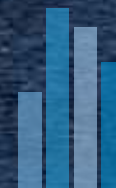


Workshop on the Handbook on CPPI's

SPAR-method and CPPI's in statistics
Denmark



Overview:

Part 1: Comments on appraisal-based price indices (spar-method)

- Value or equal weighted spar-method
- Bias in the preliminary figures
- Pros and cons of the SPAR-method

Part 2: Commercial properties in Denmark

- Commercial properties
- Price development on commercial properties



Value or equal weighted?

A choice based on the properties of the indexes:

- Value weighted (Dutot index)
- Equal weighted (Carli index)

- The (chained) Carli index fails many tests
- The Dutot index has the best properties



Bias in the preliminary figures

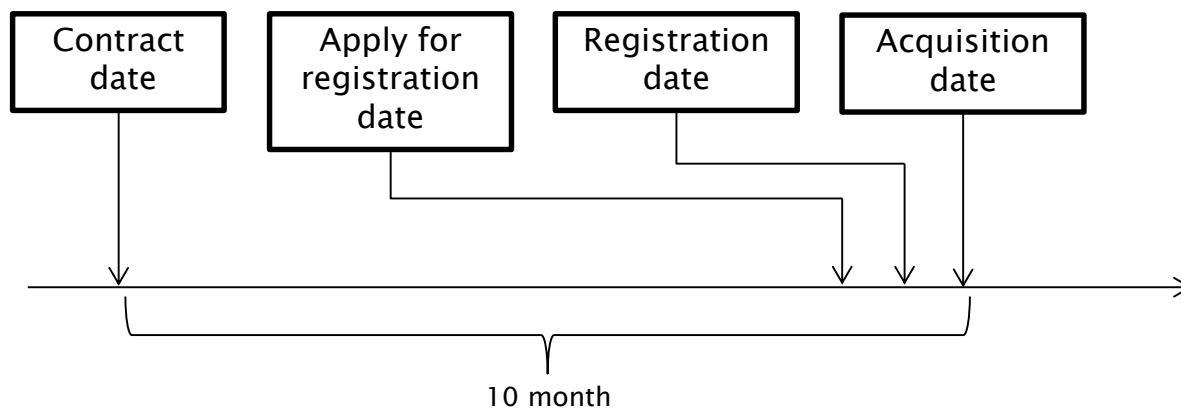
- At the time of the first publication of figures (3½ month after the reference period) not all sales are entered into the electronic land registration system.
- We have observed bias in our preliminary price index – see an example in the table below for period t:

Category	First publication	Revision 1	Revision 2
Houses	105,2	105,8	106,1

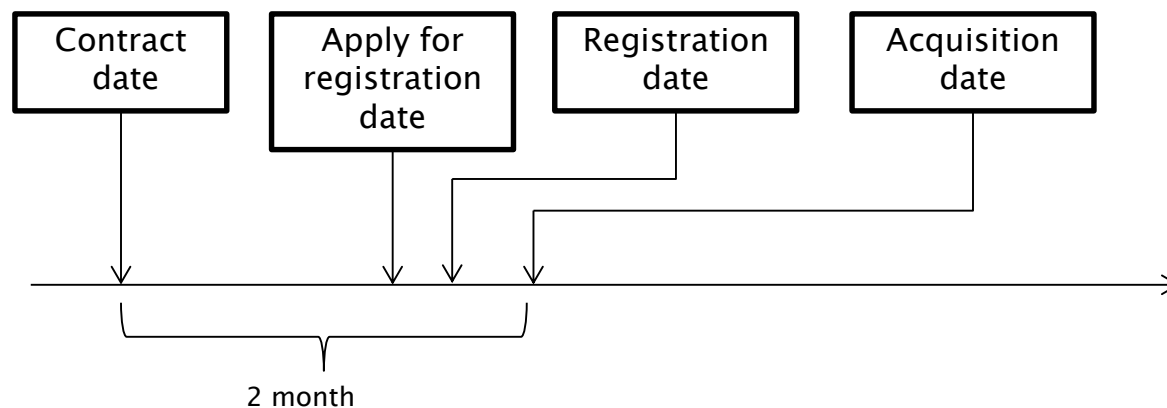
Registration pattern (analysis 1)

applying for registration just before acquisition date

Long acquisition:

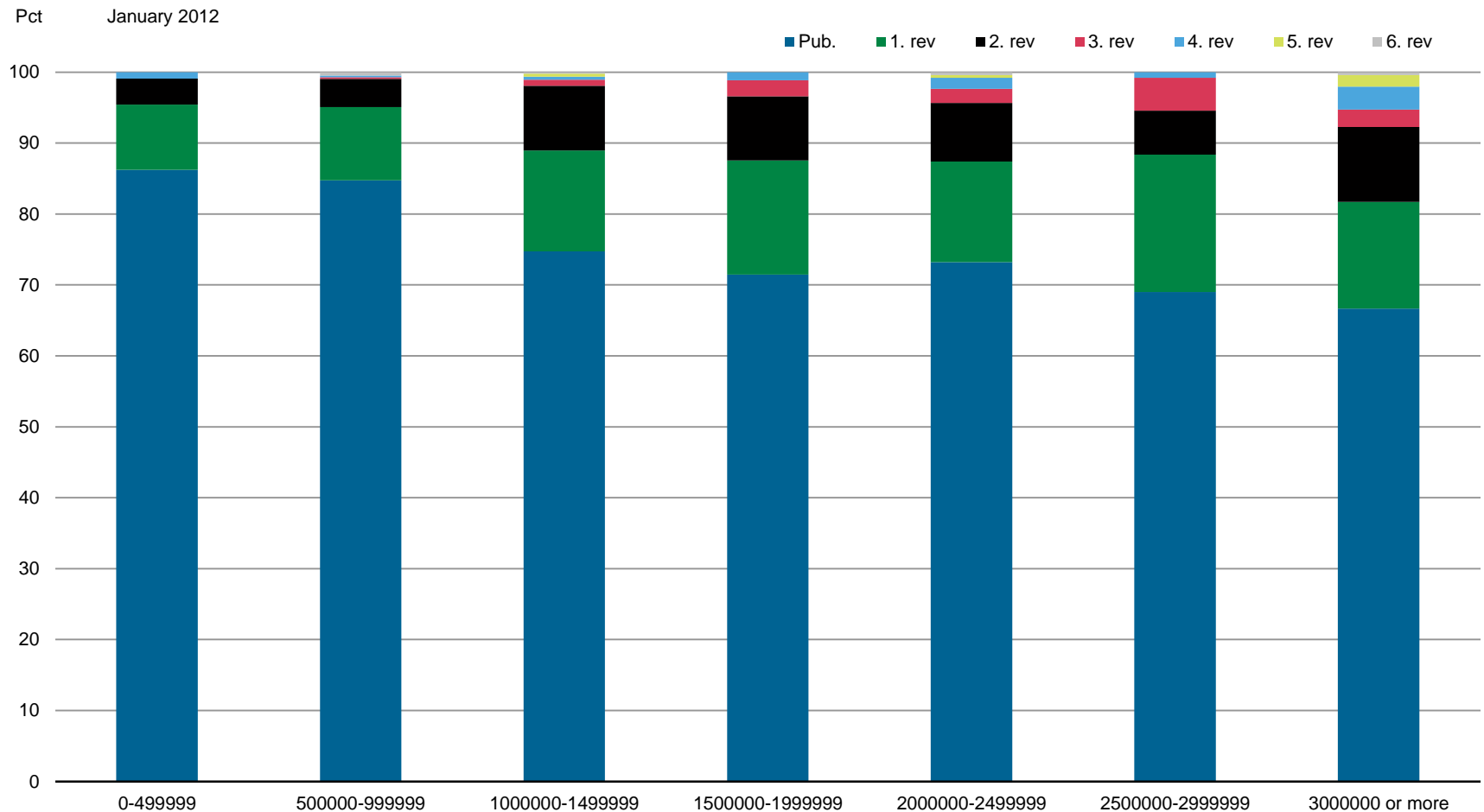


Short acquisition:



Sales price and registration (analysis 2)

the share of sales that are registered at a given time is decreasing with the sales price – financial incentive

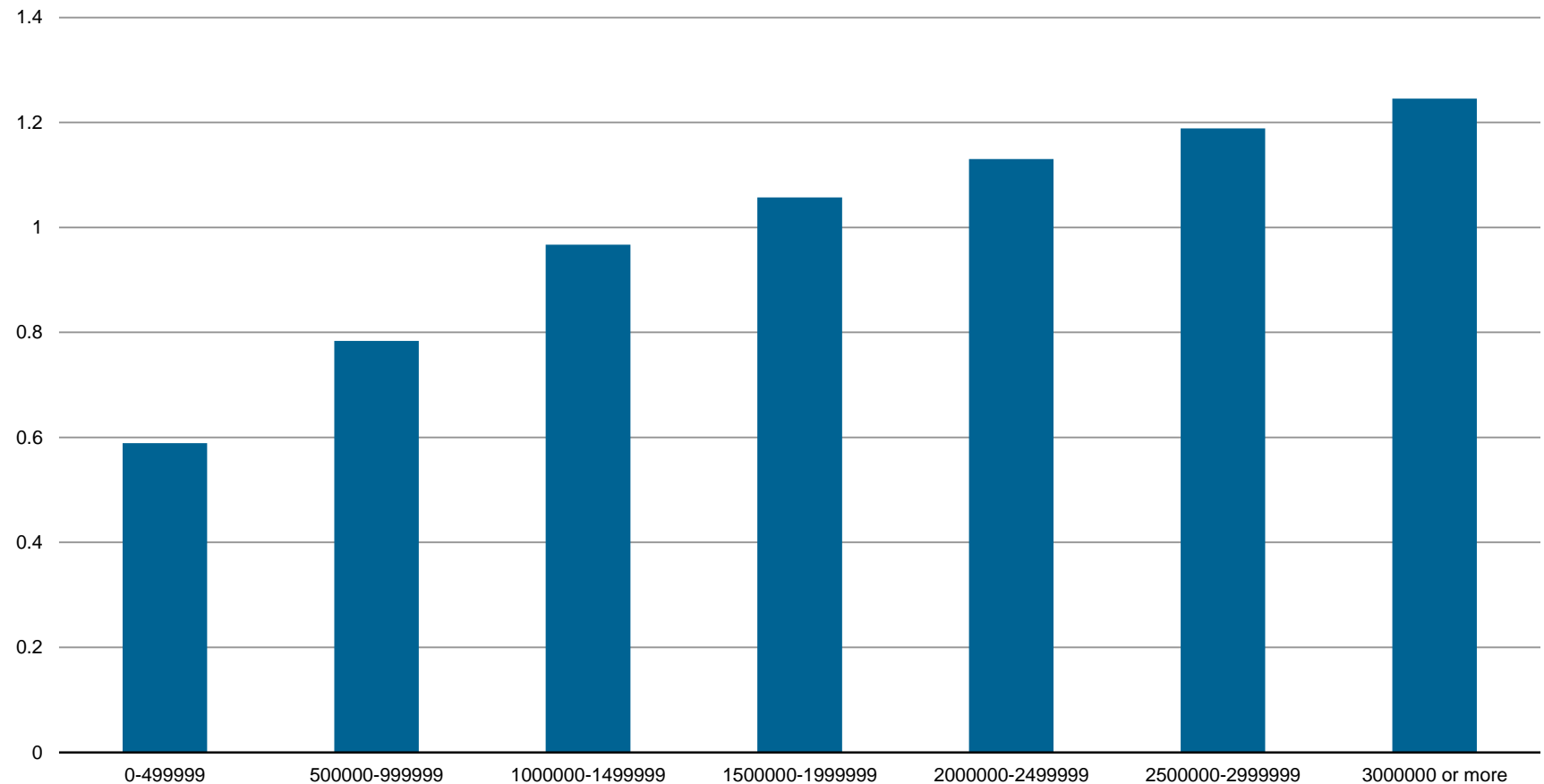


Spar-value and sales price (analysis 3)

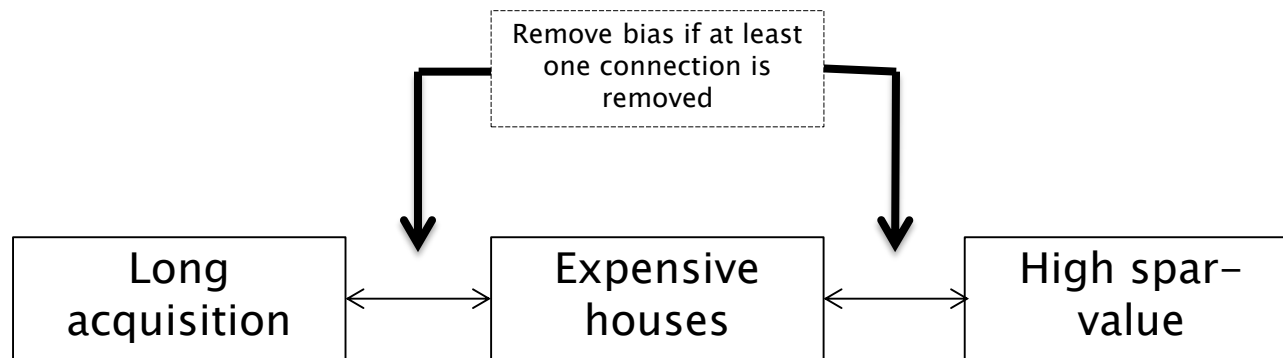
systematic valuation bias – expensive (cheaper) properties are under (over) valued

Spar-value

January 2012

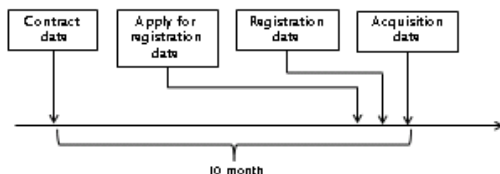


Causes of bias in the preliminary figures (analysis 4)



Financial incentive

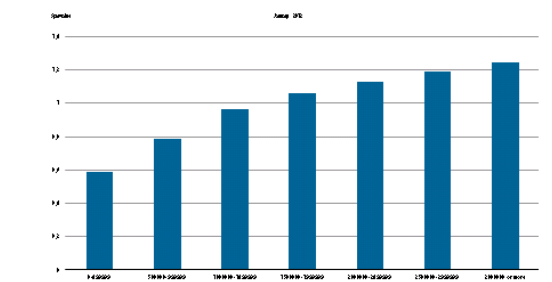
Registration pattern (analysis 1)



Bias

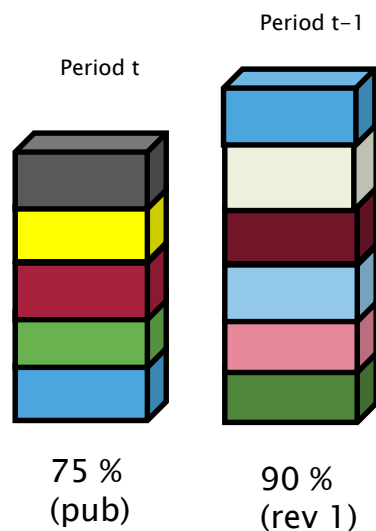
Appraisals from tax authority

Spar-value and sales price (analysis 3)

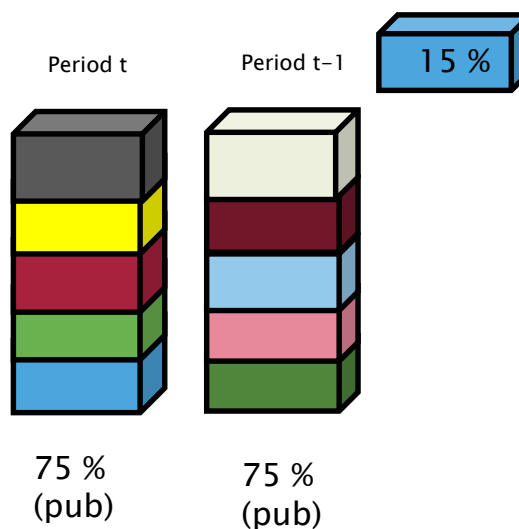


Reducing bias in the preliminary figures - visual

Old method



New method



Not all information is used by the new method, but bias is reduced significantly.

Reducing bias in the preliminary figures - mathematic

- Old formula:

$$I_t^{pub} = \frac{SPAR_t^{pub}}{SPAR_{t-1}^{rev1}} \times \frac{SPAR_{t-1}^{rev1}}{SPAR_{t-2}^{rev2}} \times \frac{SPAR_{t-2}^{rev2}}{SPAR_{t-3}^{rev2}} \times I_{t-3}^{rev2} = \frac{SPAR_t^{pub}}{SPAR_{t-3}^{rev2}} \times I_{t-3}^{rev2}, \text{Rev}=(0,1,2)$$

- New formula (minimize bias):

$$I_t^{pub} = \frac{SPAR_t^{pub}}{SPAR_{t-1}^{pub}} \times \frac{SPAR_{t-1}^{rev1}}{SPAR_{t-2}^{rev1}} \times \frac{SPAR_{t-2}^{rev2}}{SPAR_{t-3}^{rev2}} \times I_{t-3}^{rev2}, \text{Rev}=(0,1,2)$$

The final figures are identical for the old and new formula. It is only the preliminary figures that are different.



Pros and cons using the SPAR-method

Pros:

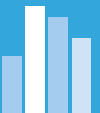
1. Easy to calculate and explain
2. Information on structure characteristics is not required

Cons:

1. Depends on the quality of the appraisals
2. Implementing a new appraisal will typically revise historical figures unless figures are not subject to revisions
3. The method cannot adequately deal with depreciation of the real estates
4. The method cannot adequately deal with major repairs or renovations of real estates

Part 2: Commercial properties in Denmark

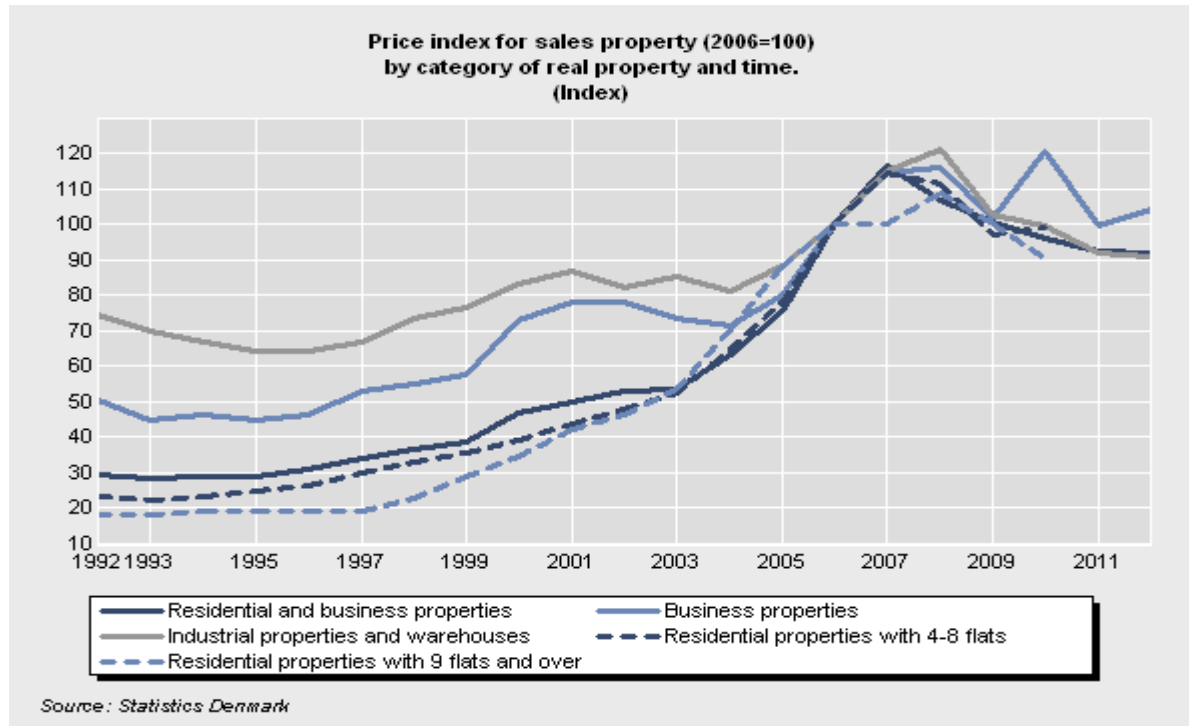
- A large part of banks write-downs during the financial crisis have been related to the financing of commercial real estate and agriculture properties.
- The concept of commercial properties are used widely and can cover both commercial properties, which run business, for instance offices-, business-, warehouses and factory buildings as well as investment properties that have rental housing as the primary goal.



Price developments in CPPI's

There has been difference in the price developments depending on:

- Real estates with residential leases or
- Real estates with commercial leases



Price development in CPPI's

- The price development of real estates with residential leases probably depend on how many of the apartments that are being rented out.
- One of the reasons that the largest increase in prices occurred in rental properties has probably been that house hunters often want to compare the costs of **renting and owning**, and that the increase in house prices has increased the rents that tenants were willing to pay which gave rise to higher rents.

Price developments in CPPI's

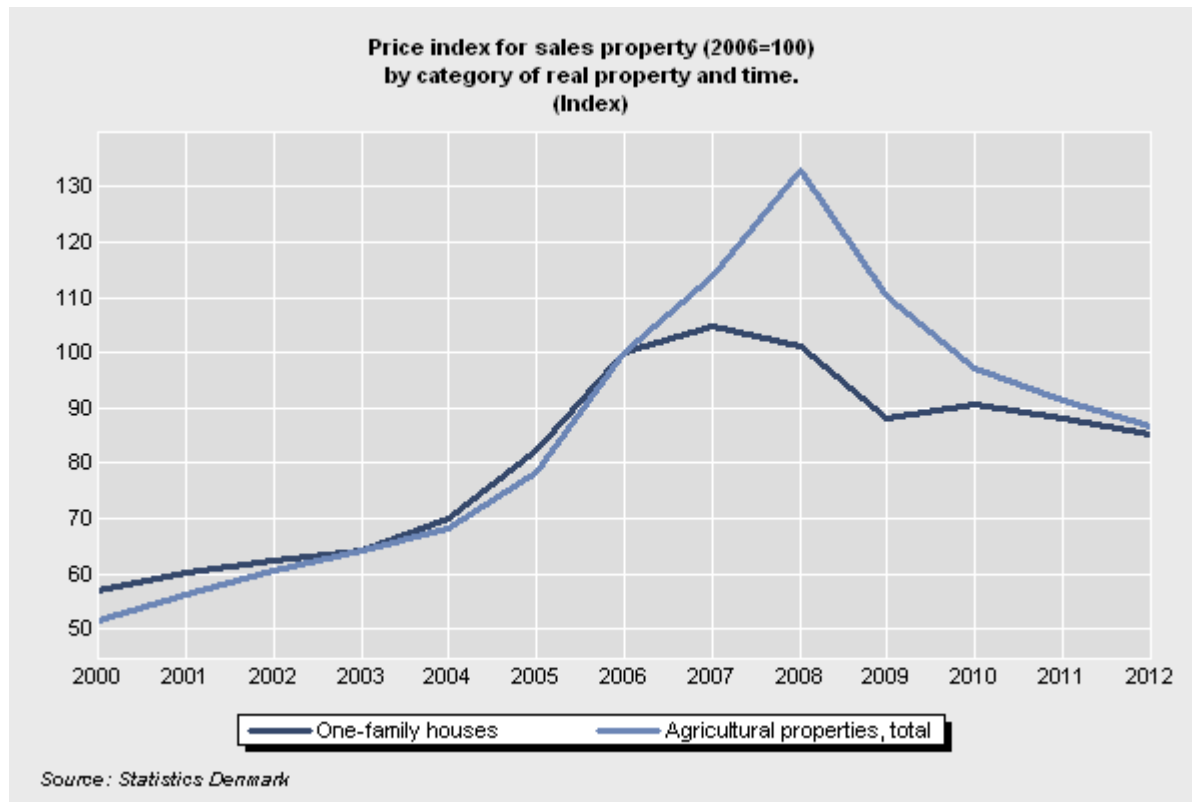
- The price development of real estates with residential leases depends essentially on the possibilities for leases.
- In the period 2004-2007 the unemployment rate decreased but has increased in the subsequent years.

Agricultural properties

- Write-downs and losses on agricultural properties is a major challenge for some credit institutions.
- Prices of agricultural properties reflect the land prices to some extent.
- The price developments on agricultural properties and one family houses were similar until early 2007, where the house prices peaked, but land prices continued to rise significantly.



Price developments for agricultural properties and one family houses



Agricultural properties

- The higher price development on agricultural properties than on one family houses can be seen in light of the fact that the amount of agricultural land - as opposed to the housing stock - in the long term is almost constant.
- This means that supply can not respond to changes in the demand. Therefore the prices increased on agricultural properties.
- A major factor for the development in land prices until 2010 has been a legal requirement for access to land for spreading manure. Large farms should own land rather than lease or enter into manure agreements.
- The expansion of large livestock production was dependent on owning enough land around the farm and in areas with large livestock production land became a very scarce resource.

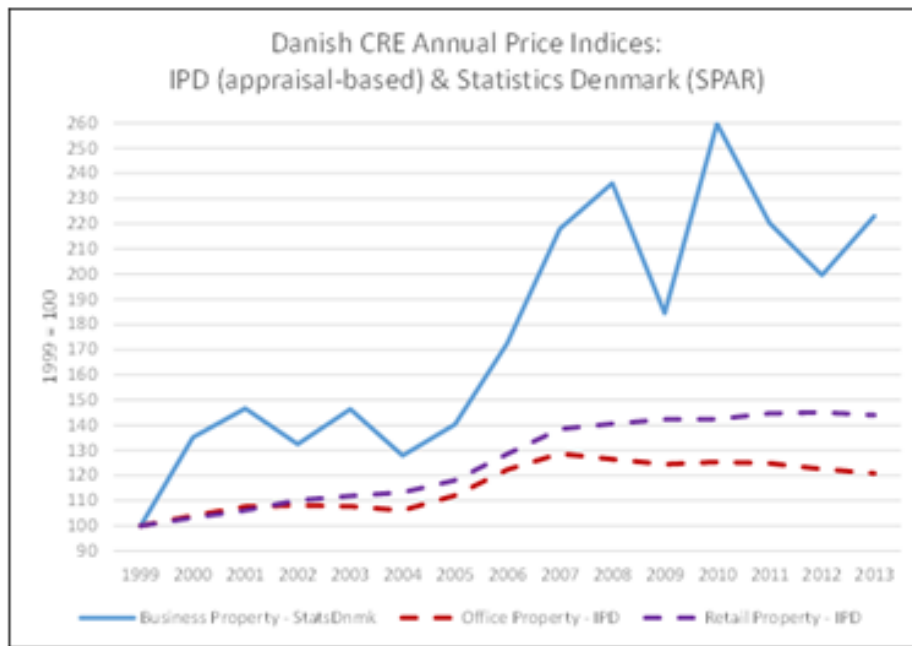


Explaining the figure

quality adjustment and number of sales

APPRAISAL-BASED PRICE INDICES

EXAMPLE



	2009	2010	2011
# sales	604	774	715

Other producers of statistics on commercial properties

- Danish Property Federation (co-operation?)
- Experian.



Thank you!

Statistics Denmark

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