The impact of house price index specification levels on the risk profile of housing corporations

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Introduction - I

- Dutch housing corporations under political pressure:
  - Subject to corporation tax (> 500 mln/year);
  - Compulsory urban renewal levy (€75 mln/year);
  - Increase energy efficiency of housing stock;
  - Increase production;
  - Negative publicity;
  - Tightened supervision;

- In times of:
  - Falling house prices due to little demand on the owner-occupied market.
  - Liquidity problems for some housing corporations.
Introduction - II

- Increasing field of tension between guaranteeing financial continuity and social objectives.
- Asset Liability Management (ALM) becomes increasingly important to obtain insight into financial risk connected to specific social and financing strategies.
ALM for housing corporations

Balance sheet

- Real estate
- Capital
- Loans

Simulation

Policy:
Rent, maintenance, sales, investments, demolition/newly built, treasury

Uncertainty: construction costs, inflation, interest rates, **house prices**

Risk analysis
House price indices - I

- Used (a.o.) to calculate risk and return on sales programs
- Up till now: Dutch national house price index used
- Renes and Jokovi (2008): not one house market, but several regional markets in the Netherlands
- Recently, lower level house price indices have become available
- Francke et al (2009): statistical properties differ per house type and region

Research question:

Analyze impact of specification level of house price index on risk-return profile of housing corporations
House price indices - II

- Indices from OrtaX local linear trend repeat sales model
- National index compared with indices based on COROP region and house type (row / corner house versus apartments)
- Local indices available from 1993
House price indices - III

- Using indices from 1993 underestimates house price risk
- To extend the time series to the early 1970s we can:
  1. Estimate the missing data (backcasting)
     Regress on other time series without missing data
  2. Use derived time series:
     Derive scenarios from scenarios of other variables
- We use a combination of these two approaches
Case description

- Impact analyzed on 5 housing corporations from different COROP regions
  1. Leeuwarden (COROP region 4: Northern Friesland);
  2. Almelo (COROP region 12: Twente);
  3. Amsterdam (COROP region 23: greater Amsterdam);
  4. Alphen aan de Rijn (COROP region 28: Eastern South Holland);
  5. Goes (COROP region 32: other Zeeland).
- Focus on risk only, expected local house price increases assumed equal.
- All distributions based on 500 economic scenarios.
- Analysis 1 ("asset only"): impact on probability distribution of sales revenue in 2018 of €100K house (price level 31 December 2008).
- Analysis 2 (ALM): impact on solvency levels using the actual multi-year plans.
Local house price increases row / corner houses

Year

Leeuwarden
Almelo
Amsterdam
Alphen
Goes
National
Local house price increases apartments

Year

Leeuwarden
Almelo
Amsterdam
Alphen
Goes
National
Impact on sales revenues - I

- Amsterdam and Alphen show largest differences
- Amsterdam: standard deviation increases by more than 50%, VaR’s 25% lower
- Alphen: Standard deviation +33%; VaR’s -16% to -24%
- Differences in variances are significant at 1% level
- No significant differences between separate indices per type and a weighted index
Impact on sales revenues - II

- For Goes and Leeuwarden, differences are not significant
- For Leeuwarden risks seem slightly lower with detailed index
- Almelo shows significant differences: standard deviation +12%, VaR’s -10%
- Again, no significant differences between separate indices per type and a weighted index
Impact on solvency - I

- Amsterdam: 25% of current stock sold in coming 15 years
- Using a national index leads to significant underestimation of actual risk profile;
- 1% VaR drops below zero when using a local index
- Alphen: risk slightly lower with local index (in contrast to asset only)!
Impact on solvency - II

- For Almelo, like Alphen, risk decreases with a local index (in contrast to asset only)
- Impact small due to shorter horizon and relatively small sales program (5.4% in 5 yr)
- Mixed results for Leeuwarden, differences insignificant.
Conclusions

- Impact of local versus national index differs strongly depending on region and house type.
- Especially for the greater Amsterdam area the risk is underestimated when the national index is used.
- ALM results sometimes opposite to asset only results.
- Housing corporations should investigate the need to switch to local indices.
- Topic for further research: extend local house price indices to the early 1970s