



PARTONE

I – Risk and Return II – Cycles III – Urban View

PARTTWO

IV - Spec. Dev." P & L" V - Asset Types VI - Efficient market Theory



## To finance a Risk, Expecting a Return

#### VA project

- Corresponding to an identified need
- Implying production/ acquisition costs
- With immediate funding for a forward delivery

#### V Speculative move

- From crash test ...
- ... to best case,
- With base scenario





## To run the Risk to Finance Expectation

#### ✔No "Free Lunch"

- Nothing is for sure:
   costs, expenses,
   revenues and proceeds
   could could be
   estimated but rarely
   100% secured
- Delay of production implies the need to anticipate "Tomorrow's market"

#### √Volatile returns

- To put money at risk – Expecting to get it
- back
- With profit



# Example: Income Producing Asset 1/3

#### ✓ Initial Value 100

- 6,0 M revenue
- A" 16,7 x" multiple

#### ✓ Initial Debt 80

- 80% " Loan To Value"
- 5,0% cost => 4,0 M of
- interest per year
- Leading to a 2,0 M net revenue

#### VRisk ?

- " non recourse" Debt, only guaranteed by a mortgage (with a 20% " airbag")
- Equity immediately at risk



Value: 16,7 x 6,0 = 100,0
Debt: 100,0 x 80% = 80,0 80,0 x 5,0% = 4,0
Net Revenue:
6,0-4,0=2,0

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## Example: Income Producing Asset 1/3

#### ✓ Fixed Deal

- Initial Value 100,0 M
- 80%" Loan To Value"
- Cost of debt 4,0 M
- Equity needed 20 M

#### √ Expectations

- 2,0 M" net revenue
- Cash on cash 10,0%

#### ✓ Market Deterioration

- (17,5) M of "losses"
- 1,5 M" net revenue
- LTV up to 97% (risk)

CRASH VARIANCE CASE 1 82,5 Value 100,0 (17,5) Revenue/year Asset Valuation (0,5) 16,7 x 15,0 x ~ higher risk Debt (LTV) 80% 80,0 97% Debt Amount 80.0 -Debt Cost 5,0% 5,0% Interest/year (Fixed Income) (4.0)= (4,0)2+4 Net Revenue/year 2,0 1,5 (0,5) 1-3 Equity Equity Yield (Cash On Cash) 20.0 2.5 (17.5)10,0% 60,0% LOSS ! Initial Value: 100 6,0 rev./year -----Market Losses Equity: 20 Deterioration New Value: 82,5 / 5,5 rev./year Market Crash Crashed Value: 65,0 Debt: 80 Debt: 80 (all equity lost, Lender starts to lose money) 97% LTV

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## Example: Income Producing Asset 3/3





Risk and Cycles

#### ✓ Trees reach the sky ?

- never ...

- ... even in " bull" market

#### ✓ Is the overall economy cyclical

- Yes...
- 123...

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- ... and consequently, RE is as well

Dow Jones since 1902

1929

1945

1974

#### ✓ Are RE cycles predi<u>ctable ?</u>

- Retrospectively yes
- Difference in magnitude and duration
- Not all markets in the same phase

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and Value "18 year" Cycle: 1830-1950



Images of Cycles

#### V From clock to sinusoid **†600** 600 - Chisis Amplitude 500 V Prime office rents in 500 500 La Défense: - € 600/sqm in 2001 400 400 - € 400/sqm in 2005 Duration - € 550/5qm in 2008 Recovery + 50% 600 V The "pork curve" ÷ 000 500 - Volume & Price 3 500 500 - 4 phases 1992 - Explains second hand 3 000 PRICE 400 Housing Market in Paris - 33% 2 500 50 000 2 000 1997 40 000 30 000 VOLUME 13 1 500 20 000 LK - IHEDATE NOV. 2008

Real Estate Cycles 1/2

#### ✔ Market slow down

- Take-up goes down ...
- ... New construction may continue (no immediate adaptation)
- Vacancy increases
- Prices go down

#### ✓ Market recovery

- Take-up goes up ...
- ... New construction may stand still (no immediate adaptation)
- Vacancy decreases
- Prices go up

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## Real Estate Cycles 2/2

#### ✓ Market slow down - Economy slows down ← Transactions ← Employment growth in Greater Paris (moving average) < 5000 m<sup>2</sup> - Employment decreases Transactions - Take-up goes down 4,0 % 1800 1600 3,0 % 1400 ✓ Tenants experience 2,0 % 1200 favorable balance of 1000 1,0 % 800 power 0.0 % 600 - Take-up goes down TRENDS IN RENTS IN ILE-D -1.0 % - Tenant candidates are -2,0 % pretty rare 2000 2001 2002 2003 2004 2005 2006 2007 - Vacancy increases La Déte - Prices (rent) go down Source: Catella (top) & CBRE (left) 90 91 92 93 94 95 96 97 98 99 00 01 02 05 04 05 06 07 LK - IHEDATE NOV. 2008





- Get the Building permit
- Without claims

#### V Construction Risk

- Get the Building done
- On time, @ forecasted
- Costs

#### V Letting Risk

- " Pre-Let" is better
- C Best lease terms

#### V Exit Strategy

- Hold before Sale ?
- <u>– S</u>ale asap

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## Ex: Office Building Development 1/4

#### ✓ 15,000 m2 office ?

- What rent?
- What "multiple" ?
- What production Cost
- What risk ?
- What debt ?
- What return needed ?

#### ✓ How much for the land ?

- Value ...
- ... minus production
- ... minus needed margin







## Ex: Office Building Development 3/4

#### ✓ When Negotiating Land

- Price paid for Land depends on final hypothesis: Volatility between 76,5 and 131,6 <u>M (</u>+72%)
- Turn over (Value): from 162,0 to 247,5 M (+53%)
- Profit: from 40,5 M to 54,0 M (+ 53%)

#### ✓ Unequal split

- Identified "New Value" goes mainly to Land...
- ... and then to Marginal profit











City Zoning

#### ✔Urban Planning Specifies Zoning:

- To protect residential area (against offices)
- To locate certain uses in periphery
- To build harmony

#### V Since Otis...

- It's possible to " multiply" land ...
- ... knowing certain urban zones attract people like magnets

#### ✓ Certain uses are

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- more" profitable"... - ... but restricted urce: Left : OTIS 1851

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"New Land" Invention

#### ✓ Paris

- City growth constrained by walls
- Protection of Historical center
- Expansion possible in Periphery
- … La Défense

#### V London

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- No limit to City expansion
- limited "Protection"
- "Relevant" land available for densification
- ... Canary Wharf



## Land Maximization

### V Isle of Dog 80'

- A new business District competing with "The City"
- No" City frame" constraint
- High Rises and density

#### ✓ La Défense 60'

- A new business District competing with "CBD"
- No" City frame" constraint
- High Rises and density

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## Urban" Maximization"

#### ✓ Hugh Ferris Metaphor

- "The Metropolis of Tomorrow" in 1929
- From small farm to high rises

#### V City skyline

- Affected by Offices
- Demonstrating market Strength

#### ✓ What's next?

- Shanghai
- Dubai

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- New York
- Coruscant ?

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Hugh I

# <section-header><section-header><section-header><section-header><list-item><list-item><list-item>

## Land Value > Building Value

## ✔ "nail house" (Hard to remove)

- Sichuan city of Chongqing
- Mrs Wu (1 out of 280 owners) holding out for \$2.5 m, without water or electricity for 2 years
- City court force them to move out. It's called a "nail house" in Chinese because it's so hard to pull out



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Other " Nail Houses"

#### V Historical Landmark

- Listed (protected) buildings can't be demolished
- Whatever the Land value is

#### ✓ Old building dies

- When use is
- " underperforming", and... - ...economic context
- renders eviction





## The Singer Building, N.Y.

#### ✓ Historical Land mark

- World's tallest building from 1908 to 1909 (187 m.)
- Razed in 1967 (Tallest be demolished)
- Led to more active Landmark Conservation

#### ✓ One Liberty Plaza

- " US Steel building", build
- in 1972, 226 m.
- 54 floors

#### ✓ Rational: Floor size

- 390 m2 for "Singer
- 3,400 m2 for " One Liberty Plaza" (195,000 m2 in total)



## Office Demolition & Redevelopment

#### ✓ Existing values

- The building: € 114.8 m

#### ✓ Zoning Change

- Right to build up to 35,000 m2
- Consequently, land value up to € 175.0 m (>historical bldg value)
- ✓ Interesting equity Story
  - Demolition/reconstruction
  - € 94.5 m equity invested

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 $- \notin 105.0 \ m \ expected$ profit





12=30%x9 Equity Needed (LTC 70%) 13=12/(12+10) Equity Multiple



d Building

17,0 x 114,8

17,2 97,5

52.5

15 000 m2

€450/m2

6.8

15%

€ 3 000 /m2

29,3 1,6 x

New Building

€ 600 /m2 21,0

25% 105,0

€ 4 000 /m2 +33%

35 000 m2 +133%

+33%

+18% **420,0 /** +266% + 305,3 <- 100%

25% 105,0 315,0 +510% +87,8 <-29% +217,5 <-71%

140,0 +95,0 <- 31% 175,0 ✓ +233% +122,5 <- 40%

94,5 **/+223%** +65,2 2,1 x

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VARIANCE

+ 14.3



## RE Asset Value Life Cycle

#### ✓ Full value at Delivery

- Building is new
- Land Value maximized

#### ✓ 10 years after

- Building is older
- Land Value unchanged

#### ✓ 20 years after

- Building is obsolete
- Land Value at risk

#### ✓ 30 years after

- Building is demolished
- Land need reinvestment





# Chicago Spire: the Story Continues

#### VA 610 m tower

- Tallest full residential

#### √ 1,200 residences in front of Lake Michigan

- Shelbourne Development G.
- By Santiago Calatrava
- First occupancy in 2011

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Source: Google Earth & Spire web site

Burj Dubai: What's the Rationale ?

#### V Density in the desert

- Why going up when there is land everywhere ?
- How to get a descent occupancy?
- VEnvironmental free ?

  - Transport

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Sao Paulo Urban Jungle

#### ✔ Anarchic Land Development

- No strict regulation ...
- ... strong economic incentive ...
- ... leads to urban Chaos

#### V Heaven of Peace

- Old building with History and long term use (Hospital)
- Listed building/area
- High Quality vs. pure density



Pudong Development

#### 🗸 New Shanghai skyline

- World's tallest building (Jim Mao)
- High Rise concentration
- 7<sup>th</sup> Position in Emporis Skyline ranking

#### V A rapid development

- Only 2 high rises in 1998 (Oriental Pearl TV 461 m)
- Still a lot of land available

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and formation

ource: DR 4'? Gooole Earth

## Spec. Dev. In Historical cities ?

## ✓ Paris' protected city form (Haussmann)

- Limited density
- Listed Building and protected area
- City's Preemption right to contain inflation

#### ✓ Hope in periphery ?

- Good means of transport
- Land already fully built

#### ✓ New Hope ?

- Land liberation (de-
- industrialization)
- Active city planing



Billancourt: "Renault's lands"

#### V A new neighborhood

- 5,500 flats for 12,000 new dwellers,
- Offices: 247,000 m2, including Jean Nouvel's 22 floor green tower
- Retail & Equipments: 75,000 m2
- Delivery 2010-2011

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## Spec. Dev. In Historical cities ?

#### ✓ London is a dense and extended city

- Variable density
- Listed Building and protected area
- Multiple centres

#### V Anything down town ?

- Obsolete buildings
- Strong demand
- New needs (hospitality)

#### ✓ Land Renewal?

- Heavy refurbishment
- "Facadism"

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## "Strand & Adlwych"

#### VA change of use

- "English Electric Company", then City Bank Building (1957-2005)
- Foster & Partners



## Large Development In New York?

#### ✓ New York Highly dense and protected

- Limited density
- Limited use of volume (sky exposure plane)
- Some location without public transportation

#### ✔Hope outside Manhattan?

– New Jersey, Long Island, Brooklyn

#### ✓ New Hope ?

- Meat pack District
- Hudson yard

## Hudson Yard

#### ✓ Master Plan

- 24 million square feet of offices space
- More than 13,000 housing units\_\_\_\_\_
- More than 20 acres of public open space

#### V Services

- Extension of line 7
- Schools ???



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Speculative Development

- ✓ Find a "relevant" land

  With possible density
  (right to build)
  - With a rental market deep enough (demand for office space)
  - Perceived as a location for "sustainable" investment

#### ✔ Program design

- Building shape & surface
- Space split (45,000 m2 divisible in 10 parts)

#### ✓ Income statement

- Other costs
- Land Costs
- Profit...





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## Synthetic P&L 1/4



## Synthetic P&L 2/4

#### V Total Costs: € 81.2m

- €35.0m for Land
- £ 35.0m for construction
- € 4.9m management fees

#### V Gross Profit: € 33.8m

- Profit post tax: €25.3m
- Tax: € 8.4m

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## Synthetic P&L 3/4

#### V Net K gain: € 22.5m

- NDP €100.0M
- Land € 35.0m
- Construction € 35.0m
- Tax on K gain € 7.5m

#### ✓ Net revenue: € 2.8m

- Total NOI: € 15.0m
- Management Fees € 4.9m
- Financing Fees & Interes
- Income Tax: € 0.9m





## Synthetic P&L 4/4

#### ✓ Total Costs: 81,2m

- Other costs: €11.2m (mgt fees & interests)

#### V Financing: 70% LTC

- "Loan To Cost" ratio
- Debt raised: € 49,0m (49.0/70.0 = 70%)

#### V Equity Needed

- Total Cost debt: €32.2m
- € s.lom of Net Operating
   cash flows in 3 years
- Equity needed: €26.6m

#### V Performance

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- A" 2.0x" Equity Multiple

- " Cash on cash": 13.4% in Year 3



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#### ✓ 5 Year Investment

- Total Costs: € 74.9M

#### ✓ Unleveraged Performance

- Equity Needed: € 72.8
- Unleveraged IRR: 11,2%





## Synthetic Cash Flow 2/4

#### V Debt Raised: € 49.0

- Interests: € 1.2m/year (4,75%)

#### V Leveraged Performa

- Leveraged Gross Profi €33.8m
- Equity Needed: € 26.61 Leveraged IRR: 22.7%

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(35,0)       Construction Cost       (17,5)       (17,5)       -	(35,0)       Construction Cost       (17,5)       -		(35,0)	Price paid	(35,0)	1000							
(4,9)       Management Fees       (1,4)       (1,4)       (0,7)       0.7)       -       -         15,0       Revenue       -       -       5,0       5,0       5,0       -       -         100,0       NDP       -       -       -       100,0       -       -         11,2%       40,1       Total       (35,0)       (18,9)       18,9)       4,3       4,3       104,3       -         (72,8)         -       Debt       24,5       12,3       12,3       -       -       (49,0)       -       -         (0,5)       Fin. Fees       (0,5)       Interest       (1,2)       (1,2)       (1,2)       (1,2)       -       -         22,7%       33,8       Total       (11,0)       (7,8)       3,1       3,1       54,1       -         (26,6)	(4,9)       Management Fees       (1,4)       (0,7)       (0,7)       -       -         15,0       Revenue       -       -       5,0       5,0       5,0       -       -         100,0       NDP       -       -       -       100,0       -       -         11,2%       40,1       Total       (35,0)       (18,9)       (4,3)       4,3       104,3       -       -         (0,5)       Fin. Fees       (0,5)       Fin. Fees       (0,5)       (1,2)       (1,2)       (1,2)       -       -         22,7%       33,8       Total       (11,0)       (7,8)       3,1       3,1       54,1       -       -		(35,0)	Construction Cost		(17,5)	(17,5)		-	-	-	-	
15,0       Revenue       -       -       5,0       5,0       -       -         100,0       NDP       -       -       100,0       -       -         40,1       Total       (95,0)       (18,9)       (18,9)       (13,3       4,3       104,3       -         (0,5)       Fin. Fees       (0,5)       Interest       12,3       12,3       -       -       (49,0)       -         (0,5)       Interest       (11,2)       (1,2)       (1,2)       (1,2)       12,1       -       -         22,7%       33,8       Total       (11,0)       (7,8)       3,1       3,1       54,1       -	15,0         Revenue         -         -         5,0         5,0         -         -           100,0         NDP         -         -         -         100,0         -         -           40,1         Total         (35,0)         (18,9)         4,3         4,3         104,3         -           (72,8)		(4,9)	Management Fees	6	(1,4)	(1,4)	(0,7)	(0,7)	(0,7)	-		
11.2%         100,0         NDP         -         -         -         100,0         -         -           11.2%         40,1         Total         (35,0)         (18,9)         (18,9)         4,3         4,3         104,3         -         -           (72,8)	100,0         NDP         -         -         -         100,0         -         -           11,2%         40,1         Total         (35,0)         (18,9)         4,3         4,3         104,3         -         -           .         Debt         24,5         12,3         12,3         -         (49,0)         -         -           .         Debt         24,5         12,3         12,3         -         (49,0)         -         -           .         Debt         24,5         12,3         12,3         -         (49,0)         -         -           .         Debt         26,6)         (1,2)         (1,2)         (1,2)         (1,2)         -         -           .         Total         (11,0)         (7,8)         3,1         3,1         54,1         -         -           .         .         .         .         .         .         .         .         .           .         .         .         .         .         .         .         .         .           .         .         .         .         .         .         .         .         .		15,0	Revenue		-	-	5,0	5,0	5,0			
III,2%         40,1         IOtal         (35,0)         (18,9)         (18,9)         4,3         4,3         104,3         -           (72,8)         .	II,2%         40,1         IOtal         (3,0)         (16,9)         (4,3)         4,3         104,3         -         -           (72,8)         .         .         Debt         24,5         12,3         12,3         -         (49,0)         -         -           (0,5)         Fin. Fees         (0,5)         Interest         (1,2)         (1,2)         (1,2)         (1,2)         -         -           22,7%         33,8         Total         (11,0)         (7,8)         3,1         3,1         54,1         -         -	44.00/	100,0	NDP	105.01	-	(40.0)			100,0	-		
.         Debt         24,5         12,3         12,3         -         (49,0)         -         -           (0,5)         Fin. Fees         (0,5)         Interest         (1,2)         (1,2)         (1,2)         (1,2)         (1,2)         -         -           22,7%         33,8         Total         (11,0)         (7,8)         3,1         3,1         54,1         -	.         Debt         24,5         12,3         12,3         -         (49,0)         -         -           (0,5)         Fin. Fees         (0,5)         Interest         (1,2)         (1,2)         (1,2)         (1,2)         (1,2)         -         -           22,7%         33,8         Total         (11,0)         (7,8)         3,1         3,1         54,1         -         -           (26,6)         (26,6)	11,2%	40,1	Total	(35,0)	(18,9)	(18,9)	4,3	4,3	104,3		-	
.         Debt         24,5         12,3         12,3         -         (49,0)         -         -           (0,5)         Fin. Fees         (0,5)         Interest         (1,2)         (1,2)         (1,2)         (1,2)         -         -           22,7%         33,8         Total         (11,0)         (7,8)         3,1         3,1         54,1         -	.         Debt         24,5         12,3         12,3         -         (49,0)         -         -           (0,5)         Fin. Fees         (0,5)         Interest         (1,2)         (1,2)         (1,2)         (1,2)         (1,2)         -         -           22,7%         33,8         Total         (11,0)         (7,8)         3,1         3,1         54,1         -         -			(72,8)									
(0,5) (5,8)         Fin. Fees Interest         (0,5) (1,2)         (1,2)         (1,2)         (1,2)         (1,2)         (1,2)         (1,2)         -         -           22,7%         33,8         Total         (11,0)         (7,8)         3,1         3,1         54,1         -         -           (26,6)	(0,5)         Fin. Fees         (0,5)         Fin. Fees         (0,5)         (1,2)		-	Debt	24,5	12,3	12,3	12		(49,0)	123	2	
(5,8)         Interest         (1,2)         (1,2)         (1,2)         (1,2)         (1,2)         -         -           22,7%         33,8         Total         (11,0)         (7,8)         3,1         3,1         54,1         -         -           (26,6)	(5,8)         Interest         (1,2)		(0,5)	Fin. Fees	(0,5)								
22,7% 33,8 Total (11,0) (7,8) (7,8) 3,1 3,1 54,1 (26,6)	22,7% 33,8 Total (11,0) (7,8) 3,1 3,1 54,1 (26,6)		(5,8)	Interest		(1,2)	(1,2)	(1,2)	(1,2)	(1.2)	-	-	_
(26,6)	(26,6)	22,7%	33,8	Total	(11,0)	(7,8)	(7,8)	3,1	3,1	54,1	-	-	
				(20,0)									
				(20,0)									
				(20)0)									

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## Synthetic Cash Flow 3/4

10 1 0 01.0 - 1					-				COLUMN THE OWNER			
V Pre-tax Protiti €33.8M	IRR	Total		0	1	2	3	4	5	6	7	8
– Capital gain: € 30.0m		(35,0)	Price paid	(35.0)								
- Revenue (income): £ 25m		(35,0)	Construction Cost	(/	(17,5)	(17.5)	2		-	123	25	2
Revenue (mcomer C 3.8m	1	(4,9)	Management Fees	5	(1,4)	(1,4)	(0,7)	(0,7)	(0,7)	123	21	2
		15,0	Revenue			-	5,0	5,0	5,0	128	23	2
Dest to Dealt.		100,0	NDP			-			100,0	-	21	
POSE CUX Profile	11,2%	40,1	Total	(35,0)	(18,9)	(18,9)	4,3	4,3	104,3	120	-	-
€ 25.3M			(72,8	3)								
- Income tax: €0,9m			Debt	24,5	12,3	12,3	2		(49,0)	123	2	2
- Tax on K-pain: f 7 cm		(0,5)	Fin. Fees	(0,5)								
ru on k gan C 4.5m		(5,8)	Interest		(1,2)	(1,2)	(1,2)	(1,2)	(1,2)	-	- 23	2
	22,7%	33,8	Total	(11,0)	(7,8)	(7,8)	3,1	3,1	54,1		1	
	1	1000	(26,6	5)								
		(0,9)	Income tax		-	-	-	(0,2)	(0,8)	-	-	-
		(7,5)	Tax on K Gain			-	-	-	(7,5)	-	-	
	18,3%	25,3	Total	(11,0)	(7,8)	(7,8)	3,1	3,0	45,9			•
	Multiple	(25,3 =	(26,6 22,5 + 2,8), Net K Gai	5) in + Net r	evenue)		<u></u>					
	2,0 x	(26,6) <<	Equity Needed Cash On Cash	(11,0)	(18,8)	(26,6)	(23.5)	(20,5) 15,3%	25,3		2	Ċ
100.0		3,8	Revenue	(0,5)	(2,6)	(2,6)	3,1	3,1	3,1	-	2	1
15,0		3,8	Cumulated Total	(0,5)	(3,1)	(5,6)	(2,5)	0,7	3,8	14	2	14
		30,0	K Gain		-	-	-	-	30,0	-	-	-
55 28 m 40 m	22,5 7,5											



Sensitivity Analysis

#### ✓ Playing with holding period

- Expecting constant NDP through time
- Only adding Net revenue

#### ✓ Trading IRR vs. Profit

- Min IRR required
- Holding strategy could put NDP at threat (income revenue illusion)

#### ✓ Cash on Cash

– High Cash on Cash could trigger a sale











# Income Producing Asset 1/2

#### ✓ Flow of income ?

- Constant
- Never ending
- Indexed (inflation)

#### ✔ Reqular revenue

- \$ 7.0m / year
- ± \$ 0.3m / year
- Indexed (2.0%/year)
- Non recoverable expenses \$0.4m / year
- NOI (Net Operating Income): & 6.6 m / year (7.0–0.4)

#### V Capex ?

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- Capital Expenditure (works needed to maintain the building)
- Here:" none"



Income Producing Asset 2/2

#### ✔ Base Valuation

- NOL × Multiple
- \$ 146.5 m (6.6 × 22.2)

#### V Sensitivity

- NOI: ± \$0.2 m
- Multiple: ± 0.2 ×
- Value: from \$ 140,8 to
- \$ 152.3 M

#### ✓ Multiple & IRR

- 22.2 × & 2.0% constant inflation => 6.50% IRR
- 22.2 × & no inflation => 4.50% IRR
- 1/ 4.50% = 22.2...

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"Cap Rate"

- ✓ Intuitive use of " multiple"
  - NOI × Multiple
  - \$ 146.5 m (6.6 × 22.2)

#### V Counter intuitive use

- of " Cap rate"
- NOL / Cap race
- W 146.5 / 1 6.6 / 4,50/

## ✓ Link between Multiple

- & Cap rate
- $-22.2 \times = 1/4.50\%$
- 1 / 22.2 = 4.5 / 100

#### ✓ Expected Return:

- We buy an asset 200 and we expect to get 4.50% return
- •If asset's NOI is constant and perpetual...
- •... to get **9.0** / year is fine (9.0 = 200 × 4.50%)

#### ✓ <u>Capitalization Rate:</u>

- If we know that the asset has a constant and perpetual NOI of 10 and if we want to get 4.50% return...
- •... then the value should be such that  $10 = Price \times 4,50\%$
- This means the value should be **222.2** (222.2 = 10 / 4.50%)

#### ✓ <u>Formula:</u>

- Value = NOI / cap rate (expected return)...
- •... just because NOI should = Value x Cap rate

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" Cap Rate": Growing Revenue V Revenue Growth - Constant growth (e.g. Revenu + Indexed & Perpetual 2.0%/year) - ... Generating a 2.0% return NOI α 0 V Expected Return +∞ Temps  $V = \sum_{n=1}^{\infty} \frac{NOI(1+g)^{p}}{m}$ r" expected return is 6.5% NOI V=? - & constant growth is 2.0%  $(1+r)^{p}$ (r - g) - " R", a cap rate of 4.50 % is fine (6.5 - 2.0 = 4.5)  $V = \sum_{n=1}^{\infty} \frac{NOI(1+g)^{n-1}}{(1+r)^n} \quad (i) a = \frac{NOI}{(1+r)} \quad (ii) x = \frac{(1+g)}{(1+r)}$  $\sum_{p=1}^{r} (1+r)^p$  $V = a(1 + x + x^{2} + \dots + x^{p})$ ✓ Math's explanation  $Vx = a(x + x^{2} + x^{3} + \dots + x^{p+1})$ - Limit to infinity ...  $V(1-x) = a(1+x^{p+1})$  With  $x^{p+1} = \frac{(1+g)^{p+1}}{(1+r)^{p+1}}$ - ... of discounted Cash

 $p \longrightarrow \infty \Rightarrow x^{p+1} \longrightarrow 0$  hence V(1-x) = a

 $V = a\left(\frac{(1+r)}{(r-g)}\right) = \frac{NOI}{(1+r)}\left(\frac{(1+r)}{(r-g)}\right) = \frac{NOI}{(r-g)}$ 

With  $(1-x) = 1 - \frac{(1+g)}{(1+r)} = \frac{(1+r) - (1+g)}{(1+r)} = \frac{(r-g)}{(1+r)}$ 

Flows



 $V = \frac{1}{(1-x)}$ 

#### ✓ Stabilized asset

- Constant NOI growth (e.g.: 2.0%/year)
- Constant Value: sold at any period on the basis of NOI / R ("R" being a composite cap rate R = r-g)

#### ✓ Cap rate

*65* 

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- " R", a composite cap rate, taking into account (i) " r" the expected return:  $6.5^{\text{p}}$ and  $(ii)^*$  g<sup>\*</sup>, the constant growth: 2.0%
- at any period "t

#### ✓ Math's explanation

- The red vertical line ...
- ... equates the pink oblique dot line



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Exit Value

" Cap Rate": All assets

#### ✓ Stabilized asset

- At any time, value is equal to NOI / cap rate...
- ...if we disregard
- transaction costs

#### ✓ Non Stabilized assets

- Cap rate quick valuation is not appropriate because
   NOI is neither constant nor perpetual
- Only DCF (discounted Cash Flows) calculation should be used

Exit Value Revenu + @ same cap rate "R" Indexed & Perpetual NOI 0 V=? +∞ Temps t NOI V = cap rate Volatile Exit Value Revenu + Non linear revenue NOI 0 +∞ Temps .  $V = \sum_{p=1}^{r} \frac{Cr_p}{(1+r)^p} \neq \frac{1}{cap rate}$ V=?

## Cash Cow Asset 1/2

#### V Flow of income ?

- Limited in time
- Decreasing

*66* 

#### ✓ Asset Maintenance

- Heavy capex needed...
- ... risk of very small residual value
- "Forest's Metaphor": if you just chop trees, sell wood, without planting trees ...

#### VE.g.: Office Building

- with 6 year firm lease
- Very shallow market
- A lot of capex needed
- Alternative use destroying value

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## Cash Cow Asset 2/2

#### V Secured income ?

- Year 9 pretty frightening

#### ✓ Residual value

- Very low (less than 4 x
- the last NOI) - Could be improved if capex
- realized

#### ✓ Valuation

*68* 

- No cap rate, just DCF
- Risky business => 11,0% IRR
- Initial yield very high
- Most of the value in income flows (NPV of income = 76% of Value



## The risk Factor

#### V Rent Collection

- Future NOI uncertain - Number of Secured periods of rent collection

- Vacancy Risk
   New rent achieved after re-letting ?

#### V Residual Value

- Degradation, obsolescence
  Works to be done, fees to be paid
- Non recovered expenses
   Durable or structural

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# Risky Ventures

## V Rent Collection - Future NOI uncertain - Number of Secured periods of rent collection Inflation impact Vacancy Risk New rent achieved after re-letting ?

#### V Residual Value

- Degradation, obsolescence
   Works to be done, fees to be paid
- Non recovered expenses Durable or structural
- vacancy

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## Asset Types & City Centrism 1/2

6°

#### ✓ Down Town Milan

- 1) Deluxe Residential
- 2°) Department Store
- 3°) Palace Hotel
- 4°) CBD Offices

#### V First Periphery

- 5°) Offices (low rises)
- 6°) Multifamily
- Residential
- 7°) Economical Hotel

#### ✓ Suburb

- s°) Warehouse
- 9°) Light Industrial
- 10°) Social Housing



## Asset Types & City Centrism 2/2

#### ✔ Down Town Milan

- 1°) Deluxe Residential
- 2°) Department Store
- 3°) Palace Hotel
- 4°) CBD Offices

#### V First Periphery

- 5°) Offices (low rises)
- 6°) Multifamily Residential
- 7°) Economical Hotel

#### 🗸 Suburb

- s°) Warehouse
- q°) Light Industrial
- 10°) Social Housing



## Sprawl Index ✓ Sprawl Index Built up area = 100 km2 – Average distance from CBD Daris Average distance to CBD = 3,4 km Average distance to CBD = 3,8 km New York City 3D representation of a built up area Equivalent circle uniform density. and population densities. \*\*\*\*\* Berlin Source: The Spatial Distribution of Population in 48 World Cities: A. Bertaud and S. Malpezzi - 2003 LK - IHEDATE NOV. 2008



Asset Types & Zoning 2/2

## ✓ Paris " within the walls"

- Multifamily housing
- Some offices

#### ✓ Office asset base

- In Paris' CBD...
- … in West Crescent -La Défense

#### ✔ Office Speculative Development

- Heavy refurbishment/ restructuration " within the walls"
- New Construction "outside the walls"









## Risk Return Correlation 1/4

#### V Risk Free

- Capital guaranteed
- Income quaranteed

#### ✓ Low risk -> low return

- " There is no Free Lunch"
- In general around
- 2.50% 3.50%

#### ✓ Treasury Bonds

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- Secured Investments since governments never default...



## Risk Return Correlation 2/4

## ✓ If you take more risk...

- Capital not quaranteed
- Income uncertain

#### ✔… you deserve more return

- It's "logical"...
- ... but not an "exact science" (not rule for calculation)





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## Risk Return Correlation 3/4

#### V The Efficiency Line

- A Virtual line...
- ... separating the
   "Good" Investment
   (OK, because return is
   in line with risk)...
- ... and the "Bad" Investment (non OK, because return is not in line with risk)

#### V The "Pink" Zone

80

- Why take more risk for the same return or less than a T-Bond ?
- Be aware ! People constantly minimize risk and over evaluate return



## Risk Return Correlation 4/4

#### ✓ When assessing Risk

- Don't take for granted the "best Case" scenario
- Try a" Crash Test" Scenario to avoid painful losses
- And take the "middle of the road" view

#### ✓Volatility

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- What spread between Best Case & crash test ?
- The more you pay, lower will be the return and higher the risk



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## Ponzi Scheme

#### V The Promise

- Abnormal High return (in 90 days double the capital or add + 50% in 45 days)
- international postal coupons Italy vs. U.S.)

#### V The Reality

- A fraud where profit were fake, just paid by using the money of the new
- Ponzi, who became millionaire, went to Jail

#### ✓ RE Bubble

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- A pyramid scheme ?



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Bibliography

#### V Forms Follows Finance

#### V Delirious New York

– Rem Koolhaas - 1948 - ISBN 1-88525-400-8 -Monacelli Press

#### ✓ Real Estate

– A.J. Dasso, J.D. Shilling, A.A. Ring – 1995 – ISBN 0-13-766239-4 – Prentice hall

#### ✓ Real Estate Development

- 1978 - ISBN 978-0-87420-971-6- ULI

 ✓ Urban Economics & Real Estate markets
 – D. Dipasquale, W.C. Wheaton - 1996 - ISBN 0-13-225244-9 - Prentice Hall



