Cash Flow Available for Shareholders

Distributions

Risk / Return



Q21:WHAT ARE SOME FINANCIAL STRUCTURE CHARACTERISTICS? (1/2)

Characteristics of the Junior funds

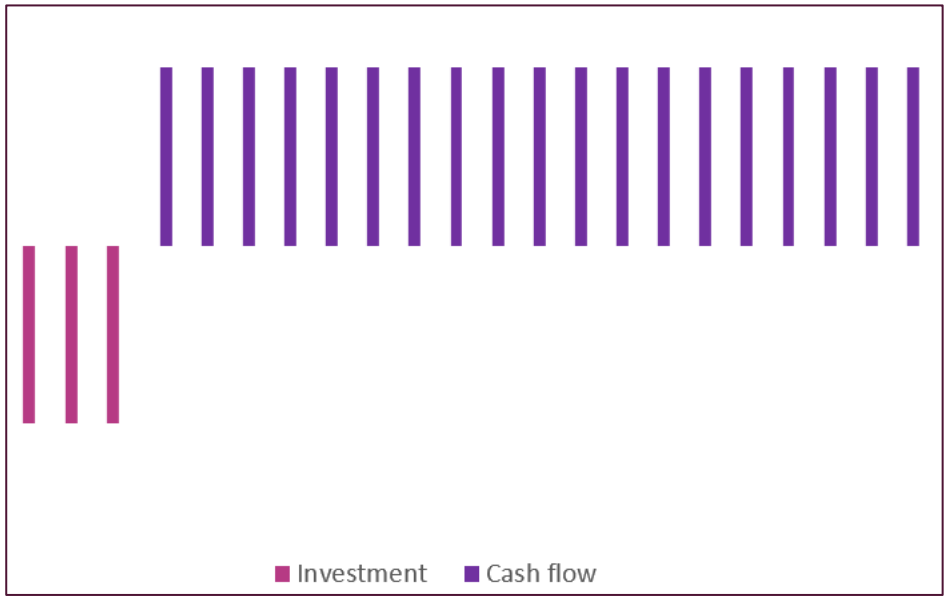
- Expected IRR
- Injection schedule
- Equity Bridge Loan → Improves IRR figure, but reduces robustness
- Share Capital vs Shareholder Loan → Tax impact + Distribution flexibility

Q21:WHAT ARE SOME FINANCIAL STRUCTURE CHARACTERISTICS? (2/2)

Characteristics of the Debt tranche(s)

- Maximum gearing (Debt:Equity ratio)
- Drawdown frequency
- Fees: arrangement fees, commitment fees
- Interest rates (fixed/variable)
- Maturity / Tail
- Repayment profile
- Respect of financial ratios
- Cash provisions (Debt Service Reserve Account / Maintenance Reserve Account)

Q22: WHAT IS THE FINANCIAL METRIC THAT THE GRANTOR USES?

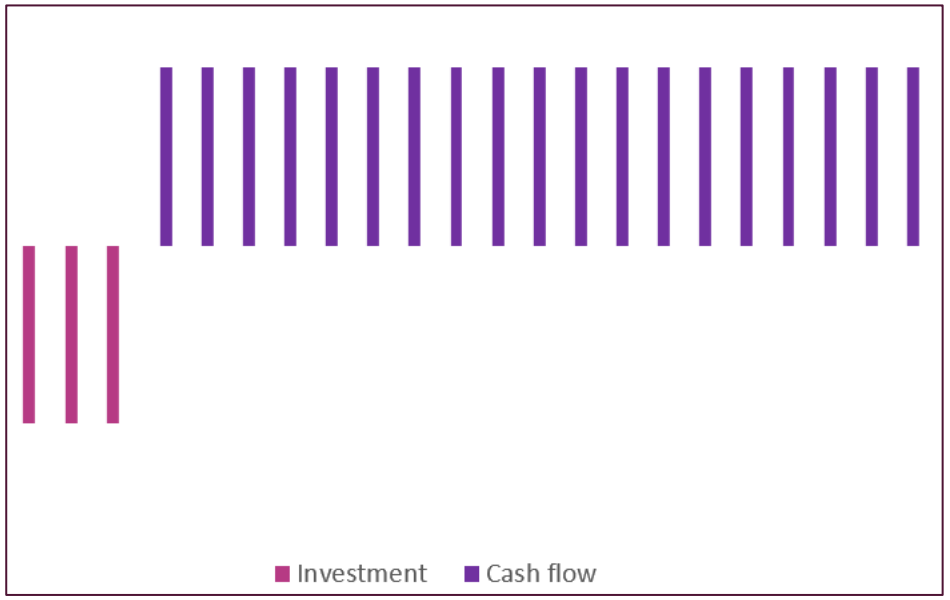


- **The NPV (Net Present Value)** is used by the Grantor to evaluate bids in availability payments PPP.
- Grantor indicates its own discount factor (4-6%)
- The NPV of Availability Payments is Calculated
- The lowest NPV, the better score!

$$\mathbf{NPV} = -\mathbf{C_0} + \frac{\mathbf{C_1}}{\mathbf{1+r}} + \frac{\mathbf{C_2}}{\mathbf{(1+r)^2}} + \frac{\mathbf{C_3}}{\mathbf{(1+r)^3}} + \frac{\mathbf{C_4}}{\mathbf{(1+r)^4}} + \cdots + \frac{\mathbf{C_T}}{\mathbf{(1+r)^T}}$$

$-C_0 =$ Initial Investment
$C =$ Cash Flow
$r =$ Discount Rate
$T =$ Time

Q23: WHAT ARE THE FINANCIAL METRICS THAT THE SHAREHOLDERS USE?
Q24: WHAT DOES THE IRR INDICATE?



- **The Equity IRR (Internal Rate of Return):** the calculated return of a series of cash-flows, i.e. the rate that gives a PV=0 to a series of cash-flows
- When discounted at **d=IRR**, the present value of cash-flow received equals the present value of the investment spent

- Equity IRR < Hurdle Rate → Investment is not acceptable
- Equity IRR > Hurdle Rate → Investment is acceptable

- A hurdle rate is the minimum rate of return required on an investment
- Riskier projects have a higher hurdle rate, while those with lower rates come with lower risk

Q25: WHAT ARE THE FINANCIAL METRICS THAT THE LENDERS USE?

- **Debt Service Cover Ratio (DSCR)** = Cash Flow Available for Debt Service / Debt Service
  - For each period, determines the headroom between the Cash-Flow from operations and the debt service (principal repayment + interests)
  - Depending on the risk profile and the sensitivity of the structure, lenders will impose DSCR levels to be respected

- **Loan Life Cover Ratio (LLCR)** = Present Value of future Cash Flow Available for Debt Service until maturity / Current outstanding debt
  - With present value calculated at cost of debt (interest rate)
  - Gives a measure of the ability to repay the debt with future cash flows within the maturity period

- **Project Life Cover Ratio (PLCR)** = Present Value of future Cash Flow Available for Debt Service until end of project / Current outstanding debt

Q:26 COULD YOU NAME SOME SPONSORS?

- Share Capital
- Shareholders Loan
- Mezzanine

INDUSTRIAL GROUPS

VINCI
ACWA POWER
Shell
EDF
BOUYGUES CONSTRUCTION
bp
EIFFAGE
SUEZ
PG&E
ENGIE
BECHTEL
TOTAL

INVESTMENT FUNDS

ARDIAN
Shapoorji Pallonji INFRA
Marguerite
meridiam
NAIP NORTH AMERICAN INFRASTRUCTURE PARTNERS
Blackstone
MACQUARIE
ANTIN INFRASTRUCTURE PARTNERS
KKR
idinvest PARTNERS
CIP COPENHAGEN INFRASTRUCTURE PARTNERS
BlackRock
cube INFRASTRUCTURE FUND

Q27: COULD YOU NAME SOME LENDERS?

- Bank loan
- Bonds
- Private debt (Institutional Investors)

COMMERCIAL BANKS

BNP PARIBAS
BANK OF CHINA
BANK ONE
SMBC
J.P.Morgan
ABN·AMRO
HSBC
MUFG
WACHOVIA
SOCIETE GENERALE
Bank of America
MIZUHO
citibank
RBS
Deutsche Bank
BARCLAYS
CREDIT SUISSE FIRST BOSTON

INSTITUTIONAL INVESTORS

AVIVA
APFC ALASKA PERMANENT FUND CORPORATION
Allianz
QIA جهاز قطر للاستثمار QATAR INVESTMENT AUTHORITY
AXA
OMERS
UniSuper
KIC Korea Investment Corporation
USS
ONTARIO TEACHERS' PENSION PLAN
fonditel

Q28: WHAT ARE THE ALTERNATIVE SOURCES OF FUNDING, ESPECIALLY IN RISKIER COUNTRIES?

MULTILATERAL DEVELOPMENT BANKS

- Multilateral Development Banks (MDBs) are Inter-Governmental Organizations mandated by Governments to support private sector investment, particularly in high-risk emerging markets.
- Multilaterals can contribute directly or indirectly to project debt.

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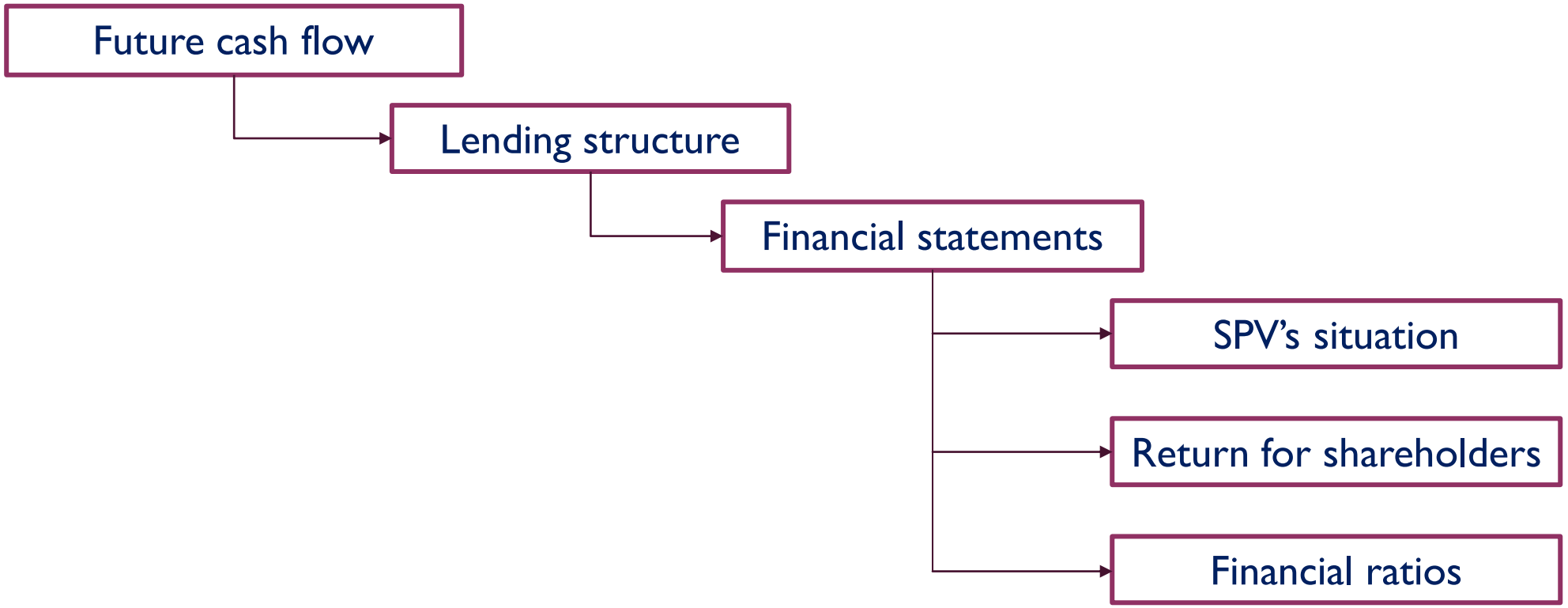
Why do we need a model? 1

2 How do you build a model ?

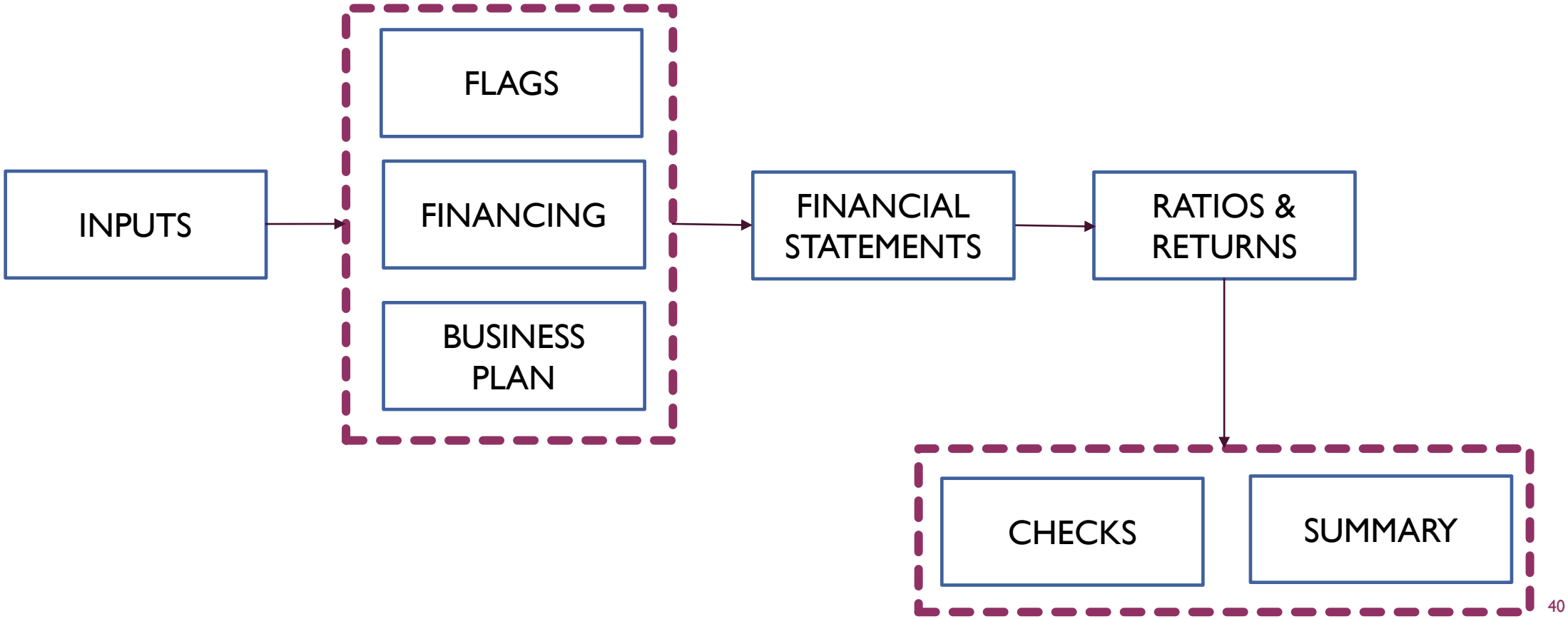
List some model best practices 3

IV – FINANCIAL MODEL

Q29: WHY DO WE NEED A MODEL?



Q30: HOW DO YOU BUILD YOUR MODEL?



Q31: LIST SOME MODEL BEST PRACTICES

- "Inputs" sheet to document all data assumptions
- "Flags" sheet for timing indicators
- Flexible/Short/Simple/Consistent formulas
- Always begin a line at the same column
- Zoom at 75%
- Calibri 11 Font
- A and B columns to be shortened
- Same format in all sheets
- Specify Unit and currency
- Same color for hard coded numbers

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1 The project – Solar PV Plant in Portugal

2 Operational assumptions – Solar PV plant in Portugal

3 Temporal assumptions – Solar PV plant in Portugal

4 Financial and fiscal assumptions – Solar PV Plant in Portugal

5 Questions – Solar PV plant in Portugal

6 Ace project finance – Financial modeling test

V – QUICK OVERVIEW OF A FINANCIAL MODELING TEST

THE PROJECT – SOLAR PV PLANT IN PORTUGAL

The project involves the construction and operation of a 35 MWp photovoltaic solar power plant in Portugal. The government has organised a bidding programme and will sign a 25-year Power Purchase Agreement (PPA) with the winner.

Your client (a candidate) has hired you to structure the financing plan.

Below are the assumptions to be considered in your model and the issues to be addressed.

OPERATIONAL ASSUMPTIONS – SOLAR PV PLANT IN PORTUGAL

Capacity	35	MWp
Production Ratio	1150	kWh/kWp/an
Availability	99%	%
Tariff	45	USD/MWh
Operational costs	100k	USD/semester
Construction costs	3m	USD/semester
Inflation	2%	%/year

Annual production = Capacity x Production Ratio x Availability

TEMPORAL ASSUMPTIONS – SOLAR PV PLANT IN PORTUGAL

Construction Start	1 January 2021	Date
Construction Duration	2	Years
Operations Start	1 January 2023	Date
Operations Duration	25	Years

- Pro-rata drawdown of debt in construction / Repayment in operation
- Interest to be paid in operation / For simplification, no interest payments are considered to be made during construction.
- Linear depreciation over the duration of the PPA

FINANCIAL AND FISCAL ASSUMPTIONS – SOLAR PV PLANT IN PORTUGAL

Gearing	**65%**	**%**
All-in interest rate	**5% (In operations phase only)**	**%**
DSCR Target	**1.5**	**x**
Maturity	**End of PPA (No tail)**	**Date**
CIT	**25%**	**%**

QUESTIONS – SOLAR PV PLANT IN PORTUGAL

1. Build a financial model forecasting the 3 financial statements.

2. Determine the Equity IRR for Shareholders and the Project IRR.

3. Calculate the NPV of the Project.

4. Calculate the Average DSCR.

ACE PROJECT FINANCE – FINANCIAL MODELING TEST

Our team is currently working on a « Project Finance Modeling Test From Scratch » course. If interested, stay tuned for updates!

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THANK YOU