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The development of a CPPI

Practical challenges regarding data sources

Introduction

- Handbook on required data sources
 - Issues regarding data linkage
 - Example in the Netherlands
- Handbook on transaction data
 - Issues regarding transaction data
 - Example in the Netherlands
- Summary

Handbook on required data sources

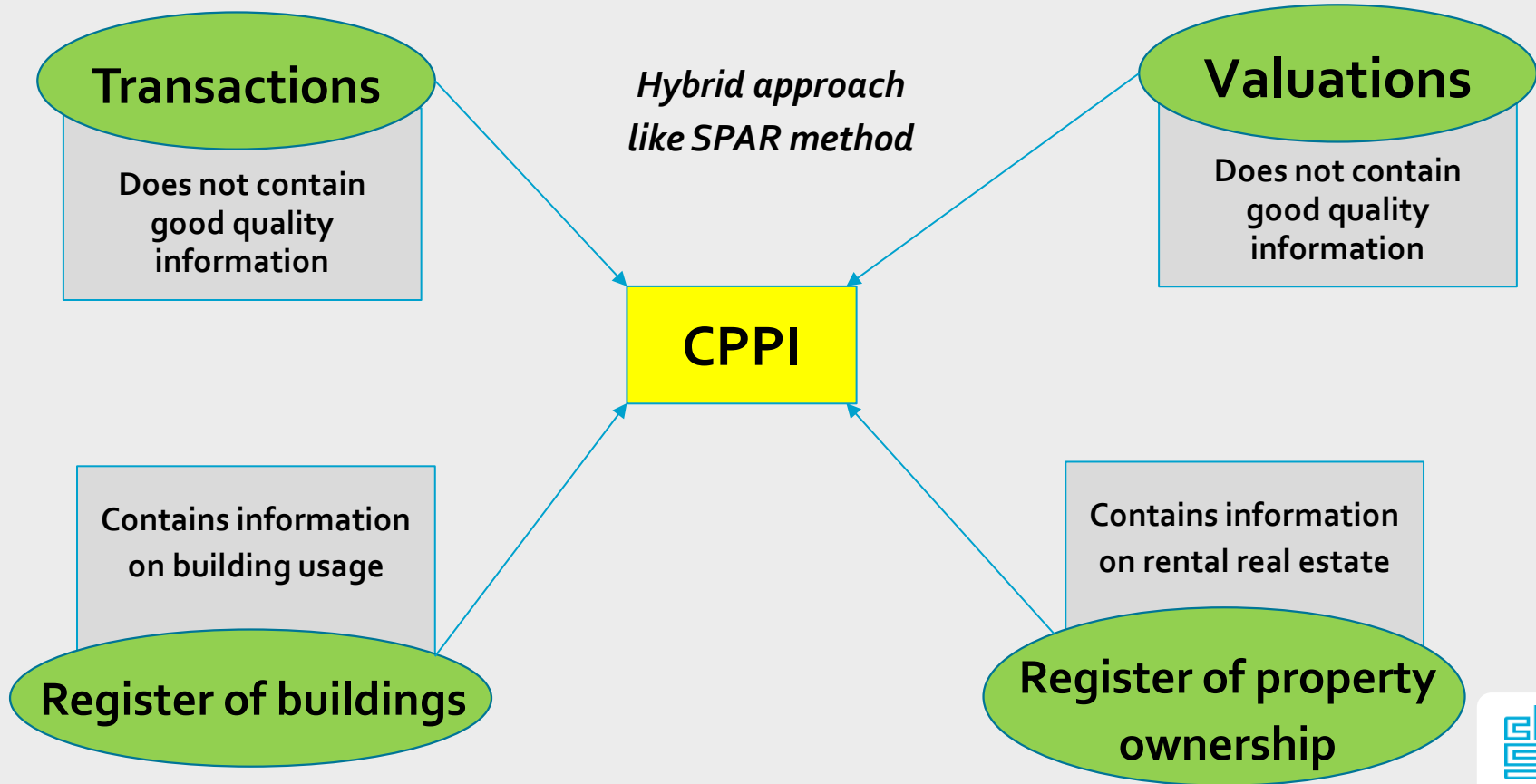
Handbook Ch. 8.1 - Overview:

- *"In practice, compilers of CPPI's exploit two sources of data"*
- *"The data for other variables ... come from a variety of different sources"*

Missing: issues regarding linkage of data sources



Issues regarding data linkage



Issues regarding data linkage

Transactions

Plot

Valuations

*Valuation
object*

Unit of measure

Isolated object

Register of buildings

License

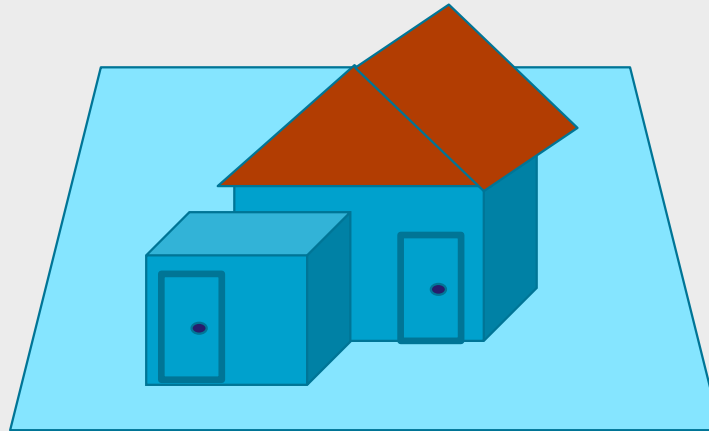
**Register of property
ownership**



Example regarding data linkage

Transactions

Plot



Valuations

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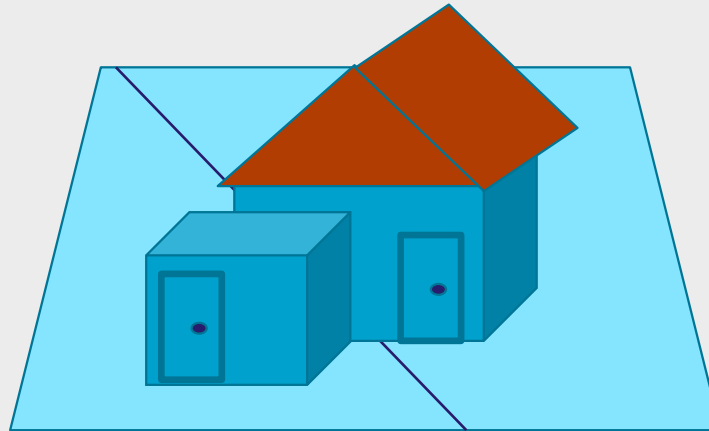
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Example regarding data linkage

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Valuations

*Valuation
object*

Isolated object

Register of buildings

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Register of property
ownership



Handbook on transaction data

Handbook CPPI Ch. 8.2 - Transactions

- *Lack of transparency*
- *Lack of timely data from a transparent source that can be independently verified*
- *Small numbers of transactions*
- *Heterogeneity*

Missing: concrete issues and solutions



Issues regarding transaction data

- *Lack of transparency*



Issues regarding transaction data

Lack of transparency

... can originate from complexities in the contracts

Portfolio / cluster sales

Excluding these sales is not an option:

- Reduced amount of transactions
- Possible sample selection bias



Issues regarding transaction data

Lack of transparency

... can originate from complexities in the contracts

Portfolio / cluster sales

... are registered in various ways

example 1

Transaction number	Address	Number of objects	Sale price
100.001	Street 1	4	€ 600.000
100.002	Street 35	1	€ 150.000
100.003	Street 168	10	€ 1.900.000
100.004	Street 249	15	€ 5.000.000



Issues regarding transaction data

Lack of transparency

... can originate from complexities in the contracts

Portfolio / cluster sales

... are registered in various ways

example 2

Transaction number	Address	Sale price
100.001	Street 1	€ 600.000
100.001	Street 35	€ 600.000
230.003	Street 168	€ 5.000.000
230.003	Street 249	€ 5.000.000



Example regarding transaction data

Object imputation method

Transaction 600.001	Sale price
Object 1	
Object 2	
Object 3	
Object 4	
Total: 4 objects	Total: € 10.000.000



Example regarding transaction data

Object imputation method

Transaction 600.001	Sale price
Object 1	
Object 2	
Object 3	
Object 4	
Total: 4 objects	Total: € 10.000.000



Example regarding transaction data

Object imputation method

Transaction 600.001	Sale price	Object type
Object 1		Office
Object 2		Office
Object 3		Rental house
Object 4		Retail
Total: 4 objects	Total: € 10.000.000	Total: 3 object types



Example regarding transaction data

Object imputation method

Transaction 600.001	Sale price	Object type	Valuation
Object 1		Office	€ 4.500.000
Object 2		Office	€ 1.000.000
Object 3		Rental house	€ 500.000
Object 4		Retail	€ 3.000.000
Total: 4 objects	Total: € 10.000.000	Total: 3 object types	Total: € 9.000.000



Example regarding transaction data

Object imputation method

Transaction 600.001	Sale price	Object type	Valuation	Portfolio share
Object 1		Office	€ 4.500.000	50%
Object 2		Office	€ 1.000.000	11%
Object 3		Rental house	€ 500.000	6%
Object 4		Retail	€ 3.000.000	33%
Total: 4 objects	Total: € 10.000.000	Total: 3 object types	Total: € 9.000.000	Total: 100 %

Example regarding transaction data

Object imputation method

Transaction 600.001	Sale price	Object type	Valuation	Portfolio share
Object 1	€ 5.000.000	Office	€ 4.500.000	50%
Object 2	€ 1.111.111	Office	€ 1.000.000	11%
Object 3	€ 555.556	Rental house	€ 500.000	6%
Object 4	€ 3.333.333	Retail	€ 3.000.000	33%
Total: 4 objects	Total: € 10.000.000	Total: 3 object types	Total: € 9.000.000	Total: 100 %

Summary

It would be beneficial to us if the handbook would discuss the following issues more in depth:

- Issues regarding the use of multiple data sources.
Like key variables, units of measure, etc.
- Concrete issues regarding the use of transaction data.
*Like portfolio sales,
coping with small numbers of transactions, etc.*

