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

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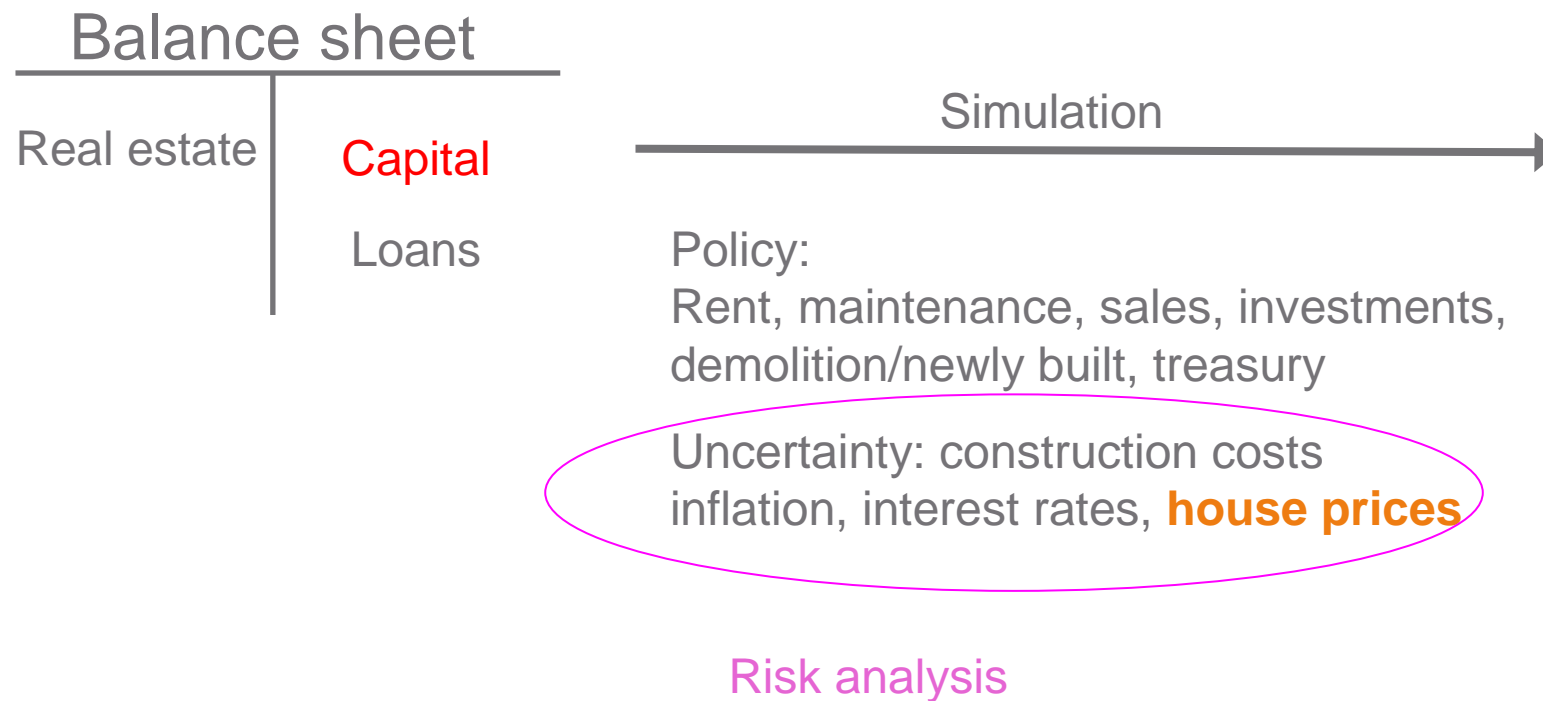- Impact on solvency

- Conclusions

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

Figure 2.2: Change in sales prices within the Netherlands
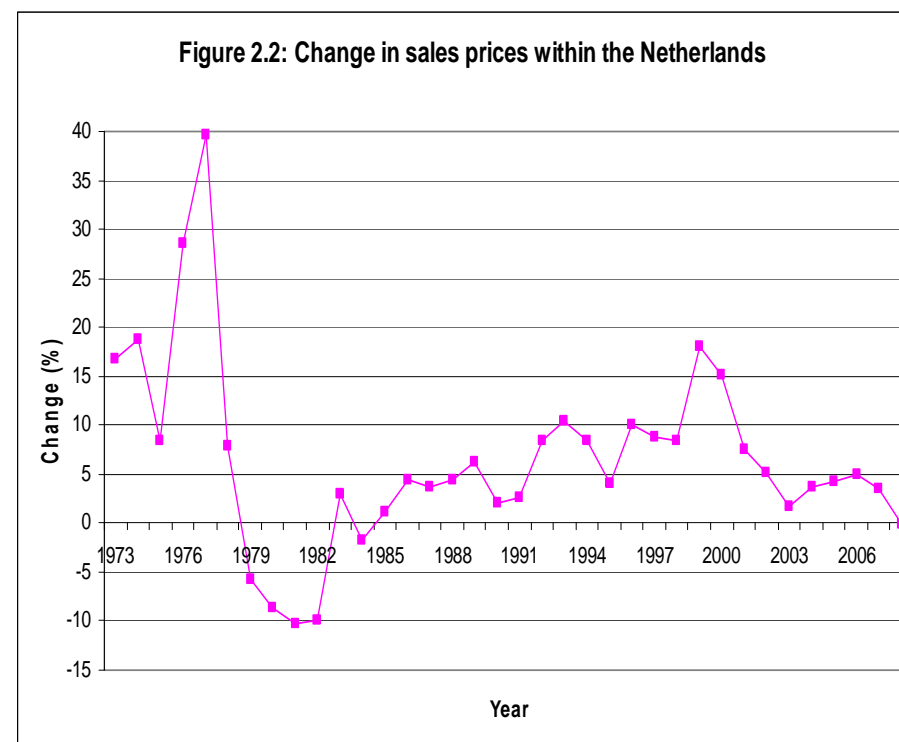
Case description

- 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

Legend:
- Leeuwarden
- Almelo
- Amsterdam
- Alphen
- Goes
- National
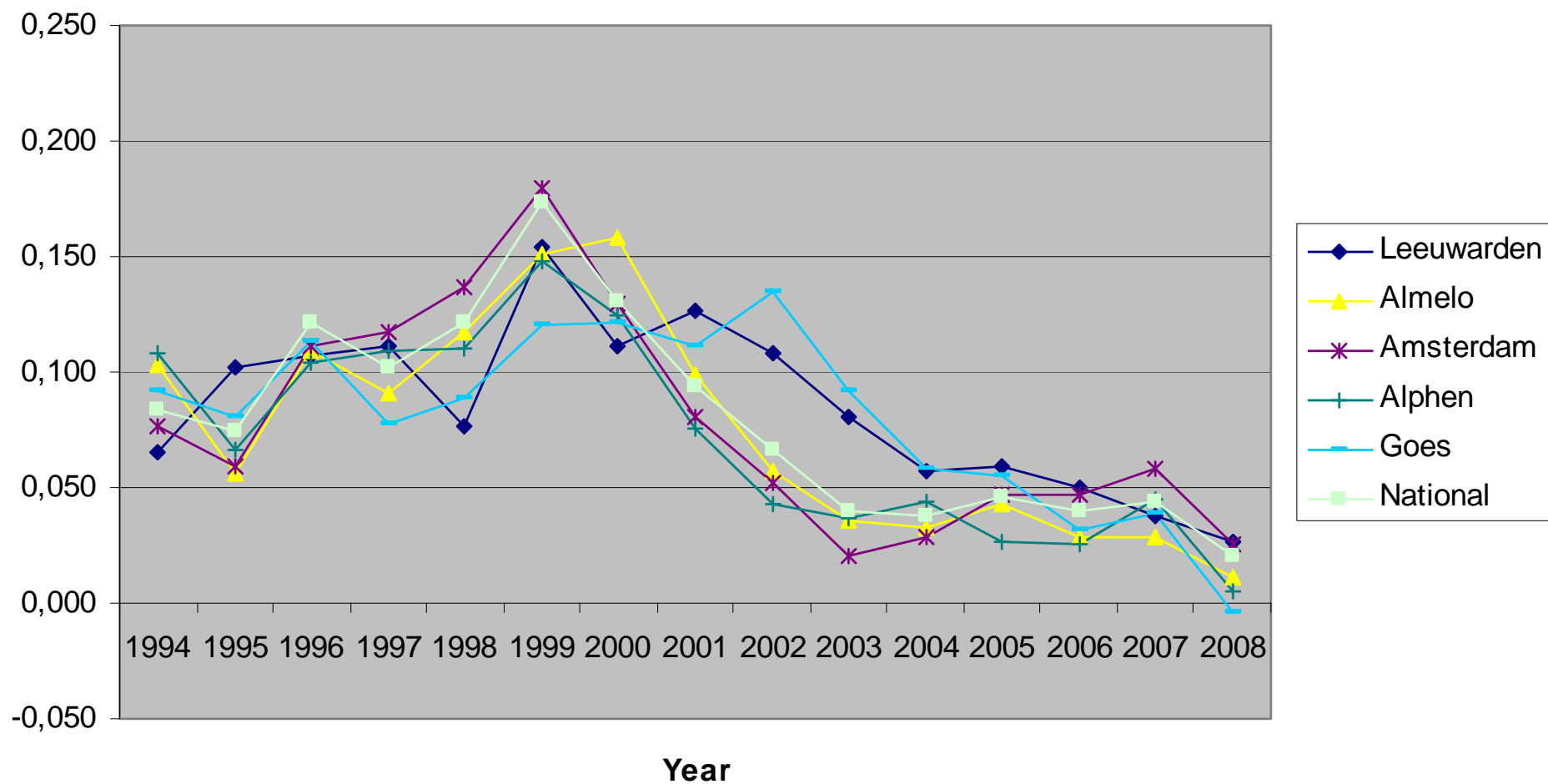
Local house price increases apartments
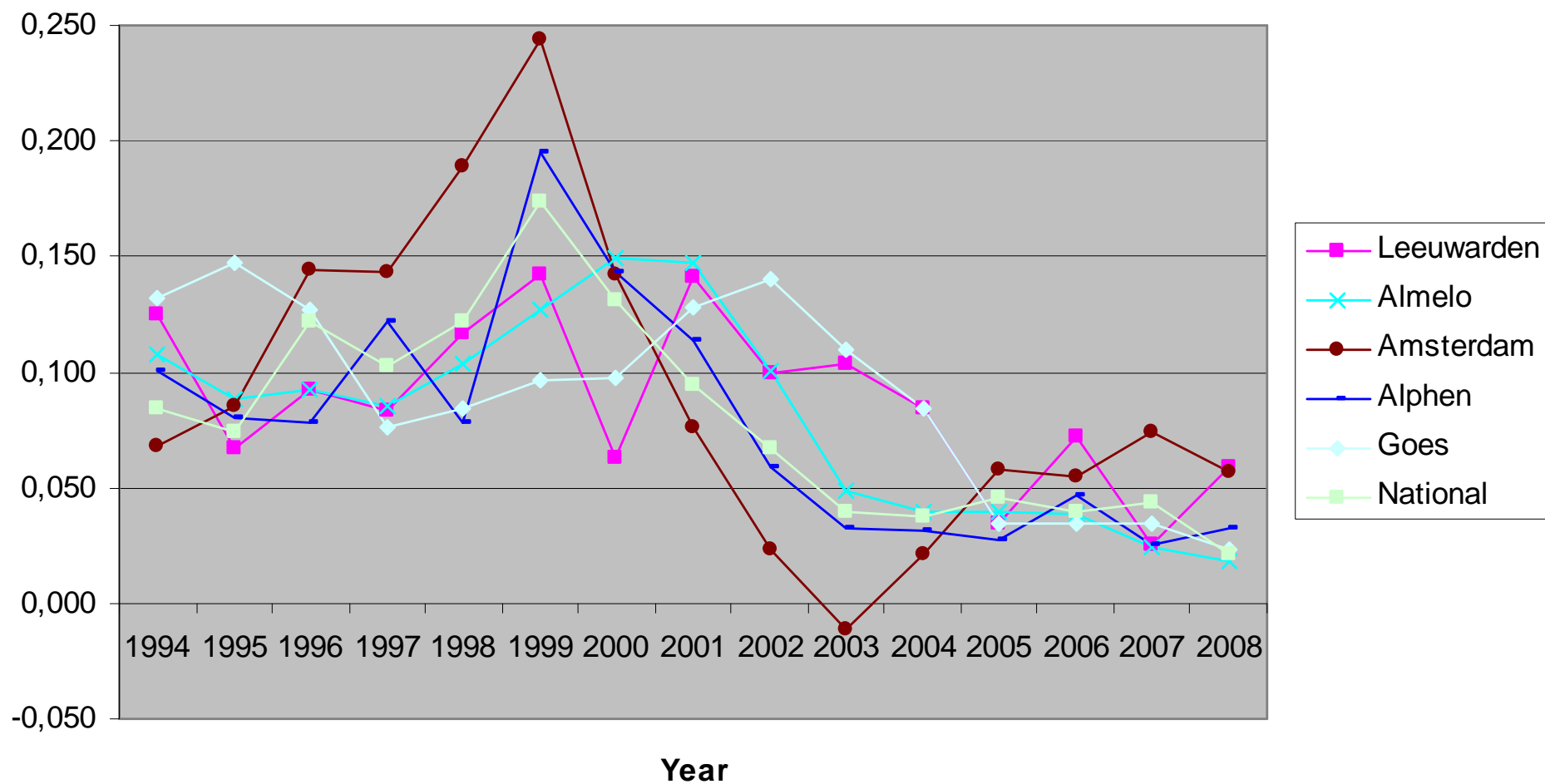
Impact on sales revenues - I

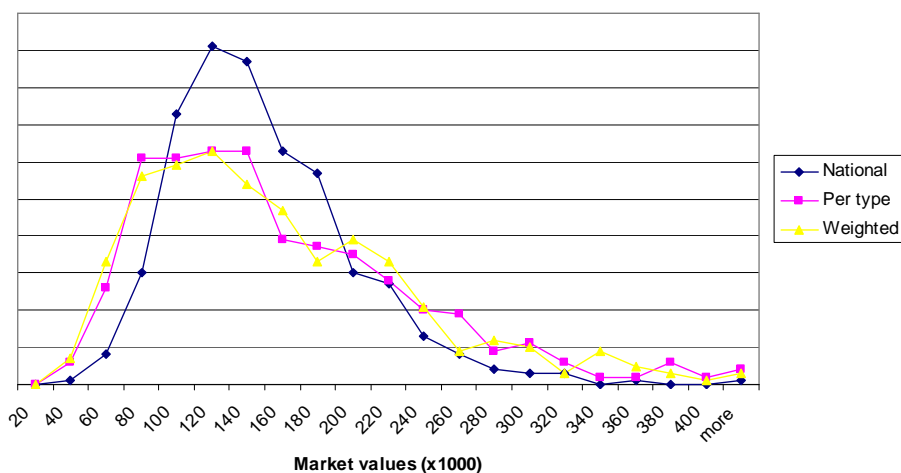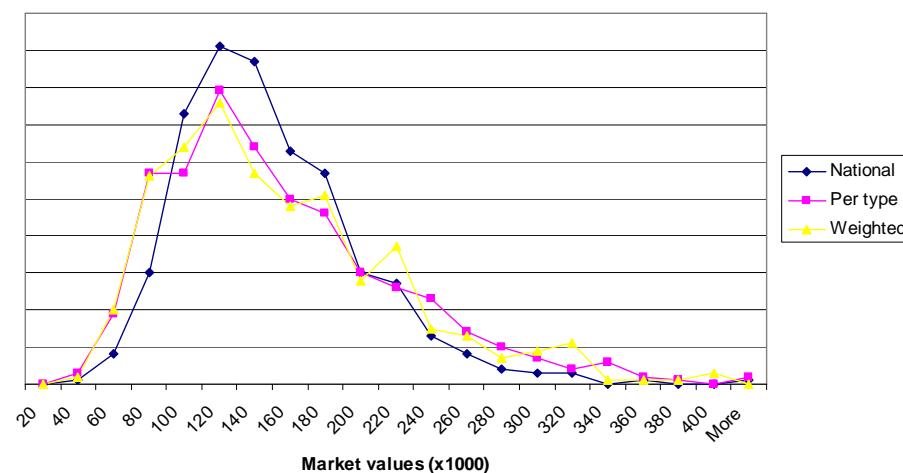Figure D.3: Distribution of values in 2018 - Amsterdam

Figure D.2: Distribution of values in 2018 - Alphen

- 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

Figure D.4: Distribution of values in 2018 - Goes
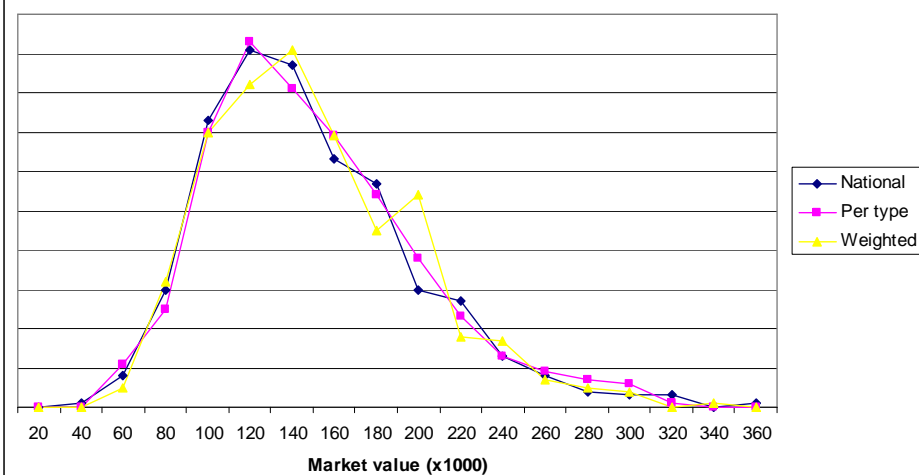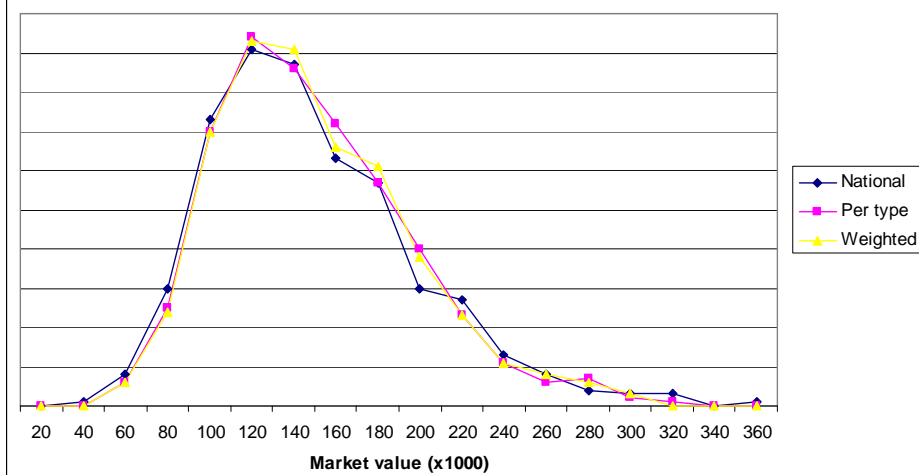

Figure D.5: Distribution of values in 2018 - Leeuwarden

- 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

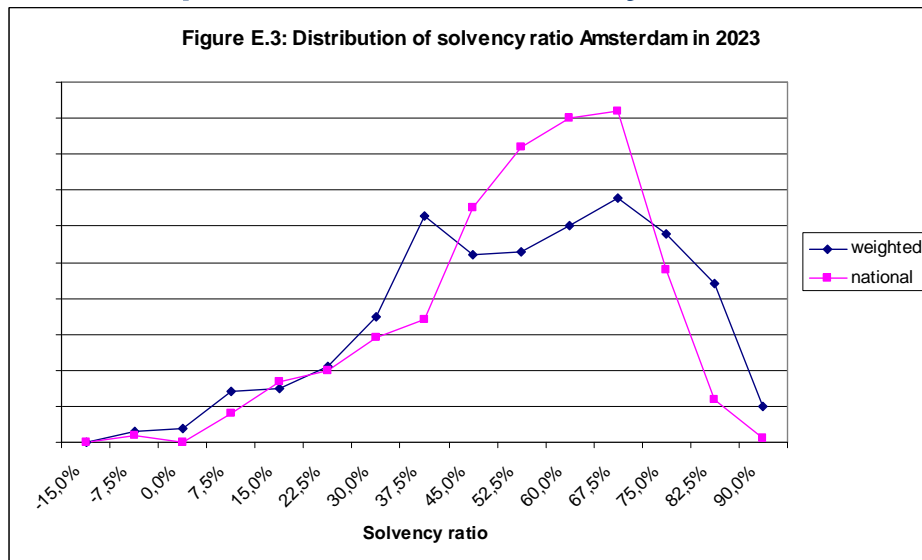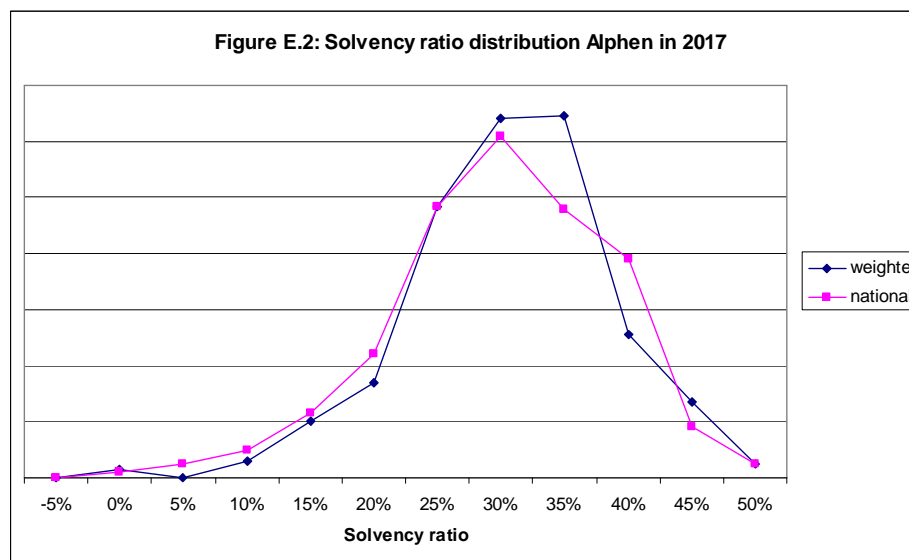**Figure E.3: Distribution of solvency ratio Amsterdam in 2023**

Figure E.2: Solvency ratio distribution Alphen in 2017

- 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

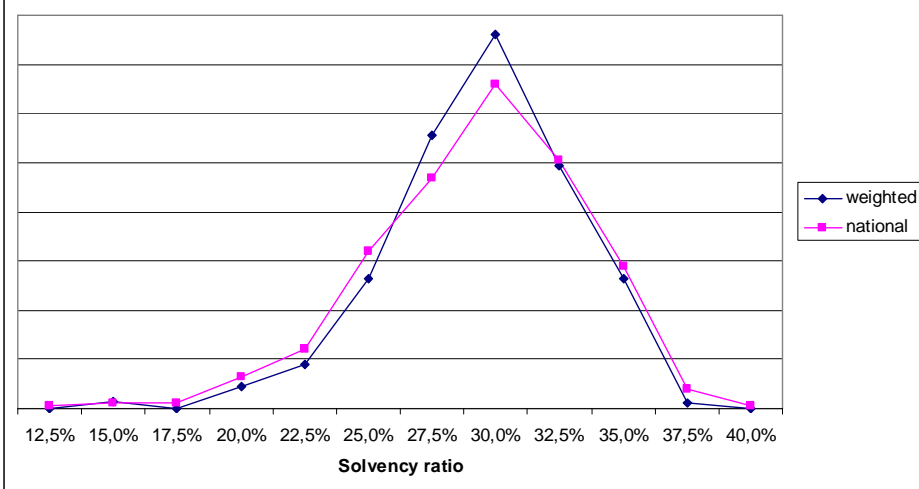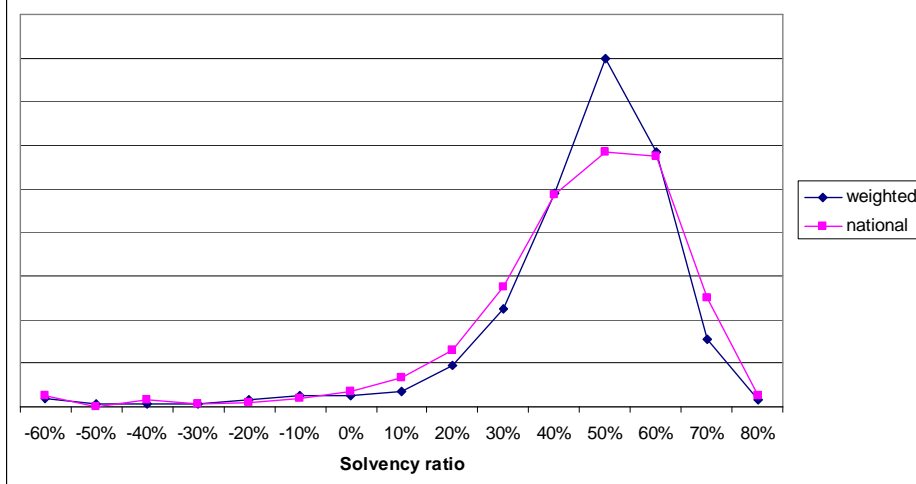Figure E.1: Solvency ratio distribution Almelo in 2013

Figure E.4: Distribution of solvency ratio Leeuwarden in 2024

- 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