Real Estate Investment: A Strategic Approach
Fourth Edition, 2023

Andrew Baum

Chapter Ten

Structured Real Estate Investment and Options

Here is a building

- It was bought for £400m in 2005
- The investor put in £80m (20%)
- The bank lent £320m (80%)

Here is a building

- It was bought for £400m in 2005
- The investor put in £80m
- The bank lent £320m
- The rent is £30m p.a. (**7.5%** of £400m)
- The interest rate is 7% - £22.4m p.a. is needed to pay interest
- The investor gets the rest - £7.6m on £80m, or **9.5%**

Here is a bank

- The bank charges a fee of 1% (£3.2m)
- One employee got a big bonus for doing this deal

Here is a problem

- The bank charges a fee of 1% (£3.2m)
- One employee got a big bonus for doing this deal
- The bank (employee) wanted to do more deals like this
- But the bank had limited balance sheet capital against which it could make loans
- What to do?

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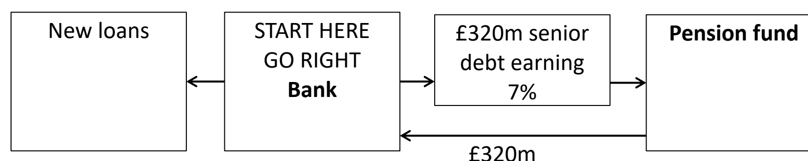
Here is an idea

- Sell the loan to someone else, get the cash back and issue another loan
- The bank can **sell** or **syndicate** the £320m by selling it to other lenders and pension funds, who will earn a 7% return
- The bank gets the risk off its balance sheet
- The bank gets its £320m back, so it can make more loans, charge more fees, and pay employees more bonuses



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Here is a better idea

- The bank can take a book of loans like this and **securitise** the portfolio - i.e. sell a bond backed by these loans
- The bank makes more fees for issuing a bond
- The bond risk is spread across a range of assets and a range of borrowers, so it looks less risky

£320m senior debt earning £22.4m (7%)

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£1.28bn? bond earning £89.6m (7?%)

Here is a better idea

- The price is higher, because the interest rate demanded by pension funds is lower for a **diversified pool**
- If the interest rate falls from 7% to 6.5% each loan is now worth £345m
- The bank makes £25m on each £320m plus fees of say £10m

£320m senior debt earning £22.4m (7%)

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£1.38bn bond earning £89.6m (6.5%)

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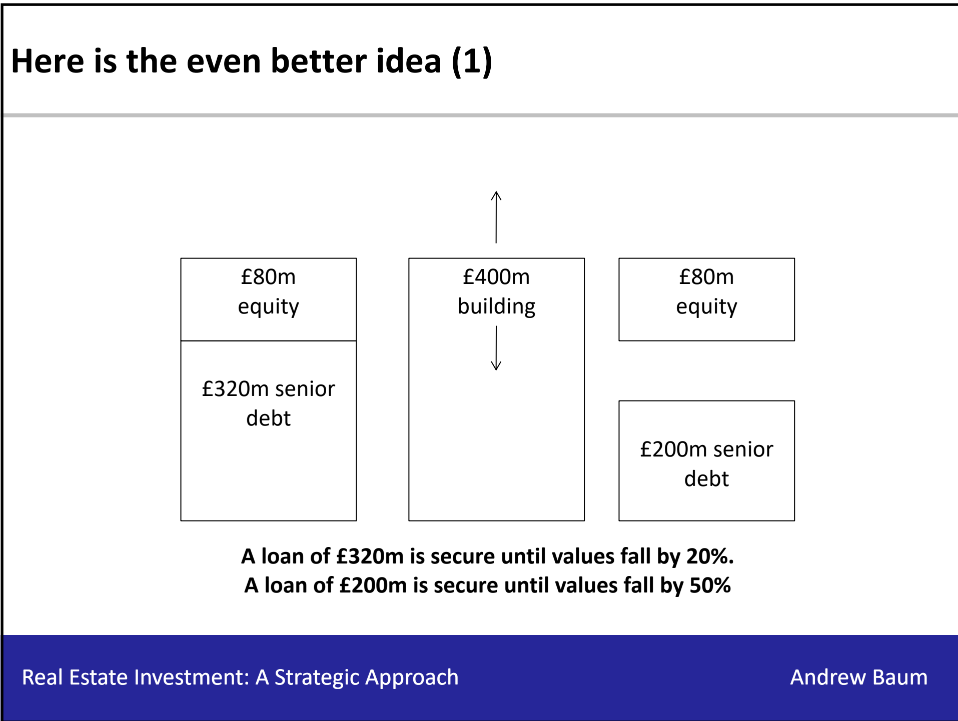

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Here is the even better idea (2)

- The bank sells a £200m loan to someone else
- This is less risky so the interest rate is lower – say 5%
- £10m of rent is 5% of £200m, leaving another £12.4m for the bank
- The bank sells the £12.4m income at a 7.5% interest rate - £165m. This is **junior debt**
- It has now recovered £365m for a loan of £320m. Plus it makes £10m fees
- It has made £55m extra. And a £400m building is supporting £445m of capital….

£7.6m at 9.5% for £80m
£12.4m at 7.5% for £165m
£10m at 5% for £200m

£30m rent

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And the Nobel Prize idea?

Equity	£7.6m to the investor								
Junior debt	£12.4m at 7.5% for £165m	+	£12.4m at 7.5% for £165m	+	£12.4m at 7.5% for £165m	+	£12.4m at 7.5% for £165m	=	£49.6m at 7% for £708m
Senior debt	£10m at 5% for £200m	+	£10m at 5% for £200m	+	£10m at 5% for £200m	+	£10m at 5% for £200m	=	£40m at 4.75% for £842m

£30m rent

- **Securitise** the senior and junior debt too
- The bank makes another £67.5m per deal
- Plus fees!

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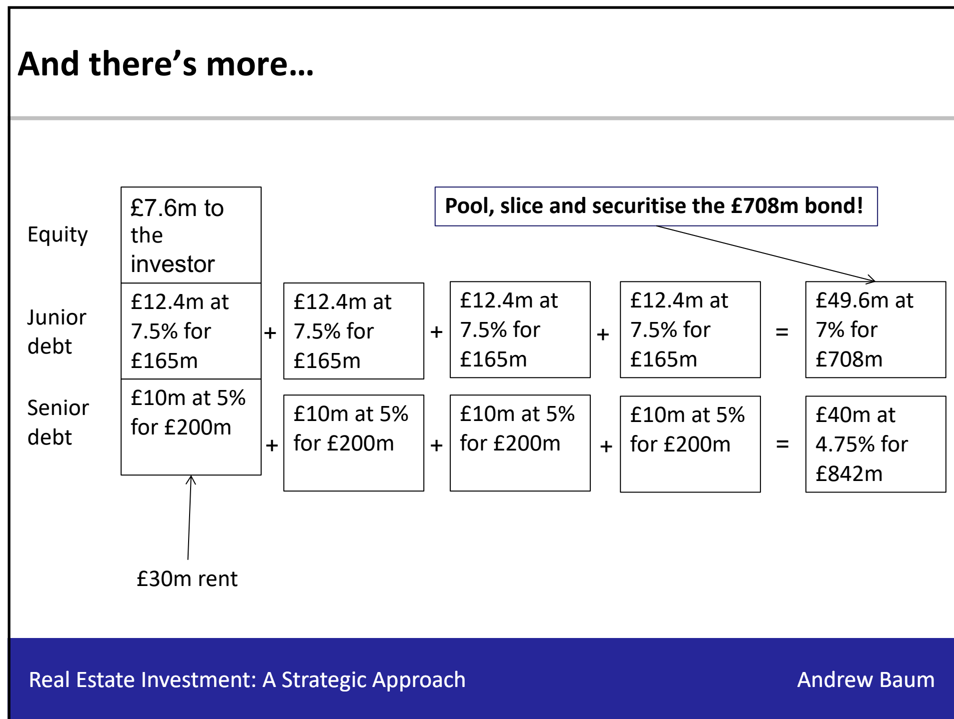
And there's more…



But junior debt is junior debt…

- All of these junior loans will default if property prices fall by 20%
- In 2007-9 prices fell by 45% in the UK
- So bankers made these fees and profits no longer
- Shareholders picked up the losses
- But some banks are owned by……us

- Lenders like leverage, because it increases expected returns
- It increases risk too, but lenders can pass the risk on

Borrowers like leverage too

% of IRR — Fee impact

Fund IRR (%) axis: 0, 10, 20, 30, 40	% of IRR axis: 0–16

£400m building

zero equity

£400m other people's money

Carried interest gives managers a slice of the upside – increased by leverage

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Borrowers like leverage too

"With the passage of authority to ...management, the latter rewards itself not only with income but also with prestige. That, as well as the justification for managerial pecuniary return, is materially enhanced by size. Size, accordingly, becomes for those in authority an important goal, along with return."

John Kenneth Galbraith, A History of Economics, 1987

Firm Objective: Mainland Europe

37%, 16%, 12%, 13%, 6%, 16%

Shareholder Value, EPS, FFO, AUM, ROCE, Other

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Karl Marx warned us

- Under capitalism, capital intensity rises, the rate of profit falls, and financialisation (leverage) increases to improve returns
- 'Fictitious capital' dominates: 'money that is thrown into circulation as capital without any material basis in commodities or productive activity'
- Only real production creates sustained accumulation - the failure of financialisation results in panic and systemic crisis

- **What has changed?**

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RICS/BPF urge action

The government will go ahead with proposals to ban upward-only rent reviews unless the property industry implements the voluntary lease code, the Royal Institution of Chartered Surveyors said in October 2002.

In a letter sent to the top 100 UK surveying firms, RICS Commercial Faculty Chairman, Graham Chase, and former President, Richard Lay, said: "This is the last chance for the industry to prove it can self-regulate. Should we fail, it is unlikely that we will have the option again."

Property Week, October 2002: "The nation's biggest retailers have no record of landlords sticking to the six-month old voluntary lease code."

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It's all about cash flow

- Flexible leases means cash flow uncertainty
- Increasing discount rates or yields is subjective
- The answer lies in the cash flow
- Simple DCF is not enough - we need to simulate the possible cash flow outcomes and **find the mean cash flow**

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Breaks and short leases

- Breaks and short leases create uncertainty
- Will the break be exercised? Will the lease be renewed?
- Each event has a probability: this determines the mean cash flow
- The cash flow will be subject to other uncertainties: how long will it take to re-let the property?
- Consider a property let on a 10 year lease with a 5 year break: what is the expected 15-year cash flow? Complex!
- Simulation allows the mean cash flow to be modelled

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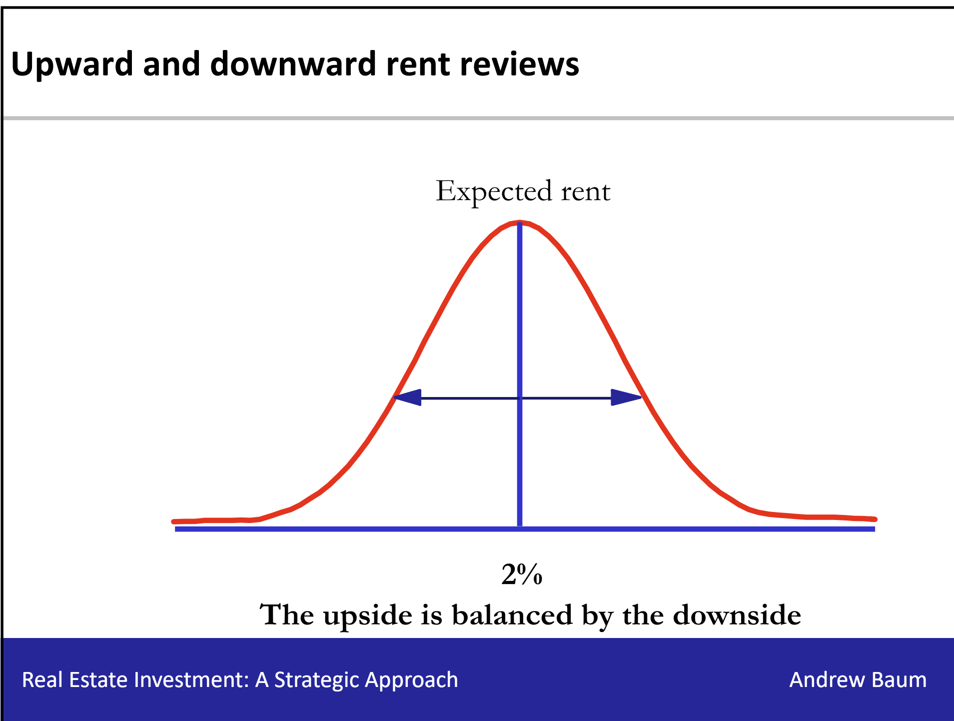

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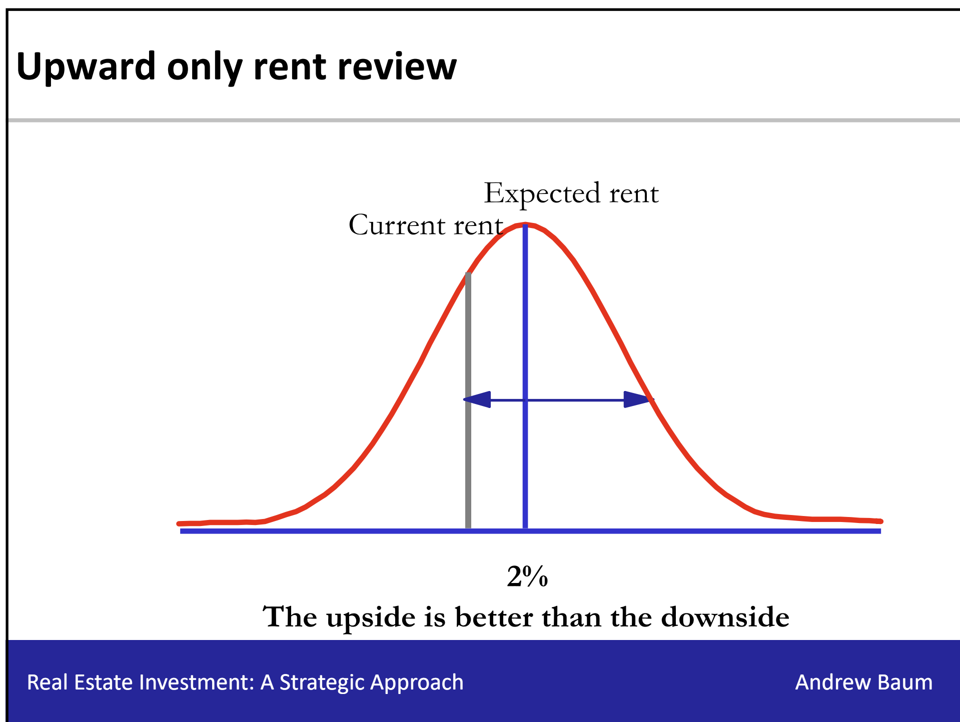

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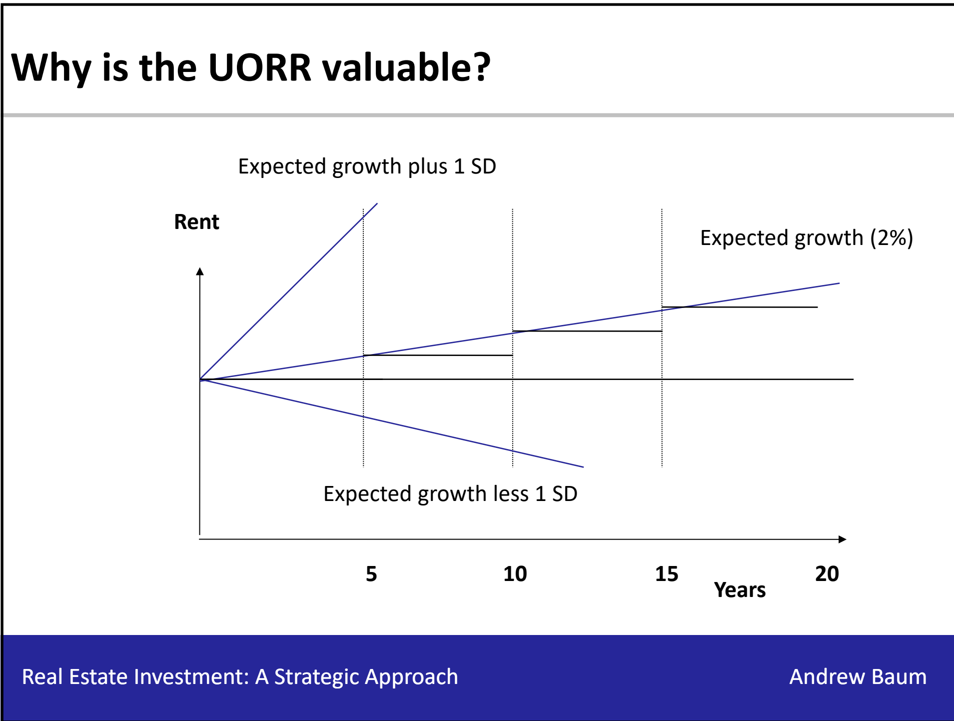

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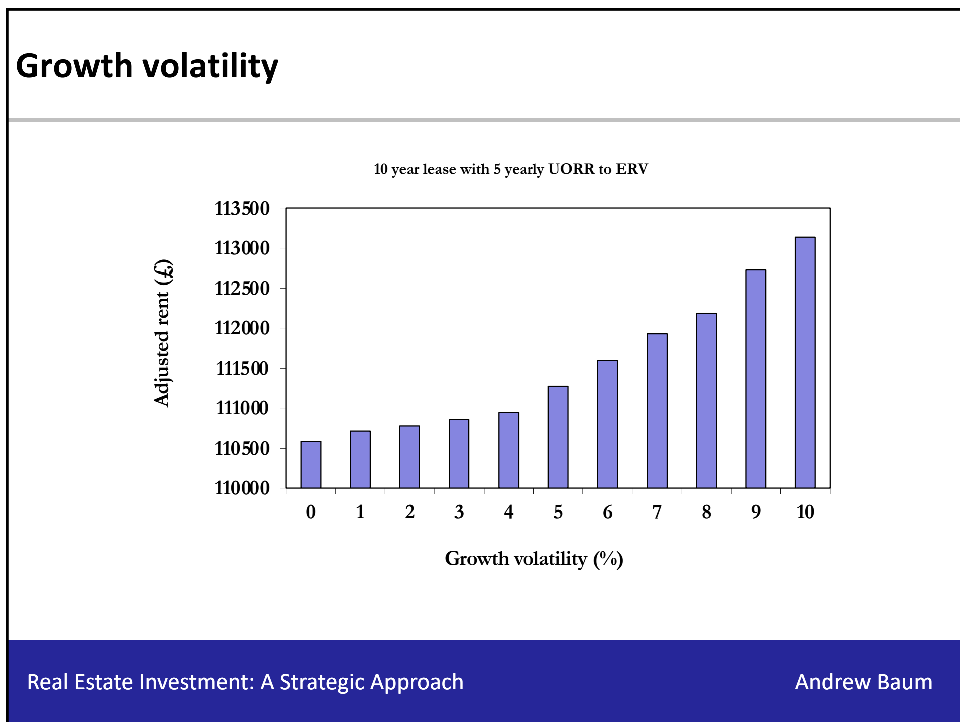

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Insights

- Flexible leases produce complex cash flows
- Simple DCF fails to price the upward-only rent review
- The bigger the range of possible rental values, the more valuable is the upward only rent review: volatility is important
- The mean rental growth does not always produce the mean cash flow

Income slices and option value

- The cash flow from a property can be split into:
  - the bottom slice
  - the uplifts
  - the reversion
- The rental cash flows which are derived from the property:
  - exhibit growth or drift
  - inherit the stochastic properties (variability) of the underlying asset
- The reversion can be priced as a real option; the uplifts are financial options

Stripping cash flows: 1

Fifth Slice Years 21-25

Fourth Slice Years 16-20
Fourth Slice Years 21-25

Third Slice Years 11-15
Third Slice Years 16-20
Third Slice Years 21-25

Reversion

Second Slice Years 6-10
Second Slice Years 11-15
Second Slice Years 16-20
Second Slice Years 21-25

Annuity Years 1-25

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DCF and real options

- DCF ignores the option value of a project: it may be unprofitable now, but will it be unprofitable tomorrow?
- Scenario analysis/sensitivity testing tends to appear to be normally distributed
- The developer is never forced to undertake a loss-making project, but can always choose to develop when conditions are right
- The distribution of possible outcomes is skewed to high returns

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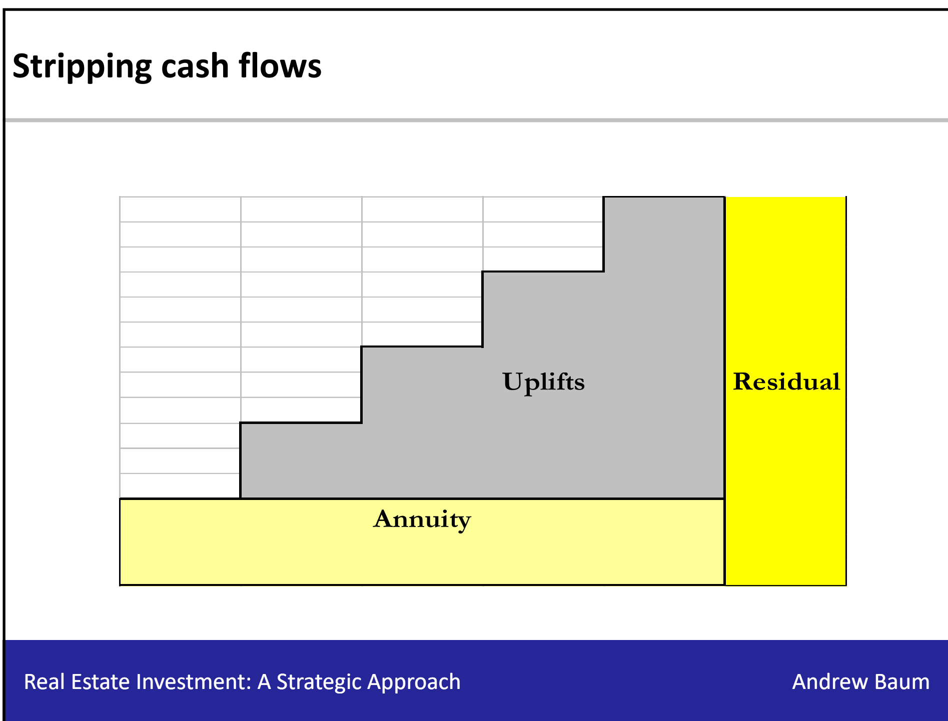
DCF and financial options

- DCF assumes a *deterministic* cash flow
- Cash flows are risky, or *stochastic*
- The difference is unimportant as long as the distribution of possible outcomes is normally distributed
- In the upward-only rent review, the distribution of possible outcomes is *not* normally distributed
- Volatile rents rarely result in falling incomes, but can easily result in rising incomes

Pricing options

- The value of an option depends upon:
  - the current price of the stock
  - the strike price
  - the expected growth of stock prices
  - the time over which the option can be exercised
  - the volatility of stock prices
  - the risk free rate

Stripping cash flows



Step 1: buy a long lease property

- Long lease: 15 years plus
  - Upward only rent review
  - RPI indexation
  - Fixed increases
- Sale and leaseback is ideal
- High yield: 7.5% plus
- Solid covenant
  - Government
  - Government equivalent
  - FTSE 100

Example

- Government tenant, 20 year lease
- Rent £500,000
- Upward only rent review
- Yield: 7.75%
- Total outlay £6.45m including costs

Stripping cash flows

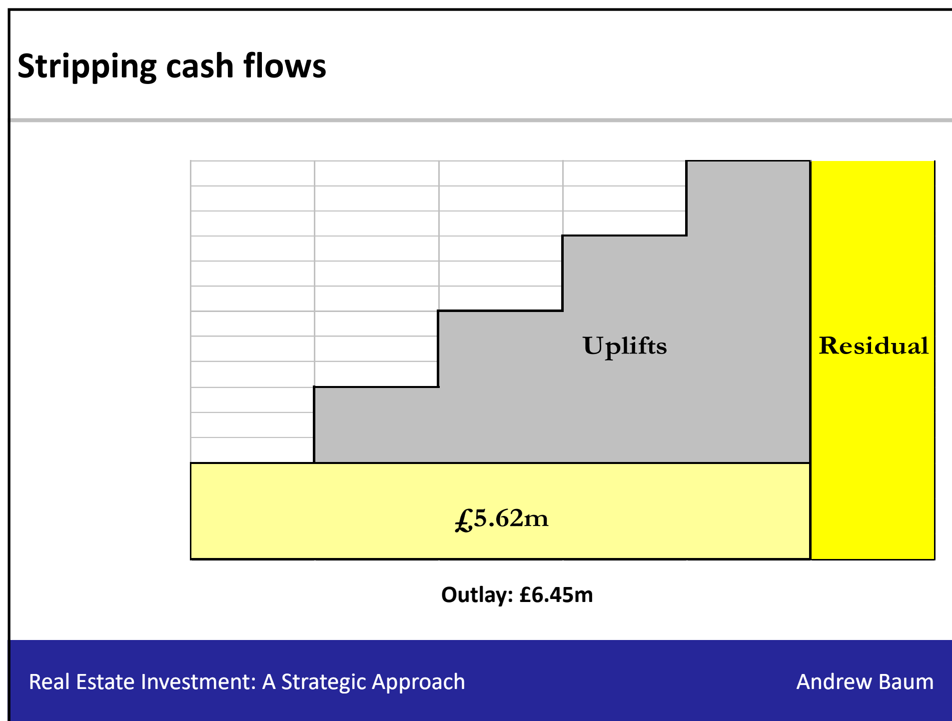
Outlay: £6.45m

Step 2: finance the annuity

- Current rent is an annuity or a series of zero coupon bonds
- Value is determined by yield on debt
- This can be lower than the yield on the property purchase
- In some cases the value of the debt can be a very high proportion of the value of the property
- Bank will lend a very high proportion or all of this value

Example

- Current 20 year gilt yield 4.75%
- Spread/margin say 1.5%
- Debt yield 6.25%
- Value of 20 year debt £5.62m
- Equity needed: £0.83m



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Step 3: finance the uplifts

- Upward only rent review: swap for fixed 2% rent increases and eliminate uncertainty for tenant
- Finance the stepped increases at the debt rate
- OR swap UORR for annually RPI indexed lease
- OR retain uplifts

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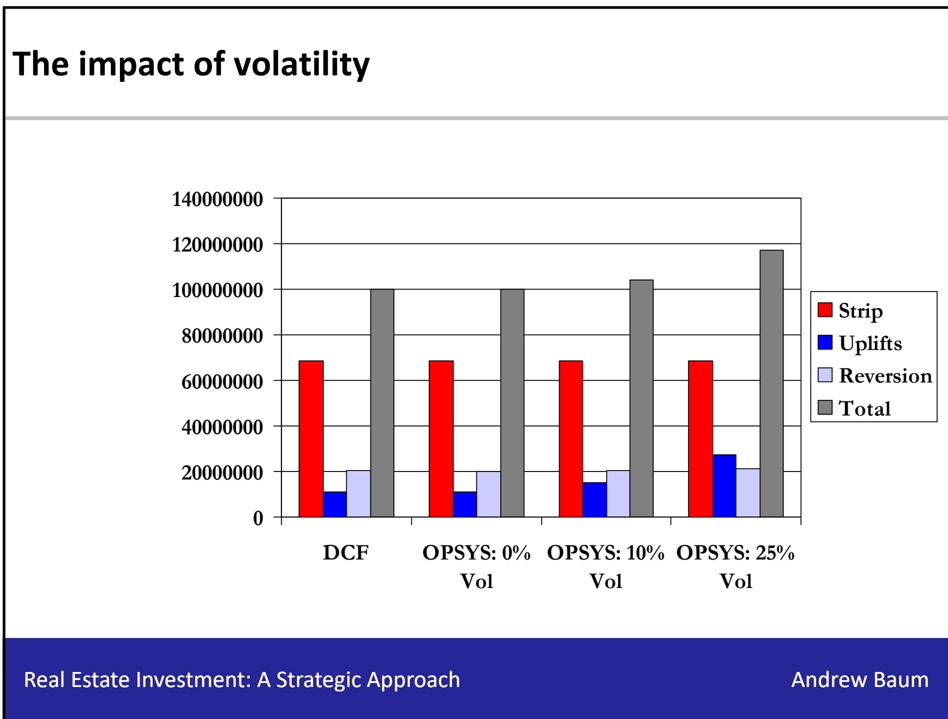

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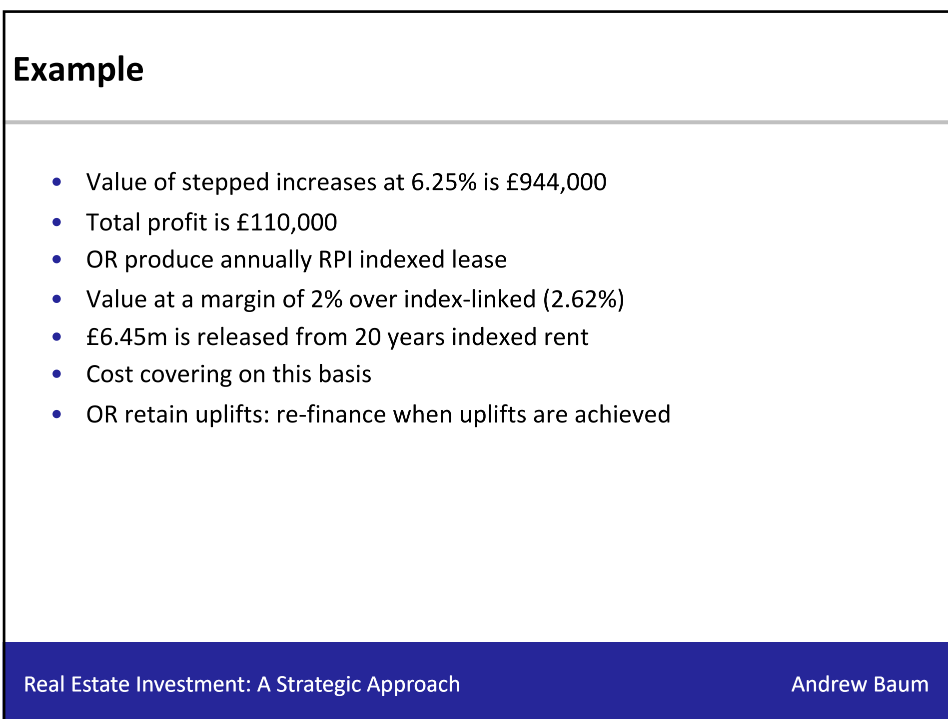

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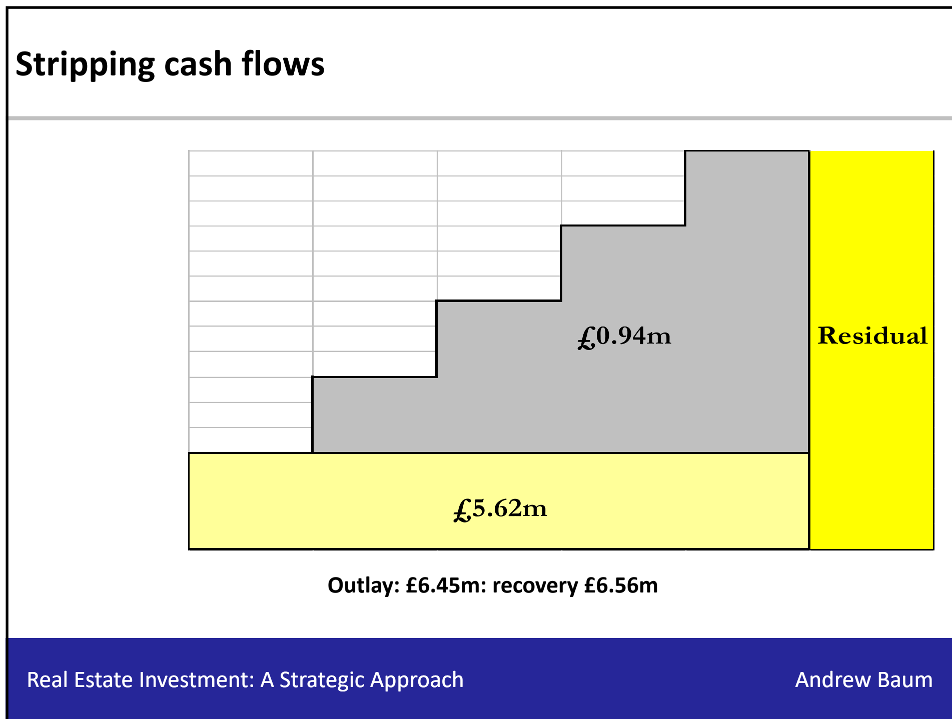
Stripping cash flows

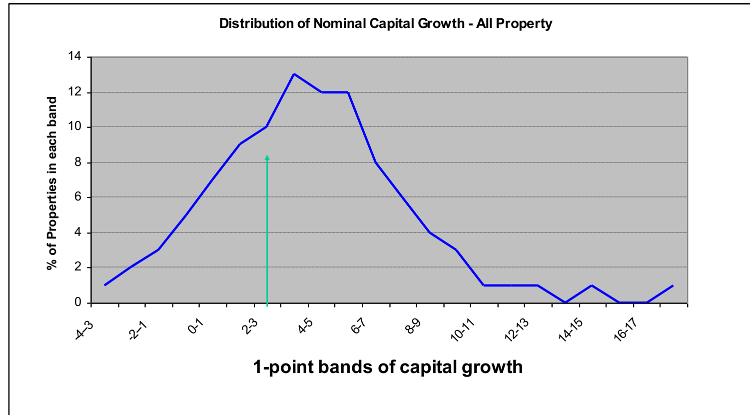


Outlay: £6.45m: recovery £6.56m

Step 4: finance the residual

- Vacant possession value in 20 years can be conservatively estimated at (say) 50% current market value
- Values are very unlikely to fall
- Residual value insurance will underpin loan
- Bank lends against residual value
- Value increases for shorter lease terms

Nominal values



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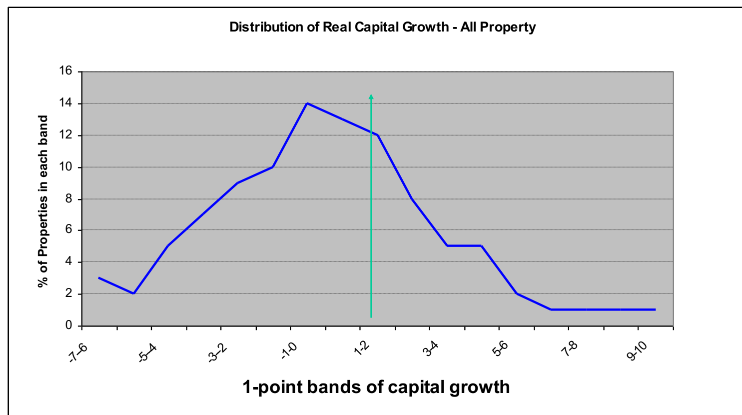
Real values



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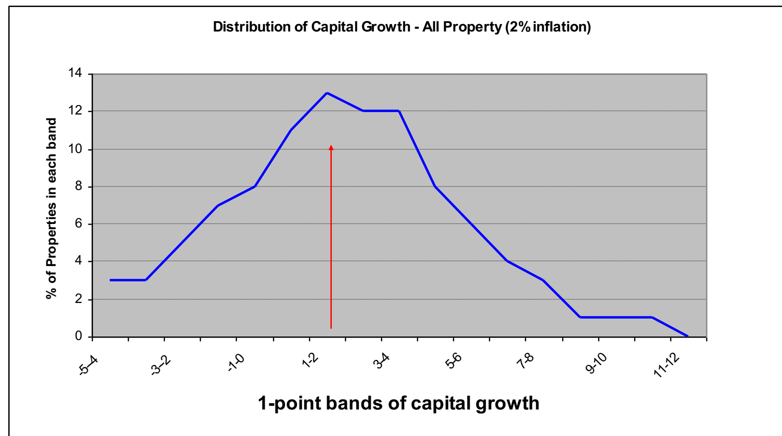
Nominal values: 2% inflation



Example

- Vacant possession value in 20 years at 50% current market value is £3.19m
- Present value of £1,000,000 at 6.25%
- Present value of £660,000 at 8.25%
- Present value of £460,000 at 10.25%
- Total profit £500,000-£1.1m

The L&G/Croydon Council Case

The L&G Croydon Council Case

- In April 2019, Legal and General (L&G) and Croydon Council announced a partnership designed to provide affordable housing
- Under the deal L&G bought 167 homes (mainly 2 and 3 bedroom flats) from the local authority for £44.6 million and leased them back to the council over a 40-year term
- These affordable housing units will be rented out, at local housing allowance levels, to previously homeless local families
- After the 40-year term ends, the properties will belong to the council
- The homes will be managed by Croydon Affordable Housing, a local housing charity set up by the council
- We assume that the lease transfers part of the rental income of the affordable homes to L&G after Croydon takes a slice to cover management and maintenance costs

The L&G Croydon Council Case

- What are the benefits for the local authority of this deal? What are the benefits for L&G in such a partnership? Why is L&G willing to forfeit the ownership of the homes after the 40-year lease runs out?
- Many local authorities are short of public financing and constantly under pressure to provide more social housing, but borrowing is often very difficult to achieve under the tight limits imposed by the public sector borrowing requirement (PSBR)
- The deal provides a long-term lease plus a long-term receivable for the local authority. Management is retained by Croydon, and ownership of the housing reverts back to the council after 40 years. This type of arrangement puts assets and lease liabilities simultaneously onto the local authority's accounting balance sheet, which makes it compliant with the PSBR

The L&G Croydon Council Case

- From the perspective of L&G, the attraction of the deal is that there is no property management burden and no gross to net yield leakage. The attraction of the deal to L&G comes down to risk and return
- How risky is the rental income? Croydon might be in financial difficulties, but it is difficult to imagine no government bailout for a failed local authority
- What is the yield/rate of return on the investment? This depends on the agreed rental income

Rent assumptions

Weekly rent per unit	Two Bedrooms	Three Bedrooms
Inner South East London	£281.45	£340.64
Outer South London	£230.10	£279.14
Mean	£255.78	£309.89
Units	100	67
Weekly rent	£25,578	£20,763
Annual rent	£1,330,030	£1,079,657
Total annual rent		£2,409,687
Say		£2,400,000

The L&G Croydon Council Case

- £2.4m is a yield of 5.38 per cent on the capital invested of £44.6m
- How is this income split between Croydon (covering management and maintenance) and L&G?
- Assuming 2.3 per cent goes to Croydon, this would provide just over £1.025m annually to cover 167 units, or £6,000 per unit annually and L&G would receive a yield of 3.1 per cent, or £1.374m
- If 2.8 per cent goes to Croydon, this would provide around £7,500 per unit annually, and L&G would receive a yield of 2.5 per cent, or £1.115m

Returns

	Quantity	Weekly rent	Annual rent	Total annual rent
Total apartments	167			
2-bed apartments	100	£255	£13,260	£1,326,000
3-bed apartments	67	£310	£16,120	£1,080,040
Total rent				£2,406,040
Rounded, say				£2,400,000
Total investment	£44,600,000			
Gross Initial Yield				5.38%
		per unit	total	as yield
Croydon annual charge		£5,000	£835,000	
Residual to L&G			£1,565,000	3.51%
IRR to L&G				3.80%
Inflation				2.00%
Real IRR to L&G				1.77%
		per unit	total	as yield
Croydon annual charge		£6,000	£1,002,000	
Residual to L&G			£1,398,000	3.13%
IRR to L&G				3.18%
Inflation				2.00%
Real IRR to L&G				1.15%
		per unit	total	as yield
Croydon annual charge		£7,500	£1,252,500	
Residual to L&G			£1,147,500	2.57%
IRR to L&G				2.14%
Inflation				2.00%
Real IRR to L&G				0.14%

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Cash flows

Income (£5,000)	Income (£6,000)	Income (£7,500)
-£44,600,000	-£44,600,000	-£44,600,000
£1,596,300	£1,425,960	£1,170,450
£1,628,226	£1,454,479	£1,193,859
£1,660,791	£1,483,569	£1,217,736
£1,694,006	£1,513,240	£1,242,091
£1,727,886	£1,543,505	£1,266,933
£1,762,444	£1,574,375	£1,292,271
£1,797,693	£1,605,863	£1,318,117
£1,833,647	£1,637,980	£1,344,479
£1,870,320	£1,670,739	£1,371,369
£1,907,726	£1,704,154	£1,398,796
£1,945,881	£1,738,237	£1,426,772
£1,984,798	£1,773,002	£1,455,307
£2,024,494	£1,808,462	£1,484,414
£2,064,984	£1,844,631	£1,514,102
£2,106,284	£1,881,524	£1,544,384
£2,148,410	£1,919,154	£1,575,272
£2,191,378	£1,957,538	£1,606,777
£2,235,205	£1,996,688	£1,638,913
£2,279,909	£2,036,622	£1,671,691
£2,325,508	£2,077,354	£1,705,125
£2,372,018	£2,118,902	£1,739,227
£2,419,458	£2,161,280	£1,774,012
£2,467,847	£2,204,505	£1,809,492
£2,517,204	£2,248,595	£1,845,682
£2,567,548	£2,293,567	£1,882,595
£2,618,899	£2,339,439	£1,920,247
£2,671,277	£2,386,227	£1,958,652
£2,724,703	£2,433,952	£1,997,825
£2,779,197	£2,482,631	£2,037,782
£2,834,781	£2,532,283	£2,078,537
£2,891,476	£2,582,929	£2,120,108
£2,949,306	£2,634,588	£2,162,510
£3,008,292	£2,687,280	£2,205,761
£3,068,458	£2,741,025	£2,249,876
£3,129,827	£2,795,846	£2,294,873
£3,192,424	£2,851,763	£2,340,771
£3,256,272	£2,908,798	£2,387,586
£3,321,398	£2,966,974	£2,435,338
£3,387,826	£3,026,313	£2,484,045
£3,455,582	£3,086,839	£2,533,726
3.80%	3.18%	2.14%

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The L&G Croydon Council Case

- If L&G receives a yield of 3 per cent and rents rise with the target rate of inflation (2 per cent), this appears to deliver an IRR of 5.1 per cent
- However, there is no repayment of capital; the £44.6m will not be returned, as the assets revert to Croydon at the end of the 40 years. Given this, the post-amortisation IRR falls to roughly 3 per cent, or 1 per cent real
- The expected real IRR on UK government long-dated index-linked gilts at the time was around minus 2 per cent). L&G therefore appears likely to have earned a risk premium over the indexed government bond of 2-3 per cent for a low risk asset, and this seems like a win-win deal for Croydon and L&G

The Argyle House case

The Argyle House case

- Argyle House is a major office building in the heart of Edinburgh city centre. It extends to 220,402 sq ft (20,476 sq m) with 169 on-site car parking spaces. The overall site extends to approximately 1.88 acres (0.76 hectares). Argyle House is let to the UK government on a fixed rent of £2,375,000 per annum, approximately £10.77 per sq ft, until 14 May 2033.
- Immediate repairs of around £3m are required. This will be at the owner's expense. There are also some irrecoverable annual expenses relating to the landlord's obligations under the lease. These currently total around £100,000 but will rise with inflation.

The Argyle House case

- The building occupies one of the most significant future development sites in central Edinburgh, lending itself to a number of potential uses such as office, hotel, residential and student accommodation. It may be possible to materially increase the developable area (by say 10-15%).
- Prime office rents in Edinburgh are now pushing £35-40 per sq ft. Cap rates for new stock are estimated to be around 4.5%. UK government bond yields are currently priced at yields of at around 0.85% for durations of 10-15 years.
- Purchase costs will total 6.25% of the purchase price. Demolition would cost around £2m. New office build costs will be around £300 per sq ft.

The Argyle House case

- Why would a purchaser be interested in buying this asset?
- What is a fair price for this building? What price would you expect a tax-exempt UK investor to pay for this building on 14 May 2021?
- How would you expect a buyer to maximise his/her return on equity?

Questions

- Why would a purchaser be interested in this asset?

- Hold for income, cash flow, yield
  - Use leverage to enhance cash on cash yield
  - Sell at a profit if bond yields and cap rates fall
- Sell income strip to bond/annuity investor
- Access the development/re-development option
- Gamble on Edinburgh – booming capital of an independent successful Scotland?

Inputs

Size	220,402
Car spaces	169
Site ha	0.76
Lease	17
Rent	£2,375,000
Rent psf	£11
Site value m	£35
Price	£44,700,000

Inputs

Purchase costs	6.28%
SPV costs	1.80%
Price psf	£202.81
Repairs	£3,000,000
Outgoings	£97,000
Inflation	2.00%
Rent growth 1	4.80%
Rent growth 2	3.30%
Rent growth 3	3.30%
Rent growth long	1.50%
Exit cap	6.00%

Options

- Hold for income
- Re-furbish/redevelop
- Sell income strip – hold residual

Outputs

Gilt yield 15+ years	1.60%
Risk premium	2.75%
Discount rate	4.35%
NPV	£2,917,466
IRR	4.843%
Annuity premium	1.00%
Annuity discount	2.60%
Annuity value	£32,300,881
Outlay	-£47,507,160
Cost of residual	£15,206,279

Outputs

Development value	
Size	250,000
Rent psf	£20
Rent	£5,000,000
Cap rate	0.05
GDV	£100,000,000
Cost psf	£200
Construction cost	£50,000,000
Fees @15%	£7,500,000
Profit@15% GDV	£8,625,000
Residual land value	£33,875,000

Value of reversion at year 17: £55m
Growth needed in residual land value 2.9% p.a.
Inflation target 2.5%