

# Never for Ever : Building Lifecycle and Depreciation Of Commercial Real Estate

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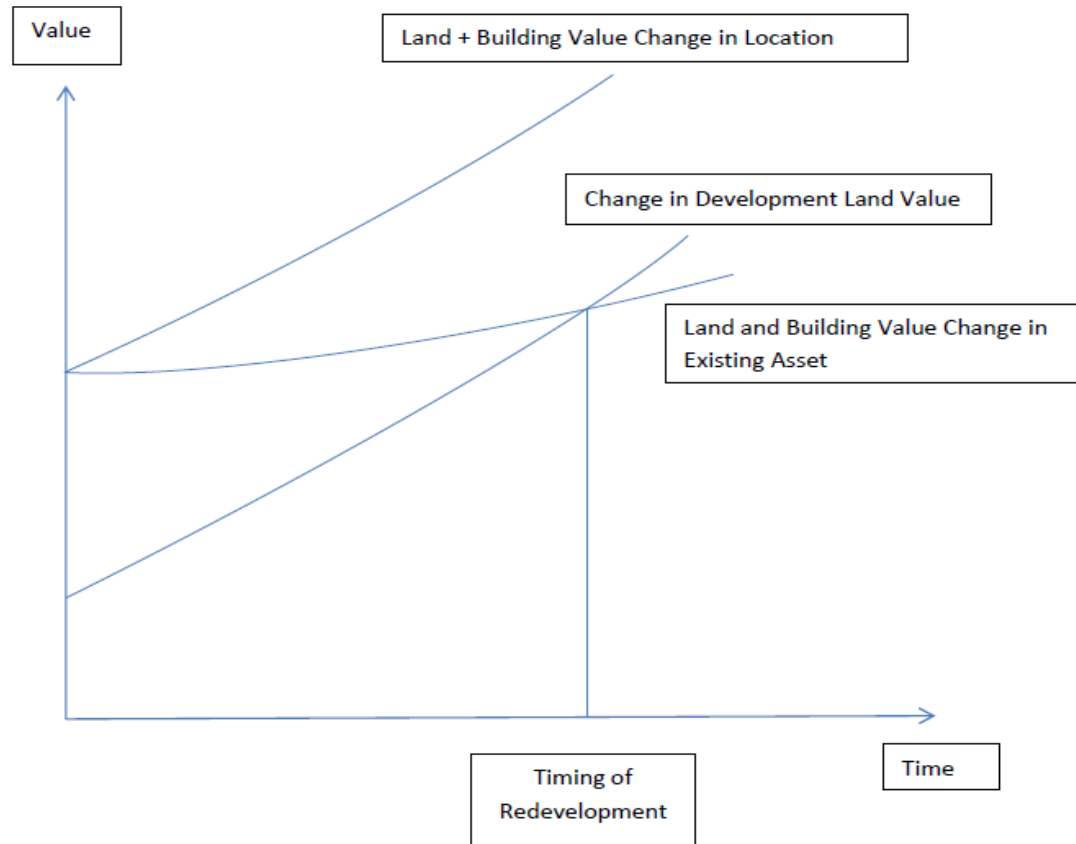
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# Questions

- Modelling the life cycle of buildings- why do we need to understand how buildings behave through time?
- Defining depreciation - what is it?
- Measuring 'rental' depreciation - how fast do rental values fall away from new building rents? What about capital values?
- What is the impact on different property types?
- Can we trust the data underpinning the results?
- What are the main drivers?
- Is there a gap between actual depreciation and prior expectation?
- Is there any evidence of the age of buildings when redeveloped?

# A depreciation and life cycle model

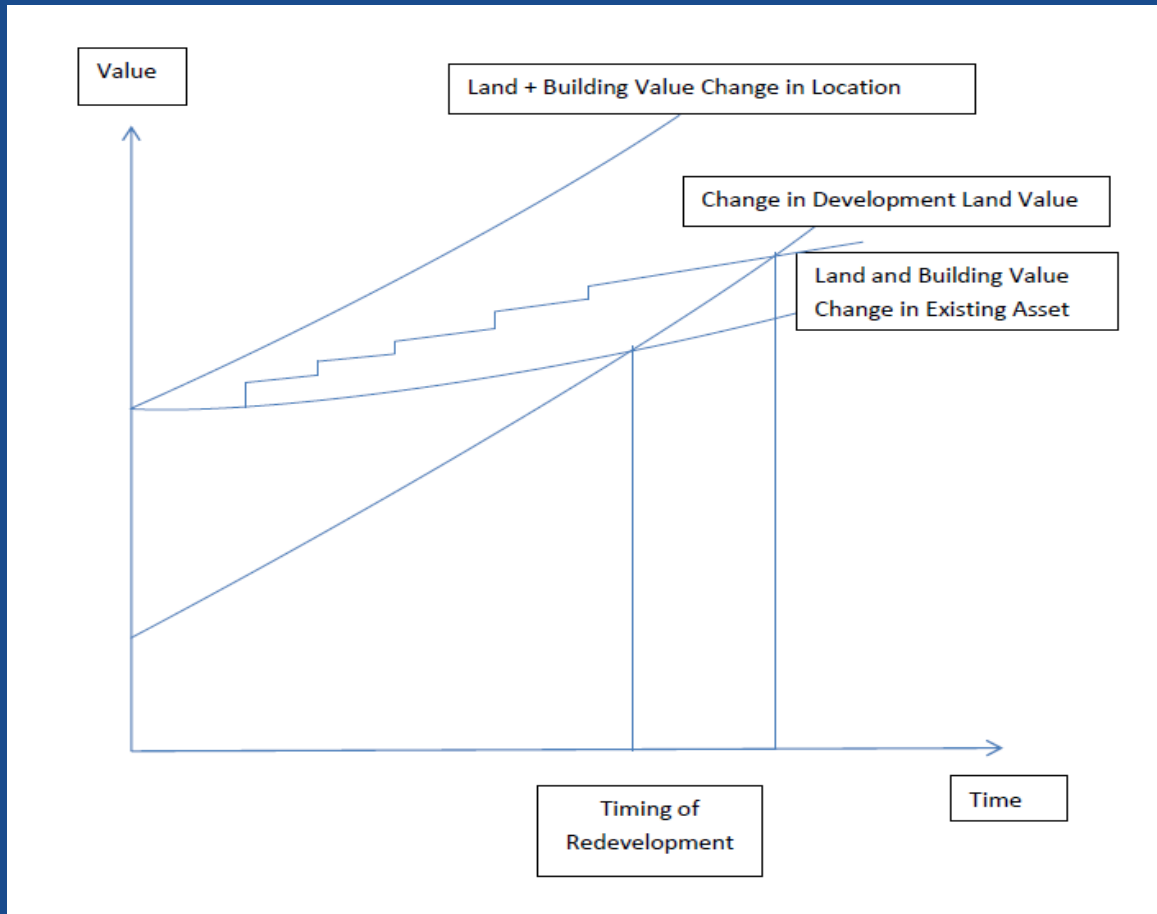


*Redevelopment occurs when land value exceeds existing use value.*

*Recurring capital expenditure can change the timing significantly.*

*Need to model both value change in location and in existing asset to forecast life cycle*

# Depreciation Model with Capital Expenditure



*In the UK, I believe we are moving to an era of more frequent minor and then major refurbishment, rather than mass redevelopment.*

*Caused by shorter lease contracts and more active management strategies by landlords.*

# Definition and Measurement of Depreciation

- *Definition*
  - “the rate of decline in rental/capital value of an asset over time relative to the asset valued as new with contemporary specification” Law (2004)
- *Measurement of (Rental )Depreciation*
  - Rental value of existing building v rental value of a new building through time
  - Amount of capital expenditure in the period being measured to keep the rental value differences to a minimum.

# UK rental depreciation: 1994–2009

	Number of properties	Cap. value end-93 £m	p.a. Rental depreciation	p.a. Capital expenditure
<i>Standard Retails</i>	<i>319</i>	<i>1,033</i>	<i>0.3%</i>	<i>0.3%</i>
Offices	217	1,496	0.8%	0.5%
Industrials	158	762	0.5%	0.2%
<i>Std Ret – South East*</i>	<i>185</i>	<i>549</i>	<i>1.0%</i>	<i>0.2%</i>
<i>Std Ret – Rest of UK*</i>	<i>134</i>	<i>484</i>	<i>-0.7%</i>	<i>0.4%</i>
Shopping Centres	19	411	0.1%	0.9%
Retail Warehouses	29	249	0.9%	1.5%
Offices – City	41	334	0.5%	0.2%
Offices – West End	64	402	1.1%	0.5%
Offices – Rest of SE	75	522	0.8%	0.7%
Offices – Rest of UK	37	237	1.8%	0.5%
Industrials – South East	104	556	0.3%	0.2%
Industrials – Rest UK	54	206	1.0%	0.3%

Source: IPF (2011), *Depreciation of commercial investment property in the UK*, London: IPF

*\*some strange results in standard retail*

# Depreciation in Mainland Europe – not so simple to measure using valuations

Similar study of Some European Office Markets over 10 years to end 2007

	No of Assets	B'mark Rental Growth	Sample Rental Growth	Rental Depr Rate
<b>L'dn WE</b>	135	9.0%	6.6%	2.2%
<b>L'dn City</b>	80	2.3%	1.9%	0.4%
<b>Amsterdam</b>	38	3.2%	3.6%	-0.4%
<b>Dublin</b>	35	9.5%	7.7%	1.7%
<b>Frankfurt</b>	17	2.9%	-2.1%	4.9%
<b>Paris</b>	168	4.3%	5.6%	-1.3%
<b>Stockholm</b>	36	3.9%	5.9%	-2.0%

*Source: Journal of European Real Estate Research, Volume: 4 Issue: 1, 2011*

*Some strange results – 2% appreciation in Stockholm offices and 5% depreciation in Frankfurt offices. **Can we trust the data?***

*Undoubtedly a valuation problem in some instances – i.e. Frankfurt – not marking to market within performance measurement systems.*

*Major tensions between UK/US and Germanic valuation traditions*

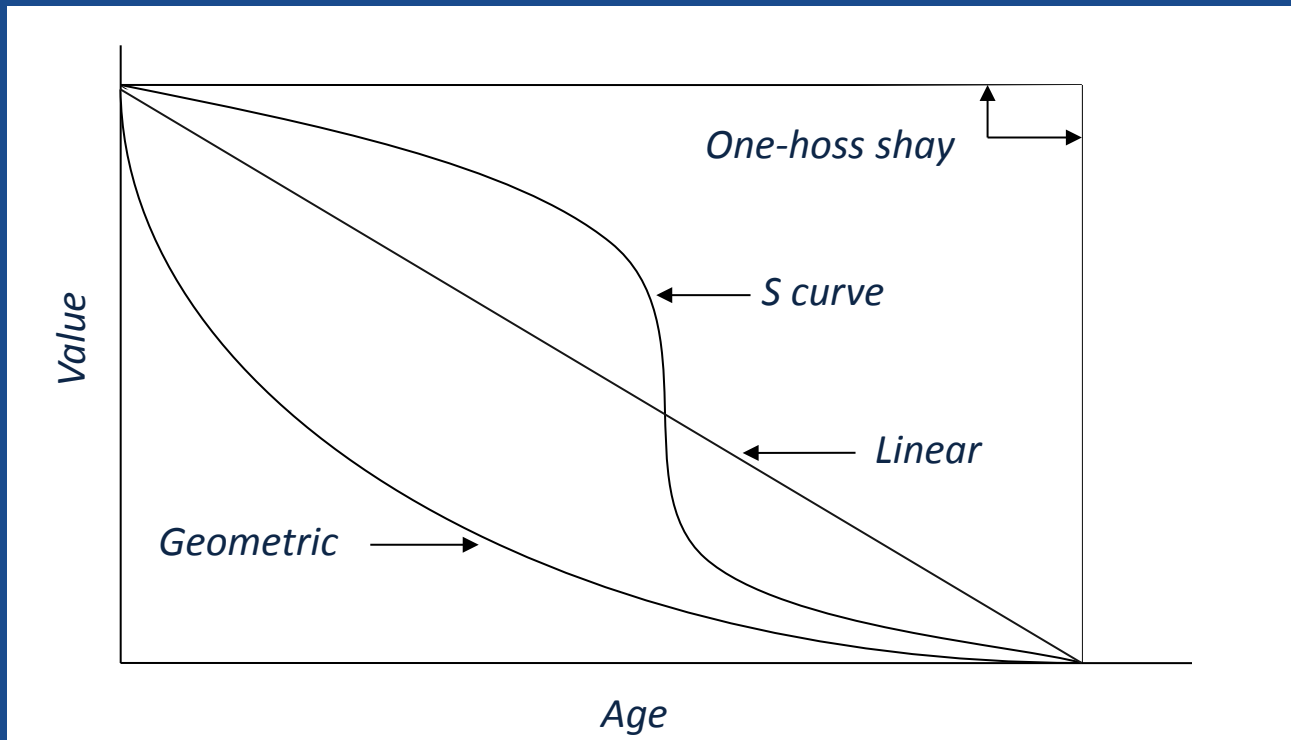
# Capital values

- Function of rental value depreciation and cap rate shift.
- Cap rates capture the timing and extent of future depreciation
- We have done a UK study of rental value depreciation and cap rate change combined.
- [http://eres.architexturez.net/doc/oai-eres.id-eres2006\\_162](http://eres.architexturez.net/doc/oai-eres.id-eres2006_162)
- Complicated by period of analysis but 1.4% pa overall and 2.4% pa for offices



# Drivers and shapes of depreciation

- Hulten & Wykoff (1976), Salway (1986) – geometric
- Barras & Clark (1996) and Baum (1997) – S-curve



# Shapes and causes of rental depreciation

- We have found using the data from the UK between 1994 and 2009
  - Shape Geometric (in fact even more convex to the origin than geometric)
  - Quality properties depreciate more than lower quality properties, but some elements of newer more than older.
  - Capital expenditure works to offset depreciation (it would be very disappointing if it didn't!).
  - Lower land value content leads to higher depreciation rates – but higher land content should lead to shorter building cycles.

# Building cycle

- Evidence of timing of cycle?
  - O'Connor (2004) in the US surveyed Minneapolis for average expected service life of non-residential buildings. Between 77 and 87 years depending on type of materials used.
  - Is this useful? If not, very little evidence of age at demolition that I am aware of.
  - Average age of the IPD portfolio of UK properties remains fairly constant at around 25-30 years from 1981 onwards (IPF 2005).

# IPD UK Average Age Profile 1981 to 2003

**Table 2: Age Profile (in years) of the IPD All Property Sample and Standard Retail, Office and Industrial Sub Samples<sup>1</sup> – 1981 to 2003**

Year	Standard Retail		Offices		Industrials		All Property	
	Start	End	Start	End	Start	End	Start	End
1981	48.9	50.6	27.5	28.7	10.5	11.2	26.8	28.2
1982	49.6	50.4	27.5	28.9	10.0	10.8	27.0	28.3
1983	49.7	51.1	28.3	29.6	10.1	11.0	27.4	28.9
1984	51.0	52.1	27.8	29.1	10.0	11.0	27.5	28.9
1985	51.4	52.9	27.3	28.6	10.3	11.2	27.8	29.4
1986	52.1	53.7	27.9	29.3	11.4	12.1	28.9	30.4
1987	55.2	57.1	28.5	30.1	11.7	12.5	30.0	31.4
1988	57.1	58.2	28.7	30.3	11.8	12.9	30.7	31.9
1989	58.4	59.5	29.3	30.8	12.2	12.7	31.3	32.0
1990	58.4	59.4	29.7	30.5	12.1	13.0	30.6	31.4
1991	58.9	59.7	29.2	28.7	12.8	13.7	30.2	30.4
1992	59.2	59.9	27.7	27.5	13.6	14.6	29.4	29.7
1993	60.4	61.1	27.5	27.6	14.3	15.0	29.4	29.8
1994	60.4	61.2	26.9	27.8	14.2	15.0	29.2	29.9
1995	60.7	61.7	26.3	27.2	14.4	15.4	28.3	29.0
1996	61.6	62.8	27.1	27.7	14.3	15.0	28.4	28.9
1997	61.4	62.7	26.6	27.3	14.1	14.8	27.8	28.4
1998	60.9	61.1	27.1	27.8	14.8	15.6	27.7	28.6
1999	60.1	60.7	26.8	27.8	15.2	16.1	27.6	28.2
2000	59.7	60.3	27.0	27.8	15.7	16.4	27.1	27.3
2001	60.5	60.3	26.5	26.9	15.9	17.1	25.8	25.9
2002	59.8	62.8	25.7	26.1	17.0	17.9	25.0	25.9
2003	61.7	62.5	25.8	27.2	17.4	18.1	25.5	26.1

*No evidence of age at which properties are re-developed or whether this is more or less than original expectation.*

## Conclusions – take home messages

- Life cycle should be completely different for different uses.
- No evidence of where life cycle is getting shorter or longer. UK offices possibly getting longer with more frequent refurbishment.
- Cash flow modelling of investments needs to distinguish between growth in location and in actual buildings.
- We can't measure Mainland Europe until the data (valuation interpretation) issues are sorted out