Debt in Real Estate

- Educational Presentation #9 – Real Estate
- 06.03.2025
- Property of the Alternative Investment Society (AIS)
- Sources: WallStreetPrep, BIWS, REFM, FT, Bloomberg

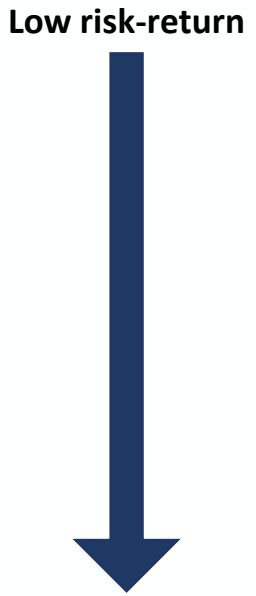
ESCP Alternative Investment Society

Section I: Debt Basics

Real Estate Capital Stack

- The real estate capital stack is comprised of debt as well as equity of different types, differentiated by their risk-return profiles
- The common capital stack includes senior debt and mezzanine debt with clear priority rights; however, a variation can be structuring senior debt in an A/B structure, where debt is equivalent in terms of priority, and repayments are made pari-passu

Senior Debt	Comprises the largest portion of the capital, has the lowest interest rate, is drawn last in capital deployment and has first repayment priority (underlying RE and CFs as collateral)
Mezzanine Debt	Interest rates for subordinate debt is typically higher given its lack of collateral and lower repayment priority
Preferred Equity	Preferred equity offers the investor a stake in the upside of the property, whilst also receiving preferential repayment conditions to reduce risk compared to sponsor equity
Common Equity	Common equity (sponsor) holders have the highest potential upside in a project; however, they also carry the highest risk with the lowest repayment priority in case of default



Terms of Debt

- For lenders to lower the risk of providing the loan, they often include strict loan terms, thereby (1) limiting the likelihood of default and (2) maximising the return in case of default
- The following two slides cover common debt terms for senior, mezzanine and construction loans alike:

Recourse

- A recourse debt is debt where the borrower is made personally liable for its repayment
- These loans are riskier for the borrower, as they have skin in the game (with personal assets), thereby aligning interest between the debt holder and the sponsor

Draws

- The process whereby capital is deployed for a project (in TPC), in increasing order of priority
- Hence, equity is committed first (pref. and sponsor equity pari-passu), followed by mezzanine and lastly senior debt, consequently protecting the interests of debt holders by ensuring equity investors have skin in the game

Sweep

- Sweeps are provisions through which lenders can take excess cash flows from a property and automatically apply them towards loan repayment
- They limit the borrower in terms of reinvesting into the property, whilst they allow the lenders to be paid back quicker

Further Terms of Debt

Loan Structuring Terms

- **Loan/Mortgage/Discount points** are fees which the borrower pays the lender upfront in exchange for providing the loan, typically expressed as percentage of the loan and referred to as a ”buydown”
- **Equity kickers** gives the lender a piece of equity within the project in addition to their regular debt payments, typical mezzanine loans to risky/highly leveraged projects

Repayment Structures

- **Constant repayment** is constant amortization (equal instalments payable over the term), including interest and principal portions
- With **bullet repayment**, the full principal is due at loan maturity, with interest-payments paid throughout
- Using **construction loans**, interest is accrued over the loan term and paid as balloon payment at maturity

Rate Terms and Other Considerations

- A **fixed rate** is an interest rate on a loan which remains constant for the entire loan term
- A **floating rate** is an interest rate which adjusts, based on the SOFR or EURIBOR with a spread on-top
- To comply with sustainability regulations, **EPC Ratings** are assigned to properties, curtailing less energy efficient buildings from receiving debt

Section II: Debt Risks and Loan Sizing

Prepayment Penalties

- Lenders expect to earn a return over the full loan term (yield), with early repayment disrupting their projected cash flow
- Hence, lenders frequently impose Prepayment Penalties, protecting their interests in the case the sponsor equity decides to repay debt early

1. Yield Maintenance

- Borrower compensates the lender for the interest they would have earned if the loan had remained outstanding
- Present value of remaining interest payments (discounted at a risk-free rate, typically Treasuries)

2. Defeasance

- Borrower replaces the loan collateral (property) with a portfolio of U.S. Treasuries that generate equal CFs
- Ensures that the lender (or bondholders in CMBS loans) continues receiving the expected payment stream

3. Step-down Penalty

- A fixed percentage of the loan balance declines over time (5-4-3-2-1%)
- Encourages borrowers to hold loans longer but offers flexibility closer to maturity

Prepayment penalties protect lenders but can significantly impact borrowers' exit strategies, and therefore must be included in pro-forma modelling

Debt Covenants (incl. Positive)

- Debt covenants are contractual agreements between borrower and lender that set financial and operational requirements, and if violated, allows debtors to accelerate loans or take ownership of the asset
- They aim to protect lenders by ensuring the borrower maintains financial health (to repay), and can be categorized into 2 groups:
  - Positive covenants: actions the borrower must take
  - Negative covenants: actions the borrower cannot take

Positive Covenant:	Explanation:
Deposits and reserves	Requires a property operating account (OPEX) with the lender's bank and may mandate minimum reserve levels for taxes, insurance, or maintenance
Performance maintenance	Borrower must maintain a minimum financial cushion, including NOI, EBIT, and potentially cash-flow coverage, thereby avoiding financial distress
Report leases	Borrower must submit copies of new leases to ensure they align with the business plan

Negative Debt Covenants

Negative Covenant:	Explanation:
Prepayment penalty	Restricts early loan repayment without a financial penalty, and ensures the lender receives the full expected interest income over the loan term
Distributions	Limits equity distributions (e.g., dividends or cash payouts) to maintain liquidity for reserves, thereby protecting the lender by ensuring cash remains available for loan servicing and property maintenance (debt sweep)
Operating restrictions	Requires the borrower to meet property performance benchmarks, such as, minimum occupancy levels, restrictions on below-market leases (to prevent undervaluing the property) and tenant quality requirements
Additional debt	Prevents the borrower from taking on more debt that could weaken financial stability and protects the lender's seniority in repayment priority

Loan Sizing

- Loan sizing is the process through which lenders (often banks) determine how big of a loan they will grant investors to fund their investments
- Investors often want to fund as much of their projects as possible with debt, meaning the bank must determine how risk they want to take, and hence how much capital they will lend
- Loan sizing is the centerpiece in the underwiring process performed by lenders and can be divided into 3 steps:

Conduct cash-flow analysis

- The first step to loan sizing is conducting a cash-flow analysis of the project
- With some projects, like construction, the analysis is based only on speculation of the future, whilst with others analysis is based on historic performance

Analyse 5 key metrics

- Based on the cash-flow analysis conducted some key metrics will be constructed
- There are typically 5 metrics which are used when loan sizing a project: Loan-to-Value, Loan-to-Cost, Debt Yield, and Debt Service Coverage Ratio, Interest Coverage Ratio

Make decision on debt size

- After constructing the key metrics, the bank must decide based on the metrics how much money they want to lend the project
- The stronger the key metrics, the more likely banks are to lend larger amounts, as they indicate a lower risk of default and higher project security

Loan-to-Value Ratio (LTV)

- Stakeholders evaluate financing risk with the Loan-to-Value Ratio (LTV), comparing the loan amount to the property's appraised value

LTV (%) = Loan Amount / Appraised Property Value

Usefulness of LTV

- Indicate level of equity and debt through which a property is financed
- Assess the risk of the loan, used for underwriting

High LTV (>75%)

- Greater credit risk, higher interest rates

Low LTV (<65%)

- Lower credit risk, more favourable loan terms

Implications of LTV

- Higher LTV ratios are seen as riskier by lenders because they have greater exposure to the potential downside, which may lead to higher interest rates to compensate for the increased risk
- LTV ratios for stable, income-producing commercial properties range from 65% to 75%, meaning a down payment of minimum 25%

Loan-to-Cost Ratio (LTC)

- The Loan-to-Cost ratio (LTC) calculates the loan amount as a percentage of the total cost of the project

LTC (%) = Loan Amount / Total Project Cost

- Project costs include hard-costs (e.g. land acquisition, construction), soft costs (e.g., legal, marketing), and contingency reserves

Usefulness of LTC

- The LTC is used for construction properties compared to the LTV, as it deals with costs, which are known in construction, compared to value
- The LTC is, therefore, only compared to all costs that have liquidation value in the case of foreclosure

Implications of LTC

- A higher LTC ratio represents more leverage and higher risk for the lender, as opposed to a lower LTC which signifies more equity from the borrower
- There is more variation in the LTC ratio from project-to-project than in the LTV ratio, as it depends heavily on project-specific costs and risk
    - Within residential projects the LTC can be up to 80% for well-qualified borrowers (track-record) with strong projects
    - Commercial developments are generally capped at 60-70% (senior), depending on project type and risk

Debt Yield

- Debt Yield evaluates the return on investment for the lender, based on property's Net Operating Income (NOI) relative to the loan amount

Debt Yield (%) = (NOI / Total Loan Amount) * 100

Usefulness of the Debt Yield

- Insight into risk by comparing property's ability to generate income, relative to the amount of debt taken on
- Used for loan sizing by ensuring the loan is appropriately sized for the property's operations
- Indicates how quickly lender could recover funds in case of default, as it's an unlevered, pre-tax metric, unaffected by non-operating items

High Debt Yield

- Reduced likelihood of default – less risk

Low Debt Yield

- Higher income relative to loan – lower risk

Typical Debt Yields

- Lenders' debt yield requirements vary, typically between 5% and 12%, and remain stable regardless of changes in interest rates, property value, or amortization periods

Debt Service Coverage Ratio (DSCR)

- Lenders use the Debt Service Coverage Ratio (DSCR) to assess a property's ability to generate income to cover its debt payments

DSCR (x) = Net Operating Income (NOI) / Annual Debt Service

... where "Annual Debt Service" is sum of principal and interest payments

Interpretation of DSCR

- DSCR = 1.0x: Income exactly covers debt obligations (usually, interest and principal portion)
- DSCR < 1.0x: Income insufficient to cover debt payments, indicating higher risk
- DSCR > 1.0x: Income exceeds debt obligations, suggesting lower risk

Example: If the NOI is $200,000 and the annual debt service is $150,000, the DSCR = 1.33x. This means the property generates 33% more income than necessary to cover debt payments.

Importance of DSCR

- A measure of risk assessment for loan approval, eligibility and terms – high DSCR can lead to more favourable interest rate and terms
- Preferred DSCR varies, however a common minimum is 1.2x (at stabilization) to provide a safety margin for the lender

Interest Coverage Ratio (ICR)

- The Interest Coverage Ratio (ICR) measures how easily a company pays interest on outstanding debt, by comparing NOI to interest expense

ICR (x) = Net Operating Income (NOI) / Interest Expense

- Similar to the DSCR, yet the ICR only considers interest expenses and principal portions of loans

Interpretation of ICR

- ICR = 1.0x: Property generates just enough income to cover interest payments
- ICR < 1.0x: Property cannot cover its interest payments with its income, indicating higher risk
- ICR > 1.0x: Property generates more income than necessary to cover interest payments, indicating a healthier financial position

Further Explanation

- The ICR directly effects debt as it demonstrates to the lender the ability to serve the interest portion of a loan
- Lenders prefer higher ICR as it shows the borrower has a larger buffer to withstand financial difficulties
- Typically, lenders look for an ICR above 1.5x to minimize risk, with an ICR of under 1.0x being considered low

Section III: Levered Return Metrics

Cost of Debt

- The Cost of Debt (CoD) in real estate is the effective interest rate which a company pays to take on debt

Cost of Debt (After Tax) = (Interest Rate) * (1 – Tax Rate)

- The post-tax cost of debt is used partially because interest is tax deductible, effectively lowering net cost of debt

Usefulness of Cost of Debt

- Through the cost of debt, lenders know the blended cost of financing from various sources
- A low cost of debt signifies creditworthiness and lower risk, whilst a higher one may indicate higher financial risk
- The cost of debt is the primary component of the Weighted Average Cost of Capital (WACC) for a company, and can be used as the discount rate when evaluating the NPV of a project

Cost of Debt vs. Cost of Equity

- The cost of equity (CoE) is the effective the return that needs to be achieved, to satisfy equity holders in a property
- As equity holders take on more risk than creditors, they will expect a higher return, leading the CoE to be inherently higher than the CoD

Leverage Effect

- The leverage effect describes the amplifying impact which using debt can have on a company's return on equity
- Leverage refers to the use of borrowed capital (debt) to finance an investment, leading to a higher stake than if solely equity was used

Positive leverage effect:

- If the return on the property exceeds the cost of debt, then leverage will increase returns
- The higher the spread between the property return and the cost of debt, the more amplified return becomes

Negative leverage effect:

- If the cost of debt exceeds the return on the property, leverage will decrease returns
- Higher levels of debt can lead to negative equity in a property, and higher debt service payments

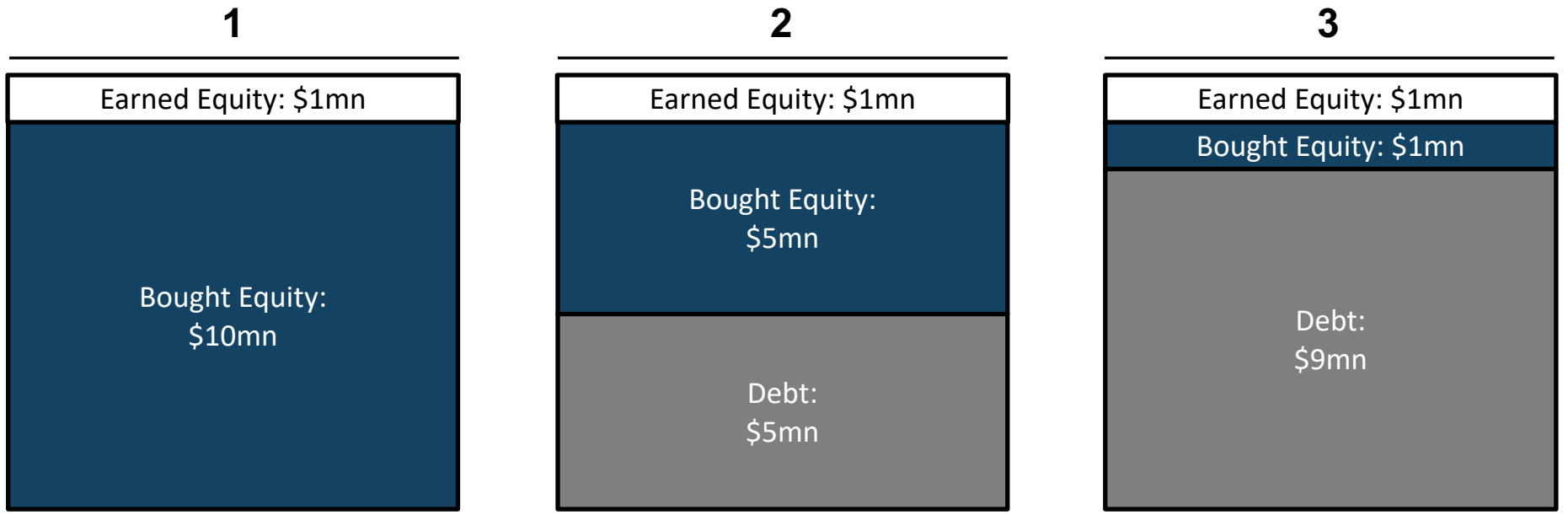
Risk Considerations

- Leverage will amplify risk; if the property is performing poorly, debt obligations will stay the same, leading to financial distress
- High leverage will also increase the risk of liquidity issues or default, if cash flows cannot cover the interest payments, which will be greater with more leverage

Capital Structure with Capital Appreciation

Property Value at End Yr. 1 = $10mn

Property Value at End Yr. 2 = $11mn

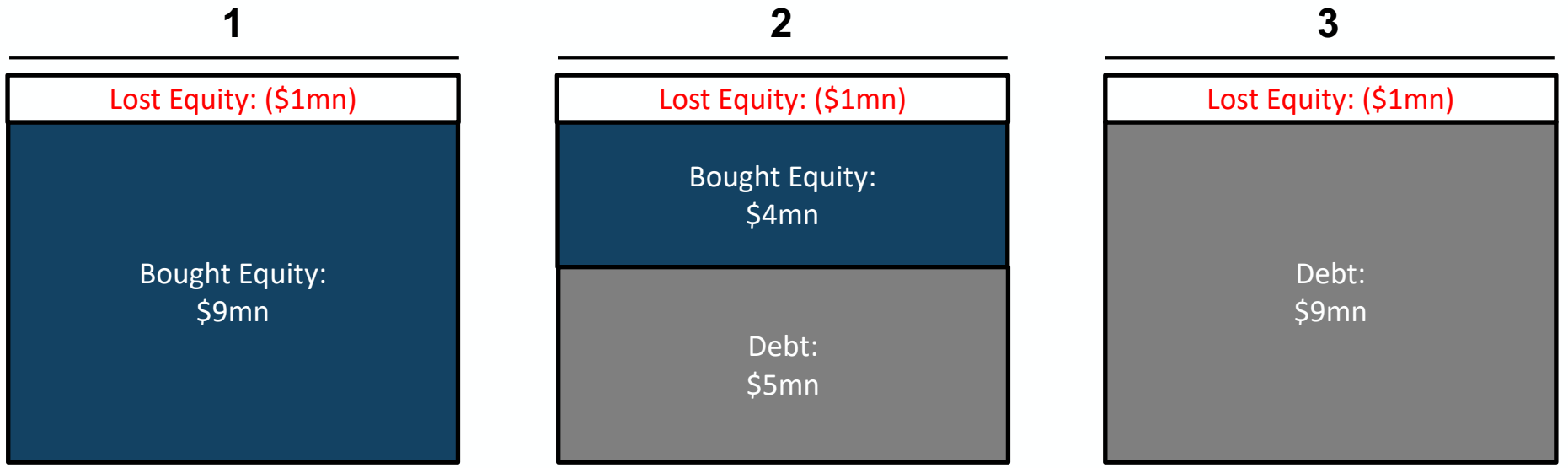


Equity Returns			
Multiple	1.10x	1.20x	2.00x
Total Return	10.00%	20.00%	100.00%
Annualized	4.88%	9.54%	41.42%

Capital Structure with Capital Depreciation

Property Value at End Yr. 1 = $10mn

Property Value at End Yr. 2 = $9mn



Equity Returns			
Multiple	0.9x	0.80x	0.00x
Total Return	(10.00%)	(20.00%)	(100.00%)
Annualized	(5.13%)	(10.56%)	(100.00%)

Unlevered vs. Levered IRR

- Internal Rate of Return (IRR) measures the percent yield received on a property investment across a pre-defined period
- Conceptually, it's the discount rate that sets the NPV equal to 0
- The two primary sources of return in real-estate investing is **NOI growth** and **Capital Appreciation**

Unlevered IRR (Property IRR)

- Unlevered IRR considers the property's performance without the influence of debt
- Cash flows for unlevered IRR are based solely on NOI and capital costs, offering a financing-neutral perspective

Levered IRR (Equity IRR)

- Levered IRR includes the impact of debt and leverage, amplifying both return and risks
- Cash flows for levered IRR include adjusted NOI minus debt service (interest and principal)

Further explanation

- Risk: Levered IRR incorporates the financial risk of the debt, while unlevered IRR does not
- Return: Levered IRR can be higher than unlevered IRR due to the impact of leverage (if the cost of debt is lower than the operational return), the equity returns are magnified
- A larger spread between levered and unlevered IRR indicates that the investment's returns are more reliant on debt financing to achieve target returns, which is problematic

Equity Multiplier (EM)

- The Equity Multiplier (EM) measures how many times over an investor earn their absolute cash back on an investment

EM (x) = Sum of Capital Distributions / Sum of Capital Outflows

- An important consideration is that the EM does not consider the time value of money
- Hence, two projects can have the same EM, whilst having vastly different net present values

Debt effect on EM

- Within investments, debt serves as an amplification of equity return and conceptually amplification of the EM
- The more debt is taken on, the smaller the capital base over which returns are spread out over will be
- ***Case Study**:*
  1. *A building is bought for 100 million dollars, and appreciates 50% in value until it is sold 5 years later*
  2. *If the project was unlevered, the EM would have been 1.5x (150 / 100)*
  3. *If the project had an LTV of 50%, our equity would have grown from 50 million to 100 million, resulting in an EM of 2.0x (100 / 50)*

Cash-on-Cash Return (CoC)

- The Cash-on-cash return (CoC) measures annual cash which an investor is getting back on the investment, relative to the equity invested

Cash-on-Cash Return (%) = Annual Pre-Tax Cash Flows / Equity Invested

- CoC return focuses solely on the realized return on an asset, excluding the unrealized capital gain

Usefulness of CoC return

- Unlike the IRR it does not consider the time value of money, making it much more of a short-term cash flow metric
- Usually a CoC return of 8%-12% is considered strong

Example Calculation

- The CoC will be higher the more leverage taken, due to the leverage effect:
- *An investor buys a property which has a pre-tax annual adjusted NOI of $50k, for $1mn*
  1. *In **scenario 1**, the project has a 50% LTV ratio, leading to a CoC return of 5% (25,000 / 500,000)*
  2. *In **scenario 2**, the project has a 75% LTV ratio, leading to a CoC return of 10% (25,000 / 250,000)*

Section IV: Refinancing and Distressed Debt

Refinancing Basics

- Refinancing is the replacement of one loan with another, typically to secure better loan terms, release equity, or adjust financing strategy
- There are following benefits to refinancing, in decreasing order of magnitude:

1. Cash-out refinancing: Borrower takes out a new loan larger than the existing debt (once stabilized), taking the difference in cash to redeploy
2. If market rates decline, refinancing can lock in a lower rate, reducing debt service costs and improving DSCR
3. Extend loan maturity period, reducing pressure from upcoming balloon payments, or changing from floating to fixed rates
4. Interest payments on debt are tax-deductible, so refinancing allows investors to keep high-interest debt early on for maximum tax shielding
5. Unlike selling an asset, refinancing does not incur: brokerage fees, transfer taxes, legal and administrative costs of a sale
6. If the asset is in a high-growth location (with likely capital appreciation), owners may want to keep ownership rather than sell too early

Risks of Refinancing

- Refinancing brings several risks, including potential prepayment penalties, reduced borrower creditworthiness, but the single most important risk is refinancing in a down market (equivalent to equity wipeouts, or extensive cap rate expansion)
- To illustrate, lets imagine the following scenario:

Initial Scenario

- Purchase Price: €100mn
- LTV: 80%
- Loan Proceeds: €80mn

Down market: Asset price falls ~10% to €90mn

Outcome

- Asset Value: €90mn
- Refinance at equal LTV: 80%
- Loan Proceeds: €72mn

Since the outstanding loan balance remains €80mn, but the new loan proceeds are only €72mn, the borrower faces an €8mn shortfall, which must be covered using additional equity

In a strong market, refinancing unlocks capital and enhances returns, but in a downturn, it amplifies equity losses, making it a risky strategy to rely on for underwriting

Distressed Debt

- Distressed debt refers to loans where the borrower is either in default or at high risk of default due to financial or operational challenges.
- A loan going from being performing to being in default, typically follows this three-step process:

Delinquent loan	• Borrower fails to make full or partial payments on time due to any operating factors • Covenants are then breached, incl. DSCR below the threshold, or reserves underfunded • Cure the delinquency by paying the missed amount plus fees
Non-performing loans (NPL)	• 90+ days of missed payments, borrower has not cured delinquency despite warnings • Lender assesses if restructuring or extending the loan can avoid default, however, this is often very difficult as creditor pressure intensifies
Default	• A loan enters default when the borrower fails to meet financial obligations for an extended period • At this stage, the lender will take legal action to enforce repayment

Three Options for Defaulted Loans (pt. 1): Restructuring

- If the lender believes the borrower can recover financially, it is also in the lenders interest to modify loan terms to improve repayment feasibility, instead of writing off the loan
- The goal is to turn the NPL into a performing loan while protecting the lender's capital

Restructuring Options

- Interest Rate Adjustments: reduce the interest rate to lower debt service costs
- Amortization Term Extensions: stretch loan maturity to reduce monthly payments
- Temporary Interest-Only Periods: allows borrower to stabilize cash flow before resuming full payments
- Forbearance Agreement: lender agrees to pause or defer payments for a set period while the borrower regains financial health

- **Advantages**: Loan restructuring helps banks avoid write-offs, stabilizing their balance sheets, and prevent fire-sale losses: By extending terms or adjusting rates, lenders keep loans classified as performing, maintaining asset values (on paper)
- **Risks**: This "extend and pretend" approach can delay inevitable losses, masking distress and inflating valuations: This can bunch together write offs, therefore resulting in a sector wide downturn with deep ripple effects (e.g. 2008)

Three Options for Defaulted Loans (pt. 2): Dissolution Options

- If restructuring is not viable, lenders may explore ways to exit the loan while recovering as much capital as possible

Short Sale

- The borrower sells the property for less than the loan balance
- The lender must agree to accept less than the full loan amount
- Avoids costly foreclosure and may yield better recovery than an auction sale

Deed-in-Lieu

- Borrower transfers the property to the lender
- Faster than foreclosure, saving legal costs
- Typically requires the property to be free of other liens (e.g. secondary debt, unpaid taxes)

Loan Sale

- Lender sells the NPL at a discount to a distressed debt investor
- Investor becomes the new noteholder and can either restructure the loan, commit equity, foreclose, or resell the debt

What happens when the Bank takes the property?

- Loan → "Real Estate Owned (REO)" Banks list REO properties as liabilities until sold
- Lenders write down loan losses, reflecting the difference between the loan amount and the new estimated property value
- The bank must now sell the property, either at auction or on the open market, OR they could sell the NPL to a distressed debt investor

Three Options for Defaulted Loans (pt. 3): Bankruptcy

- If a borrower cannot sell, restructure, or negotiate a settlement, they may file for bankruptcy to halt foreclosure and attempt to reorganize assets/liabilities

1

Chapter 11: Reorganization

- Automatic stay and debt restructuring halts foreclosures, allowing time to renegotiate loan terms, extend maturities, and modify interest rates
- Debtor-in-possession financing allows borrowers to raise new capital with priority repayment, helping sustain operations and reposition assets
- Cramdowns and court-imposed modifications can force lenders to accept restructured debt terms if the plan is viable, reducing debt burdens

2

Chapter 7: Liquidation

- Full liquidation of assets when a court-appointed trustee sells properties and distributes proceeds to creditors in order of seniority
- Secured lenders reclaim collateral means senior lenders are repaid first, but distressed market conditions may force assets to sell below loan value
- Company dissolution and debt write-offs once liquidation is complete; remaining debts are written off, leaving junior creditors and equity holders with little or no recovery

*Laws are US based, but equivalent exists in Europe (not unionized)

Shadow Banking

- Shadow banking is one of the more unorthodox options which investors can turn towards, for example in times of distress
- In essence shadow banking financing services, while legal, are by definition outside of the regulatory framework, with no oversight
- As traditional financial institutions do not offer shadow banking services, borrowers turn to other players such as hedge funds, private equity lenders and mortgage lenders to provide them capital

Advantages

1. Shadow banking provides debt funding options for a wider array of investors, especially when in distress
2. When funds are needed quickly, shadow banking is a good option as it is not slowed down by bureaucracy

Disadvantanges

1. As shadow banking instruments are comprised of highly volatile assets, they carry an inheretly higher risk
2. Risk is also higher as these instruments fall outside the regulatory framework, offering less borrower protection

Shadow Banking's role in 2008 financial crisis

- Pre-2008 mortgages were securitized through shadow banking, using excessive leverages
- When investors of these assets withdrew en masse, shadow banks were forced into "fire sales", causing a chain reaction of devaluation throughout the system

Shadow Banking Options

- Due to shadow banking's higher risk and return, it is often used by real estate credit or by private equity firms
- There are different types of shadow banking debt options which are used in different situations:

Bridge loans	• Bridge loans are short-term loans used to cover current obligations until investors finds permanent financing • Such loans have relatively high interest rate due to the lack of collateral, sometimes beyond what is legally allowed
Hard-money loans	• Considered short-term bridge loans, used as the very last resort in times of distress • These loans are quick and with high-interest rate, only based on the value of the collateral
Collateralized Debt Obligations (CDOs)	• Synthetic investment product consisting of different debt pooled together (e.g. mortgage, corporate bonds) • Used in shadow banking to create liquidity, as it allows lenders to offload debt, and investors different return based on risk appetite

Section V: Main Players in Debt

Main Players in Debt CRE (pt.1)

Blackstone	Apollo Global Man.	Parameters	Goldman Sachs AM	Brookfield
Blackstone	APOLLO	Logo	GS	Brookfield
Core, Value-add, Opportunistic	Value add, Opportunistic	Debt Strategies	All asset-classes and risk profiles	Core, Value-add
Steven Schwarzmann	Marc Rowan	CEO	David Solomon	Bruce Flatt
✗	✓	Originally Debt	✓	✗
$13.6 bn	$6.8 bn	Cumulative (5yr) Debt raised	$9.0 bn	$6.5 bn

Main Players in Debt CRE (pt.2)

KKR	Ares	Parameters	Pimco	PGIM
KKR	ARES	**Logo**	PIMCO	PGIM
All asset-classes and risk profiles	Value add, Opportunistic	**Debt Strategies**	All asset-classes and risk profiles	Core, Core+, Opportunistic
Joseph Bae, Scott Nuttall	Michael Arougheti	**CEO**	Emmanuel Roman	Jacques Chappuis*
✗	✓	**Originally Debt**	✓	✗
$3.2 bn	$4.9 bn	**Cumulative (5yr) Debt raised**	$8.9 bn	$19.9 bn

*Effective May 1st, 2025

Main Players in Distressed Debt

Parameters	Oaktree Cap. Man.	Elliot	Baupost Group	Fortress Inv. Group
Name	Oaktree Cap. Man.	Elliot	Baupost Group	Fortress Inv. Group
Logo				
Asset Classes	Credit, Equity, Real Estate	Credit, Distressed, Event, Equity, RE	Credit, Equity, PE, Real Estate	Credit, ABF, PE, Real Estate
CEO	Howard Marks	Paul Singer	Seth Klarman	Drew McKnight
Hedge Fund				
AUM	$202 bn	$71 bn	$25 bn	$49 bn

Section VI: Practice Questions

Practice Problems

The following practice problems can be used as interview prep – all mental math (no calculator allowed)

1. You issue a $40 million loan on a property that generates $3.2 million in NOI annually. What is the debt yield?
2. A borrower takes out a $50 million loan with a 3% floating interest rate. If SOFR increases by 1.5%, how much additional interest will the borrower pay annually?
3. A property was purchased for $60 million with 70% LTV financing at 5% interest-only. After 3 years, the property value drops by 10%. The borrower seeks to refinance at 65% LTV of the new property value. How much additional equity must be injected to refinance?
4. A property generates $6.5 million NOI annually. It is securitized into a CMBS loan of $75 million with 6.5% interest-only debt. What is the DSCR?
5. A CMBS loan has a $40 million balance, but the foreclosed property sells for $28 million at auction. If the liquidation expenses total $2 million, what is the loss severity percentage for the lender?
6. A lender sells a $50 million distressed loan at $32 million to an investor. What is the discount percentage? If the investor forecloses and sells the property for $42 million, what is their total profit and return percentage?
7. A borrower defaults on a $20 million mortgage, and the lender forecloses. After liquidation, the lender receives $15 million from the sale. What is the recovery rate, and what percentage of the loan was written off?
8. A property has an NOI of $4 million and carries a $50 million interest-only loan at 6% interest. What is the annual cash flow after debt service?

Answers - Practice Problems (pt.1)

The following practice problems can be used as interview prep – all mental math (no calculator allowed)

1. You issue a $40 million loan on a property that generates $3.2 million in NOI annually. What is the debt yield?

Loan Amount = $40,000,000 and NOI = $3,200,000

DY = NOI / Loan Amount = 3.2/40 = 8%

2. A borrower takes out a $50 million loan with a 3% floating interest rate. If SOFR increases by 1.5%, how much additional interest will the borrower pay annually?

Loan Amount = $50,000,000, Initial Interest Rate = 3.0%, Rate Increase = 1.5%

Additional Interest = Rate Increase * Loan = 50 * 0,015 = $750,000 additional debt service

Answers - Practice Problems (pt.2)

The following practice problems can be used as interview prep – all mental math (no calculator allowed)

3. A property was purchased for $60 million with 70% LTV financing at 5% interest-only. After 3 years, the property value drops by 10%. The borrower seeks to refinance at 65% LTV of the new property value. How much additional equity must be injected to refinance?

Original Loan = 60 * 0.7 = $42,000,000, New property value = 60 * 0.9 = $54,000,000

New Loan Amount = 54 * 0.65 = $35,100,000

Equity Shortfall = $42,000,000 - $35,100,000 = $6,900,000

4. A property generates $6.5 million NOI annually. It is securitized into a CMBS loan of $75 million with 6.5% interest-only debt. What is the DSCR?

NOI = $6,500,000, Loan Amount = $75,000,000, Interest Rate = 6.5% (Interest-Only Loan)

Debt Service = 75 * 0.065 = $4,875,000

DSCR = 6,500,000/4,875,000 = 1.33

Answers - Practice Problems (pt.3)

The following practice problems can be used as interview prep – all mental math (no calculator allowed)

5. A CMBS loan has a $40 million balance, but the foreclosed property sells for $28 million at auction. If the liquidation expenses total $2 million, what is the loss severity percentage for the lender?

Loan Balance = $40,000,000, Foreclosure Sale Price = $28,000,000, Liquidation Expenses = $2,000,000

Net Recoverable Amount = 28 – 2 = $26,000,000

Loss Severity = (40 – 26) / 40 = 35%

6. A lender sells a $50 million distressed loan at $32 million to an investor. What is the discount percentage? If the investor forecloses and sells the property for $42 million, what is their total profit and return percentage?

Discount = (50 – 32) / 32 = 36%

Profit = 42 – 32 = $10,000,000

ROI = 10 / 32 = 31.25%

Answers - Practice Problems (pt.4)

The following practice problems can be used as interview prep – all mental math (no calculator allowed)

7. A borrower defaults on a $20 million mortgage, and the lender forecloses. After liquidation, the lender receives $15 million from the sale. What is the recovery rate, and what percentage of the loan was written off?

Recovery rate = 15 / 20 = 75%

Loan written-off = 1 – 75% = 25%

8. A property has an NOI of $4 million and carries a $50 million interest-only loan at 6% interest. What is the annual cash flow after debt service?

NOI = $4,000,000, Loan = $50,000,000, Interest Rate = 6% (Interest-Only Loan)

Debt Service = 50 * 0,06 = $3,000,000

Annual Cash Flow (Levered) = $1,000,000

ESCP Alternative Investment Society