Urban and real estate economics

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Urban and real estate economics

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Urban and real estate economics

Week 12

Finances of real estate market I.

Cash flow evaluation

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Finances of real estate market

- Real estate loans and investments are classical financial activities but it is essential to know the product, as well.
- In case of business real estates project evaluation (evaluation based on cash flows) is essential.
- Real estate funds, proprietors and creditors use financial knowledge while managing real estate portfolios.

For this lecture I would like to say thanks to Edit Szász, who explained me the basics of the cash flow project evaluation.

Contents

1. The cash flow method
2. Forecasting the expected future cash flows
3. Evaluation based on cash flows

1. The cash flow method

Real estate evaluation methods

- Cost-based (RICS: amortised substitution cost-based) method
  - Replacement cost: how much would it cost now to build a real estate with the same attributes?
- Evaluation based on return measurement (cash flow, RICS: earnings-based)
  - What cash flow can one count on from the real estate?
- Comparative (RICS: market comparative) method
  - Based on prices of similar real estates, then corrections are made.

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Problems with the application of real estate evaluation methods

Evaluation based on return measurement

- Requires a reliable and specific data base.
- Mistakes may occur when the evaluation is made by an inexperienced user.

Comparative method

- No sufficient number of comparative data.
- Market is not transparent enough (for how much has it been sold?)

Cost-based method

- It does not indicate the market value though it can serve as an important benchmark.
- It may be useful for evaluation of specific cases (scheduled monuments).

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Measurement based on cash flows

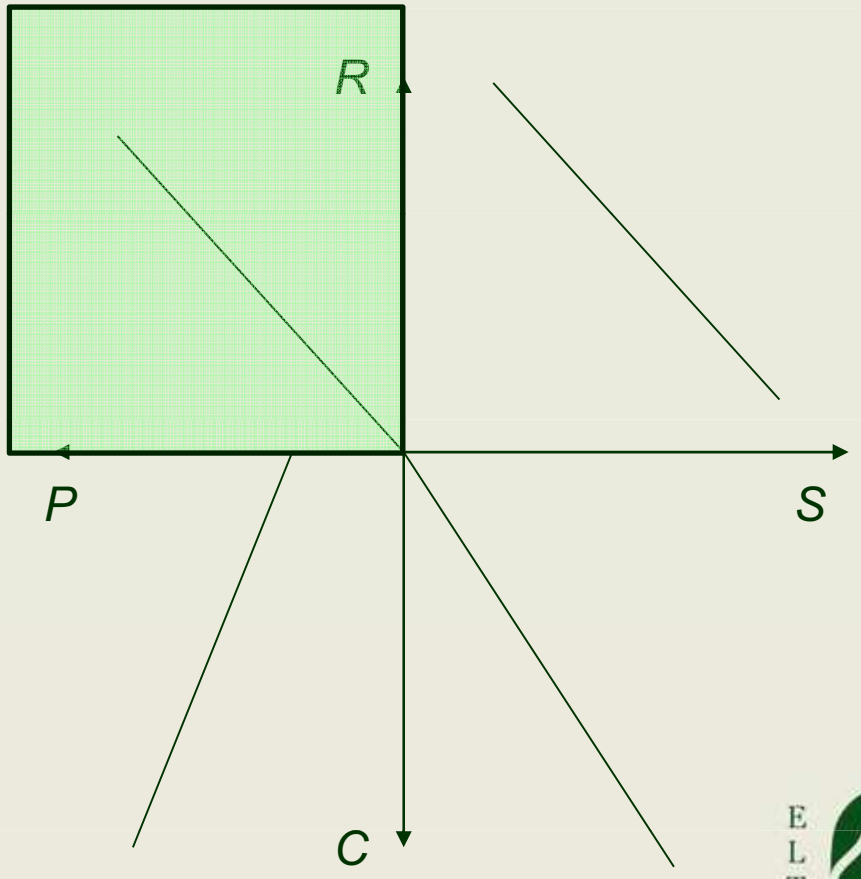
- The value of an investment – company, project, real estate – stems from its benefits.
- By evaluation based on cash flows, different incomes and benefits are monaterised.
- Due to the time value of money cash flows of different dates cannot simply be summed up.
- Numeraire: generally the current money equivalent, – generally discounting is applied: present value, PV.

The cash flow method

- The net present value of the cash flow gained from the real estate.
- Worth applying for real estates with regular cash flows: real estates to let or operated (hotel, offices, retailer and industrial units).
- Without regular cash flows it would be merely the estimation of the future value. (Not really useful.)

Connection between cash flow based evaluation and the 4-quadrant model

Connection of rents and housing prices is based on the cash flow. Higher cash flow (ceteris paribus) results in higher real estate value, i.e. the connection is positive.



Cash flow-based valuation procedure

Main parts:

1. *Forecasting the expected future cash flows*

   Expected cash flows in different dates.

2. *Defining the discount rate*

   Risk-weighted expected return, i.e. the time value of money.

Based on the above, the value of a real estate can be calculated easily.

Sensitivity analysis is for supervision of assumptions.

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2. Forecasting the expected future cash flows

Cash flow calculation

Revenue

– Operational costs (depreciation excluded)

EBITDA

+/- investment, renovation

FCFF (Free Cash Flow for the Firm)

+/- Interest payment corrected for taxes

+/- Debt stock

FCFE (Free Cash Flow to Equity)

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Cash flow calculation

- Revenue is determined by the utilization of the project.
- The first step of cash flow calculation is fundamental analysis.
- Leverage affects cash flow through debt service.

Cash flow measurement
Types of commercial real estates

Category	Key variables	Aspects of examination
Retail – shopping centres	Rent Duration of rental contracts Vacancy/Turnover	Location Size of retails Connection with other chains
Office buildings	Rent Vacancy	Type of office building (Category A, B or C) Location
Industrial real estate – mainly storehouses	Rent Vacancy/Velocity of circulation	Type of store Location
Hotels	Usage of rooms Average room price Other revenues	Location Operator Synergies with other hotel chains or other attractions

3. Defining the discount rate

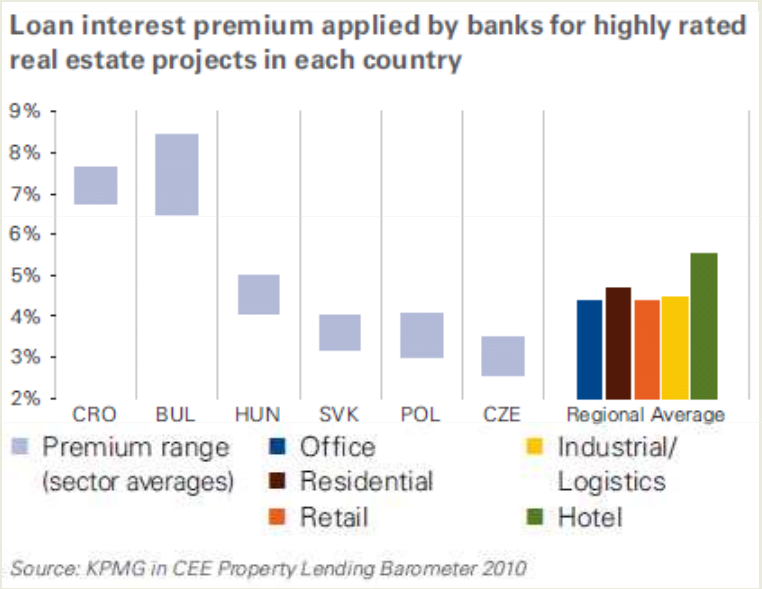
Defining the discount rate

Two kinds of discount rate need to be defined, depending on whose point of view it is examined as different return expectations belongs to different risk levels.

Bank - r_d	**Investor - r_e**
Interbank interest rates have been used as the risk-free interest rate so far (EURIBOR, BUBOR, CHF LIBOR) but now there is a risk premium even on these interest rates.	According to the principle of alternative cost, if risk and return are not in accordance, other investment is chosen.
In accordance with BASEL regulation, each client has to be rated in risk categories (PD), and expected losses have to be determined on each project, then funds have to be allocated based on this – it affects and ascertains the interest premium.	Expected return can be defined based on the expected return of similar projects or with bottom-up method (separated estimation of risk elements).
	Defining R_e based on the CAPM model, CAPM: $r_e = r_f + \beta(r_m - r_f)$
$WACC = r_d \ D/(D+E) + r_e \ E/(D+E)$	

Factors influencing the discount rate

- Expected rate of return can be defined based on the expected return of similar projects or with bottom-up method (separated estimation of risk elements).
- Based on CAPM:
- $r_e = r_f + \beta(r_m - r_f)$, where
- β shows the risk of the investment.
- Real estate agencies monitor and publish subsectorial expected returns.



Stakeholder conflicts

Banker's value

- Bank's payment from FCFF, i.e. from the cash flow disposable for financing.
- The maximum payment is the predetermined interest.
- Payment is made prior to proprietors and subordinated loans, so both risk and expected return are lower.
- The alternative cost of the project is the financing cost of similar projects.

Investor value

- Satisfied last, though its income maximum is not stated –- The proprietors can decide what part of FCFE return they withdraw and what proportion they choose to reinvest.
- Higher expected rate of return as risk is higher.
- Alternative cost of the project is the realizing return of other projects.

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Stakeholder conflicts

Proprietor

- Expected return maximum is not stated but return can only be achieved after all the investors' needs are satisfied.
- Bank financing depends on the value of real estate, the higher the value, the higher credit is available.
- For greater returns, they often engage in riskier investments..

Bank

- The return of the investor (bank) is the interest, which is determined in advance.
- The collateral is the value of the real estate, in order to optimise the LTV ratio, the banks accept a lower value, which they would likely to get.
- The aim is the safe operation, in case it covers the interest and the principal payments.

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Exercise: hotel evaluation based on cash flows

Necessary data:

- Return (discount rate and compound rate)
  - Based on market information or bottom-up rate
- Room price and occupancy rate
  - HCSO and other sources
  - Historical (3-5 years) data and forecast
- Cost data
  - Expertise, data of similar real estates
  - Historical data (3-5 years) and forecast

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Exercise: hotel evaluation based on cash flows

Parameters:

- occupancy rate,
- ratio of revenues,
- cost factors, discount rate

occupancy	55%				
other	percentage of accomodation revenues (%)	linked costs		other costs	percentage of total revenue
food, beverages	40%	50%		admin	8%
other service	10%	70%		marketing	4%
wellness	15%	40%		operational	5%
conferences	20%	40%		energie	5%
room	-	35%		management	5%
				renovation	4%
number of rooms	150			other	0%
discount rate	8%				
inflation	3,0%				

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Exercise: revenues

The revenue from the room is derived from the disposable guest nights *(number of rooms · number of days in the year)*, annual occupancy rate and average room price *(exempted from taxes and other revenues)*.

Other revenues (food, beverages, phone, Spa&Wellness, conferences) of the hotel are generally bound to room revenues.

REVENUES		1. év	2. év	3. év	4. év	5. év	6. év	7. év	8. év	9. év	10. év
average room rate	€	90,0	92,7	95,5	98,3	101,3	104,3	107,5	110,7	114,0	117,4
maximum of guestnights	vé	54 750	54 750	54 750	54 750	54 750	54 750	54 750	54 750	54 750	54 750
expected guestnights	vé	30 113	30 113	30 113	30 113	30 113	30 113	30 113	30 113	30 113	30 113
room revenue	€	2 710 125	2 791 429	2 875 172	2 961 427	3 050 270	3 141 778	3 236 031	3 333 112	3 433 105	3 536 098
food, beverages	€	1084050	1116572	1150068,645	1184570,7	1220108	1256711	1294412	1333245	1373242	1414439,4
other service	€	271012,5	279142,9	287517,1613	296142,68	305027	314177,8	323603,1	333311,2	343310,5	353609,84
wellness	€	406518,8	418714,3	431275,7419	444214,01	457540,4	471266,6	485404,6	499966,8	514965,8	530414,76
conferences	€	542025	558285,8	575034,3225	592285,35	610053,9	628355,5	647206,2	666622,4	686621,1	707219,68
total revenue	€	5 013 731	5 164 143	5 319 067	5 478 640	5 642 999	5 812 289	5 986 657	6 166 257	6 351 245	6 541 782

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Return measurement method

The value is measured on the basis of a 10-year discounted cash flow, where the value of the exit in the 10th year is calculated by compounding.

EBITDA		1 399 780	1 441 773	1 485 026	1 529 577	1 575 464	1 622 728	1 671 410	1 721 552	1 773 199	1 826 395
											22 829 935
total CF		1 399 780	1 441 773	1 485 026	1 529 577	1 575 464	1 622 728	1 671 410	1 721 552	1 773 199	24 656 330
years		1	2	3	4	5	6	7	8	9	10
discount factor		0,93	0,86	0,79	0,74	0,68	0,63	0,58	0,54	0,50	0,46
Present Value	21 143 200	1 296 092	1 236 088	1 178 862	1 124 285	1 072 234	1 022 594	975 252	930 101	887 041	11 420 652

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Curriculum

- Geltner, David M., Norman G. Miller, Jim Clayton, Piet Eichholtz [2007]: *Commercial Real Estate Analysis and Investments*, 2nd Edition. Cengage Learning. Chapter 10–11.