



German experiences with creating real estate databases

Creation of real estate databases according to the new requirements of Recommendation J
Warsaw, Poland November 18th, 2013

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vdpResearch

vdpResearch was founded in 2008 as a 100 % subsidiary of the Association of German Pfandbrief Banks.

Primary Aims:

- Analysis and forecast of real estate markets from the view of the German financial industry.
- Providing actual market information such as rents, prices, etc. for use in property valuation.

In order to fulfill their aims, vdpResearch operates a transaction database that is quarterly updated by the participating banks.

Property Finance by vdp Member Banks

Mortgage lending market in Germany

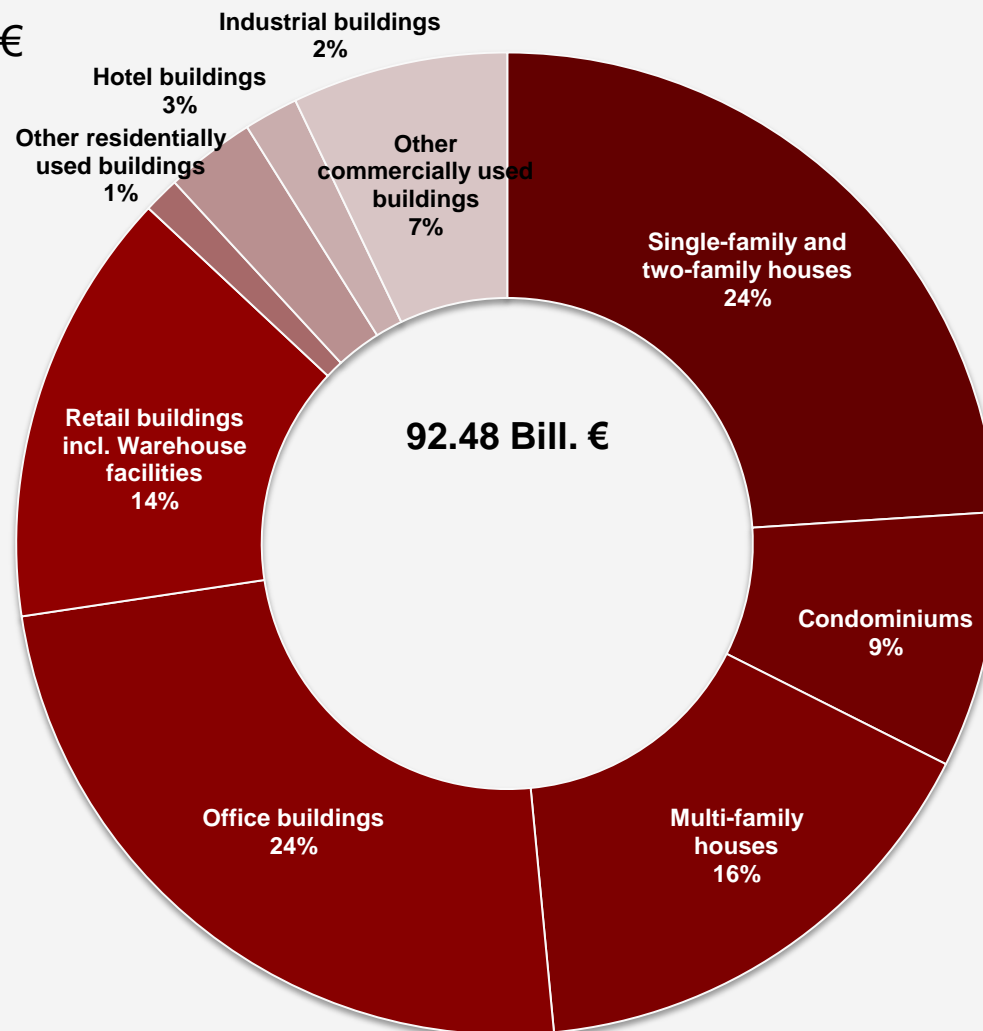
Total loan outstanding at the end of 2012: 667 Bill. €

Market share of member banks of vdp in 2012:

31.1 % Residential real estate

63.9 % Commercial real estate

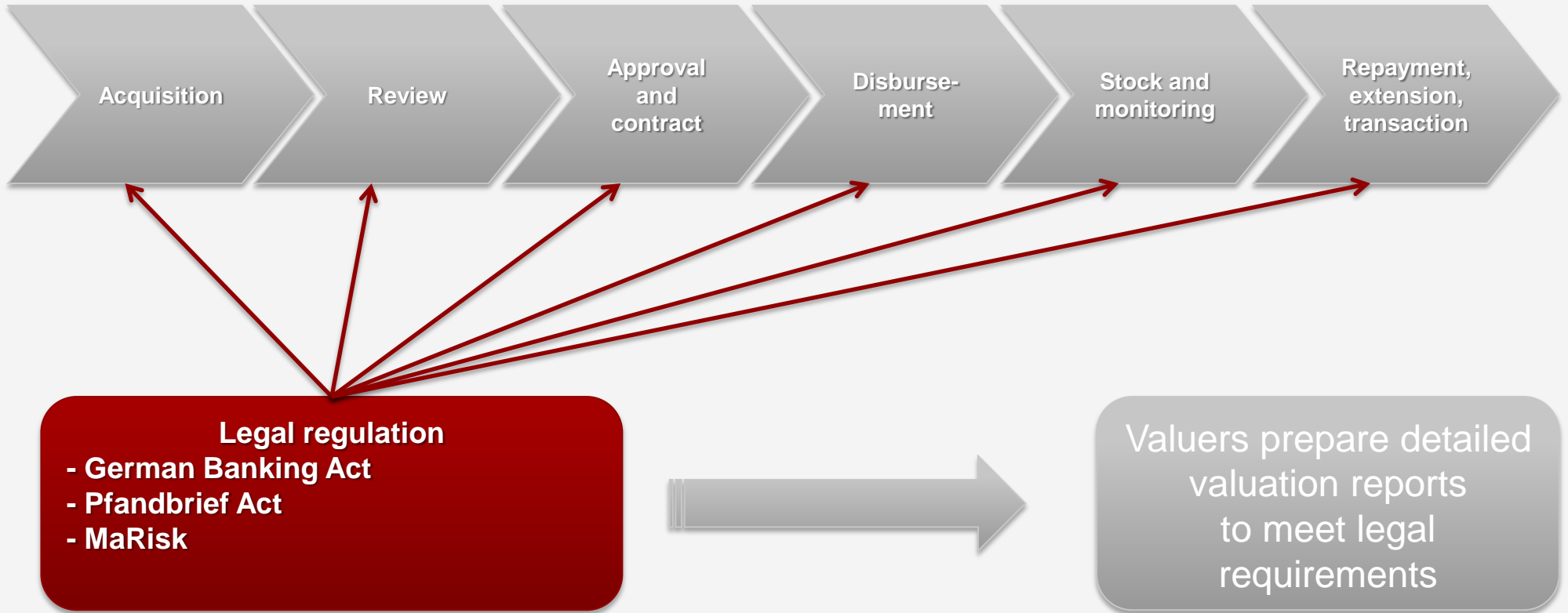
New Mortgage Loans by Property Type in 2012

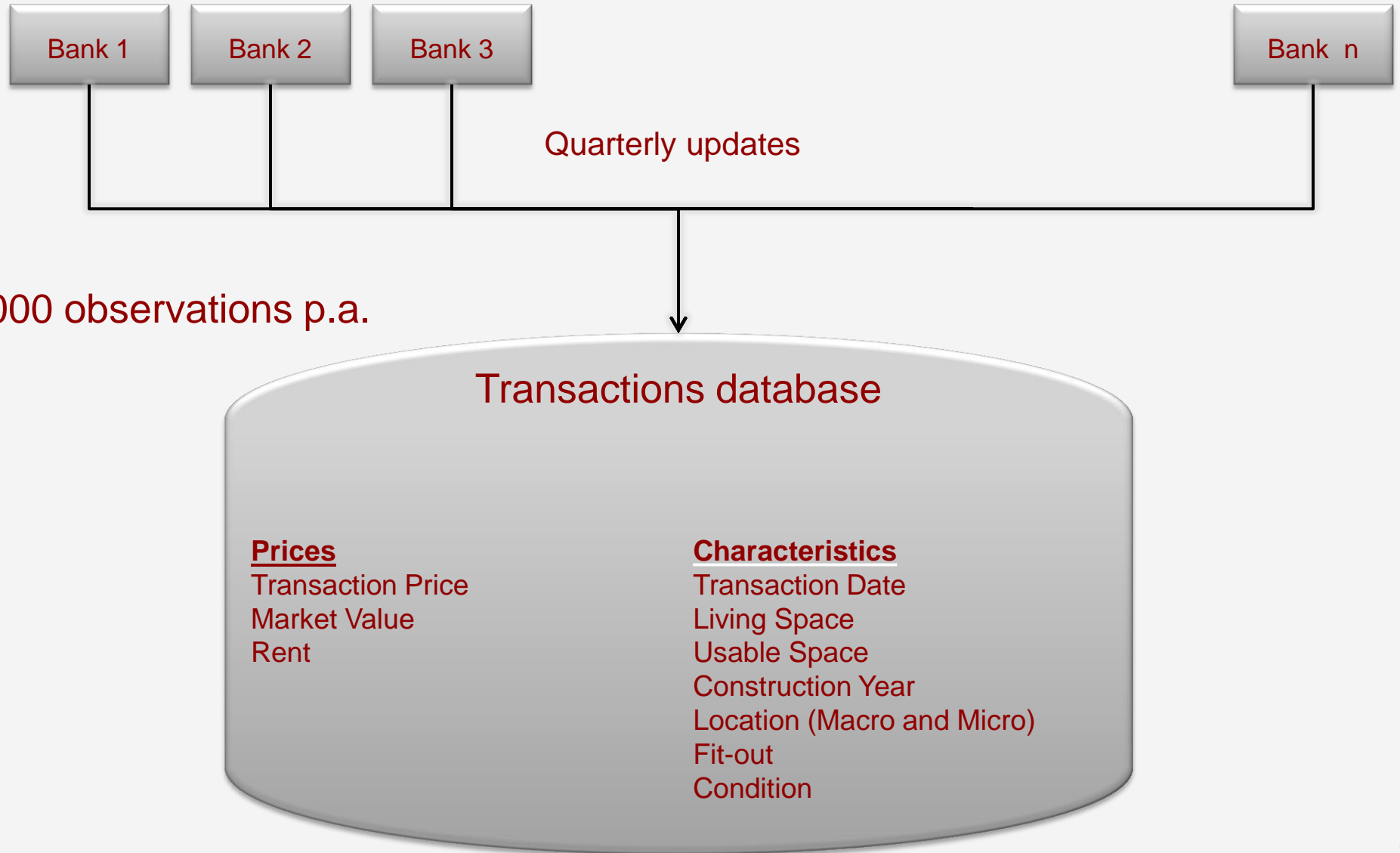


| New Mortgage Loans by Property Type | | | |
|---|----------------|----------------|--------------|
| Property type | 2011 million € | 2012 million € | % Change |
| Single-family and two-family houses | 22,037 | 22,171 | 0.6% |
| Condominiums | 7,513 | 7,809 | 3.9% |
| Multi-family houses | 16,473 | 14,857 | -9.8% |
| Other residentially used buildings | 338 | 1,100 | 225.4% |
| Office buildings | 23,682 | 22,329 | -5.7% |
| Retail buildings incl. Warehouse facilities | 17,919 | 13,256 | -26.0% |
| Hotel buildings | 3,853 | 2,738 | -28.9% |
| Industrial buildings | 987 | 1,653 | 67.5% |
| Other commercially used buildings | 3,498 | 6,567 | 87.7% |
| Total | 96,300 | 92,480 | -4.0% |
| of which foreign | 23,539 | 20,005 | -15.0% |

Source: vdp statistics

Bank Credit Process and Legal Regulation as a Source for Collecting Real Estate Data





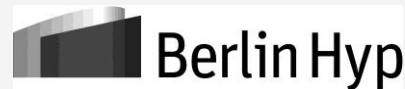
Participants



PUBLIC SECTOR FINANCE
REAL ESTATE FINANCE

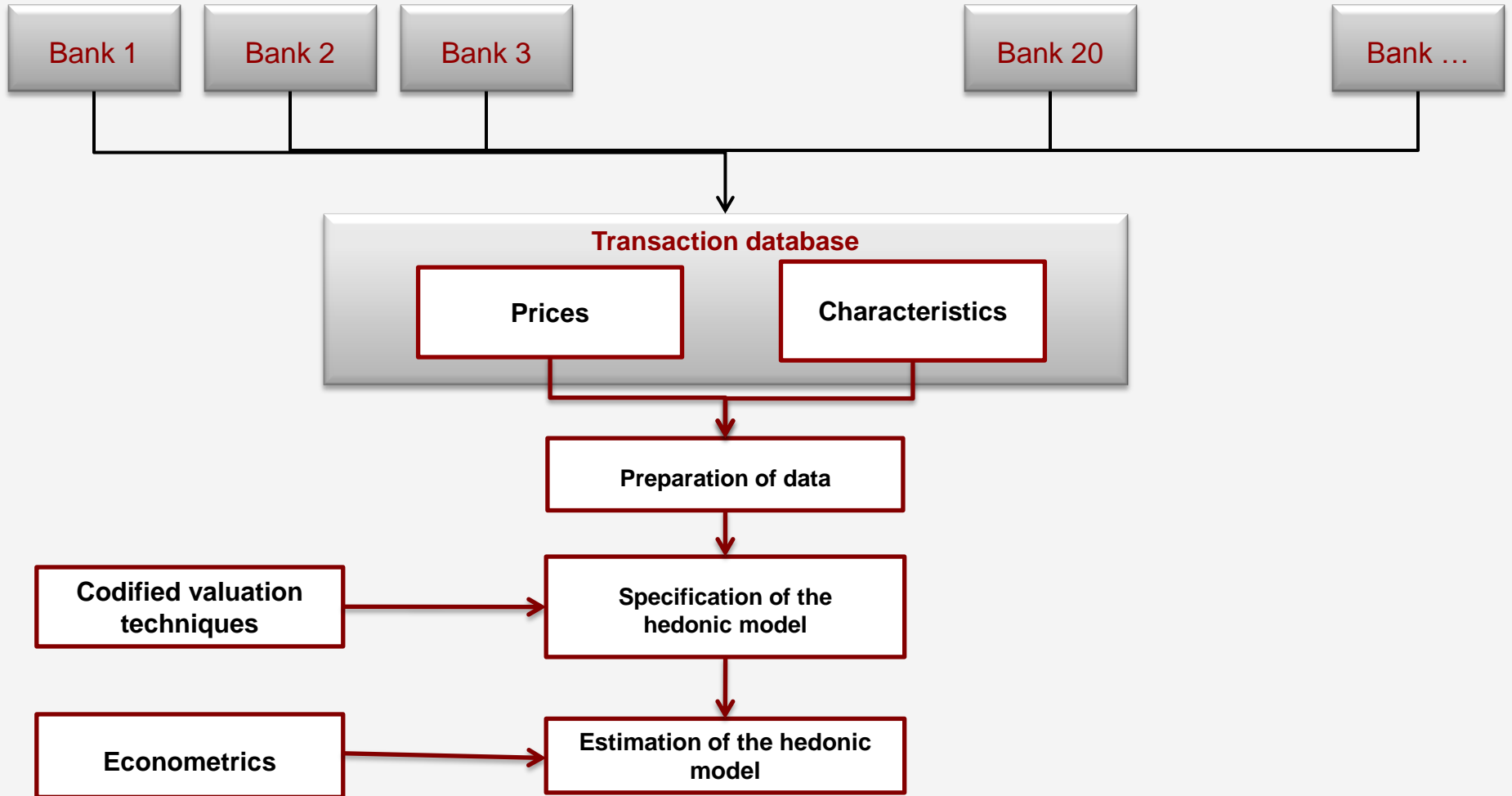


M. M. WARBURG & CO HYPOTHEKENBANK



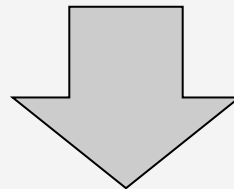
Fall 2013





- Banks are using standardized appraisal processes based on
 - legal regulations (BelWertV, ImmoWertV),
 - common quality standards,
 - certification of valuers

- Codified standards for valuations of different property types
 - Sales Comparison Approach e.g.
 - Houses
 - Condominiums
 - Income Approach e.g.
 - Multi Family Houses
 - Office Buildings
 - Retail



Hedonic Pricing Model

Residential Property Prices – Hedonic Model for Houses

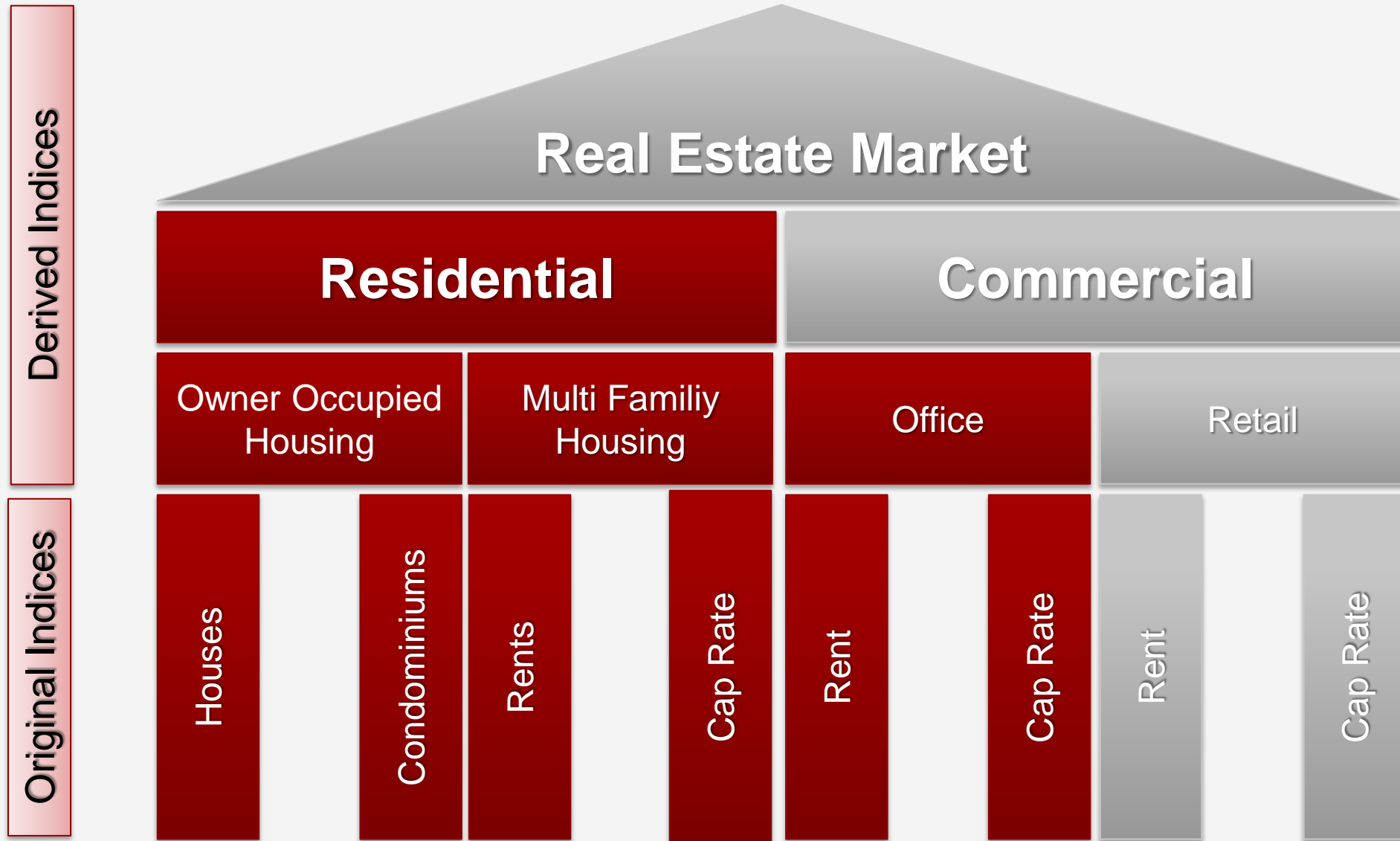
Hedonic Model:

$$\ln p_{it}^{\text{Houses}} = b_0 + \sum_{k=1}^K b_k x_{it} + \sum_{t=1}^T d^t D_i^t + \epsilon_{it}$$

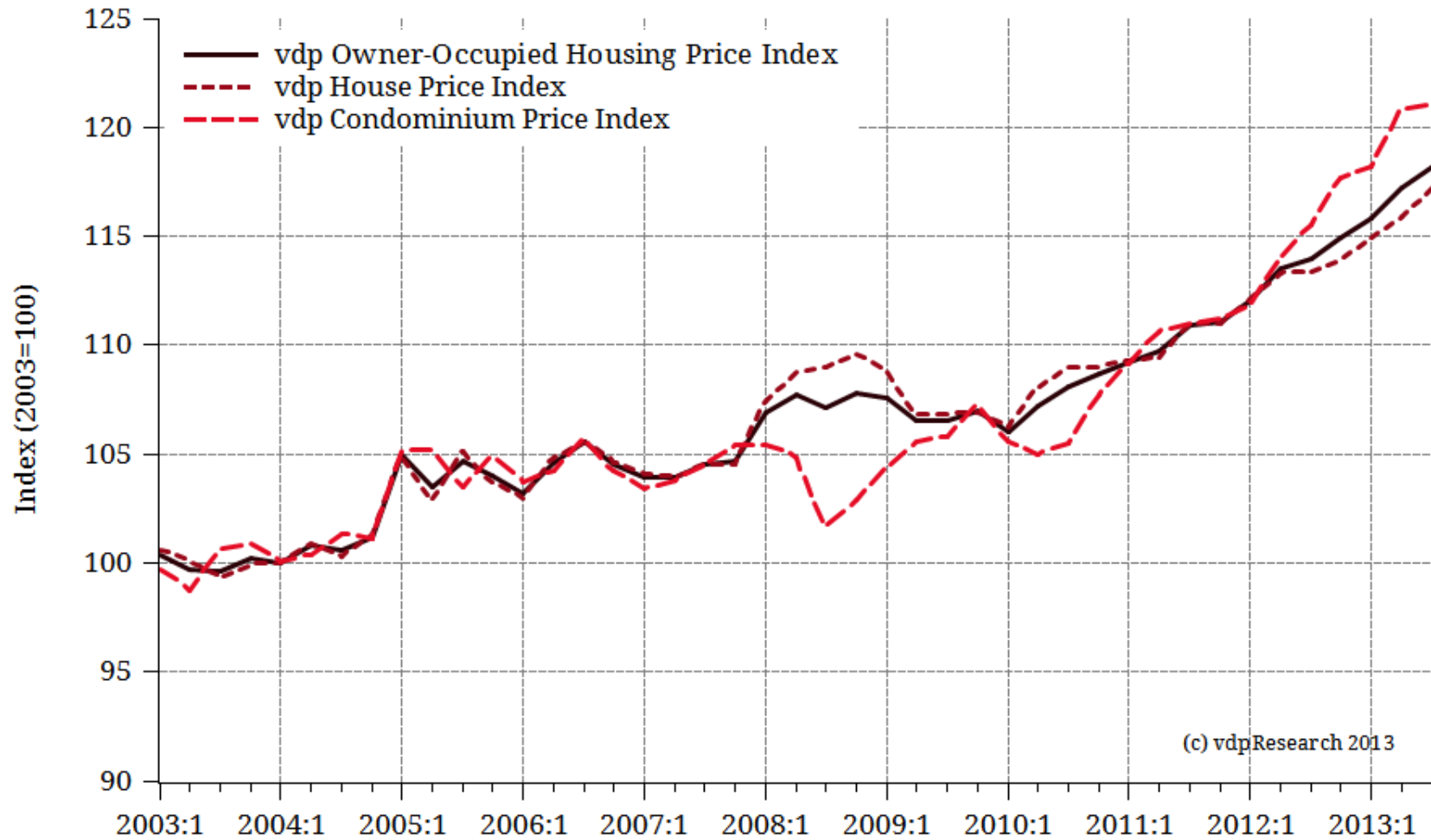
Index:

$$P_t^{\text{Houses}} = \exp(d^t)$$

- Price: Transaction price per square meter living-space
- Regressors
 - Macro location (municipality)
 - Micro location (street level)
 - Construction year
 - Fit-out and condition
 - Lot-size
 - Living-space



Residential Property Prices – Owner Occupied Housing



(c) vdpResearch 2013

Residential Property Prices – Multi Family Houses Capital Value Index

Hedonic
Rent index

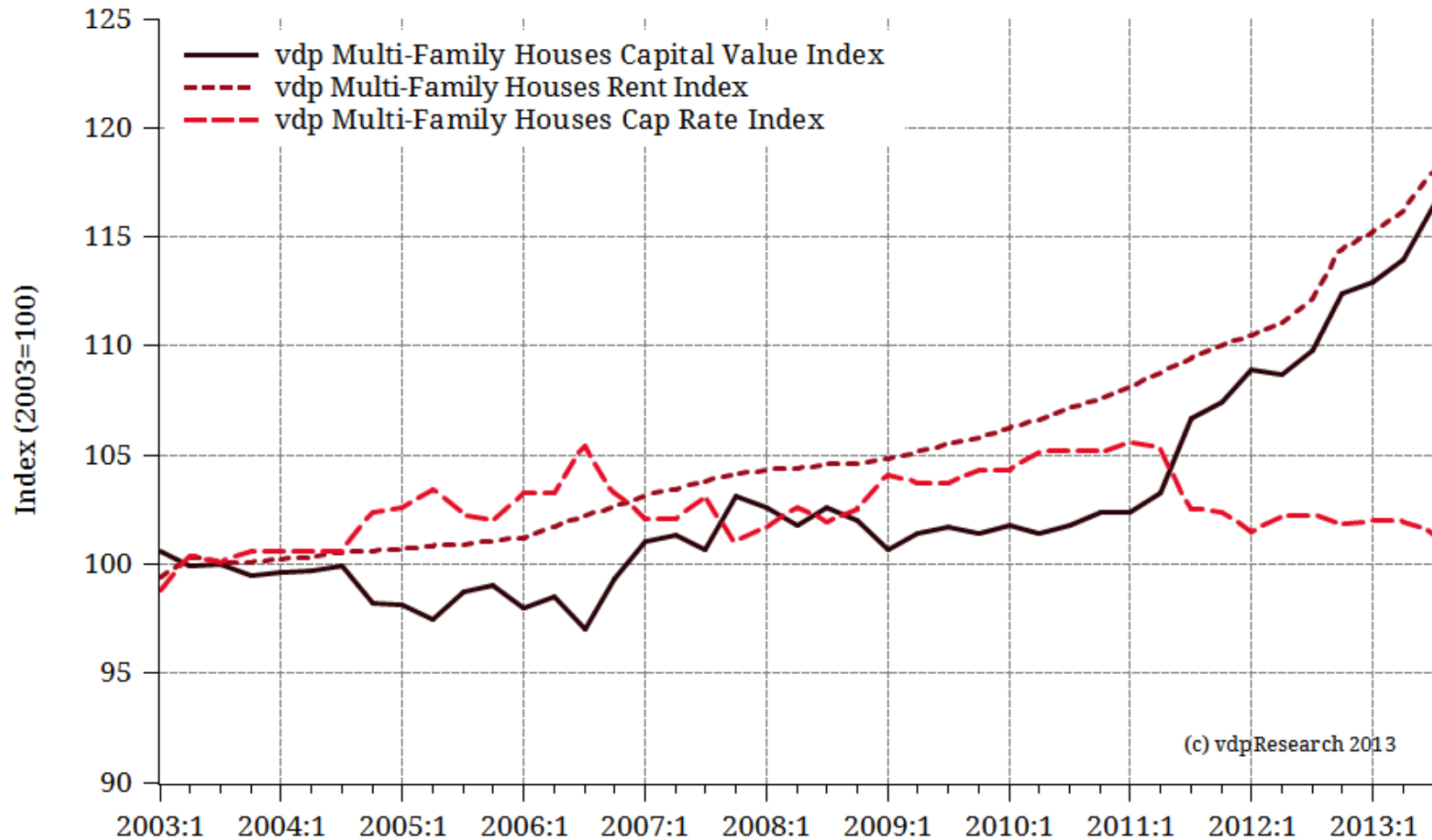
Hedonic
Cap rate index

$$CV_t = \frac{R_t}{CR_t} \cdot 100$$



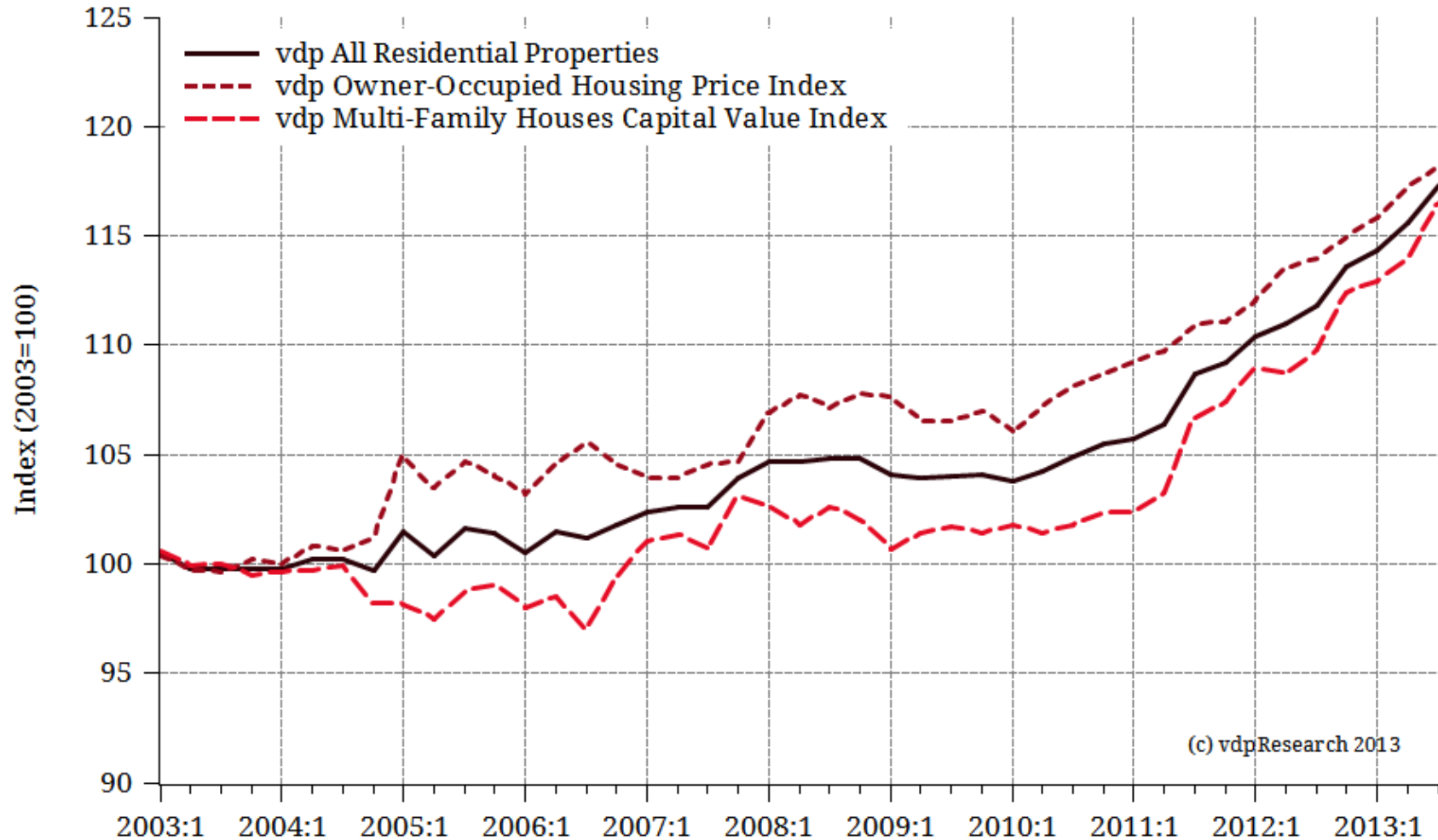
Capital value index
for living space
=
Rent index/Cap Rate-
Index

Residential Property Prices – vdp Multi Family Houses Indices



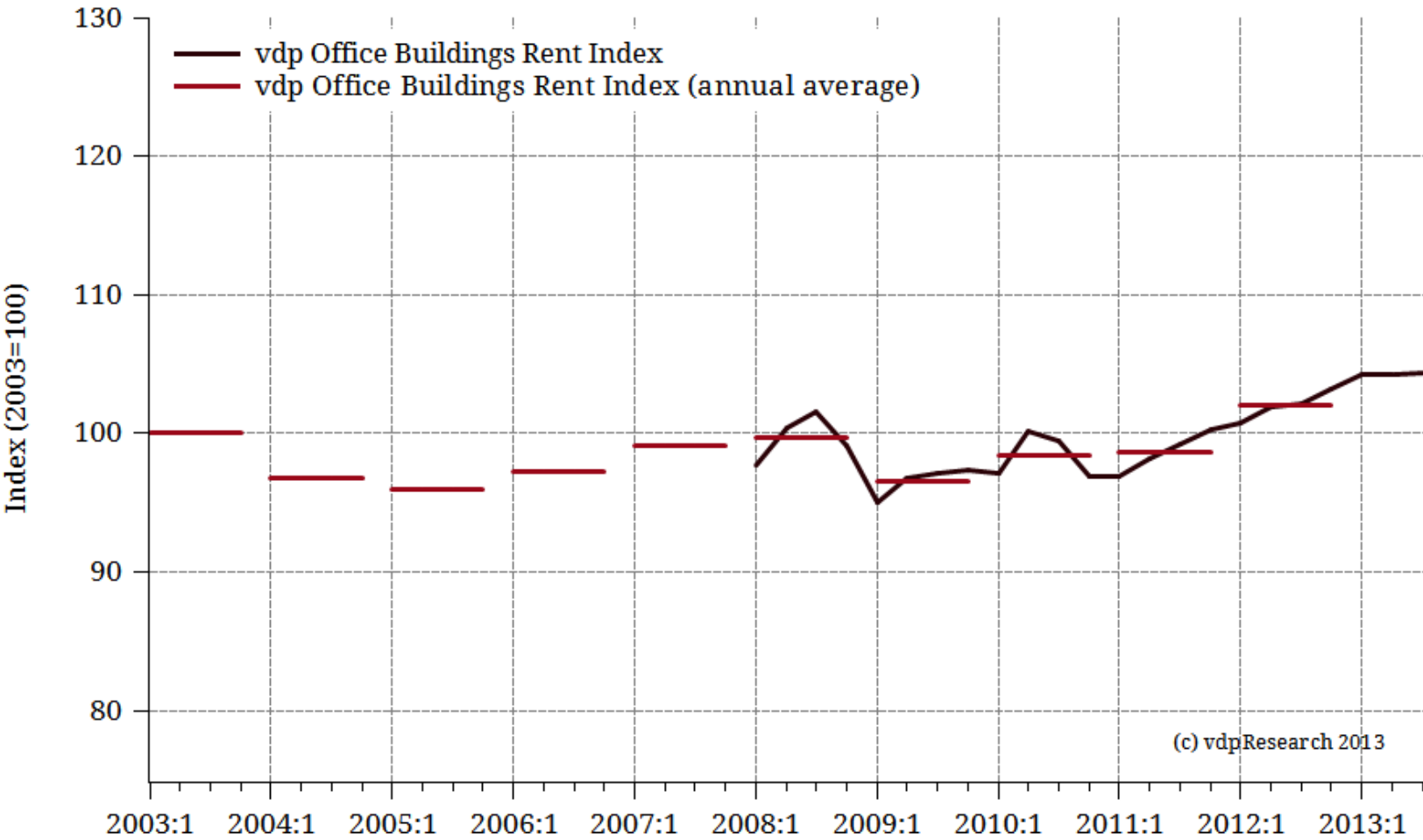
(c) vdpResearch 2013

Residential Property Prices - vdp All Residential Properties Index



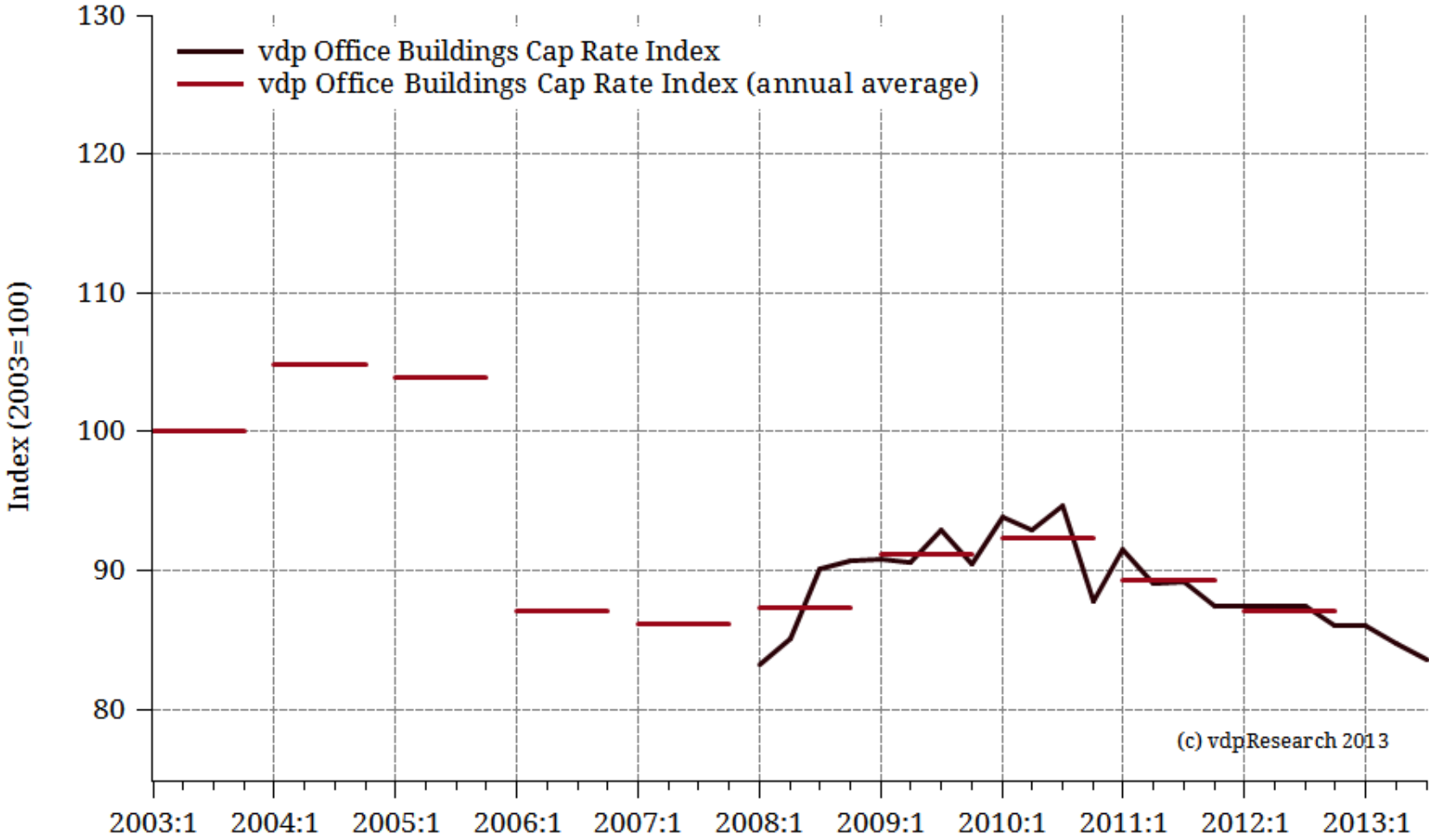
(c) vdpResearch 2013

Commercial Property Prices – vdp Office Buildings Rent Index



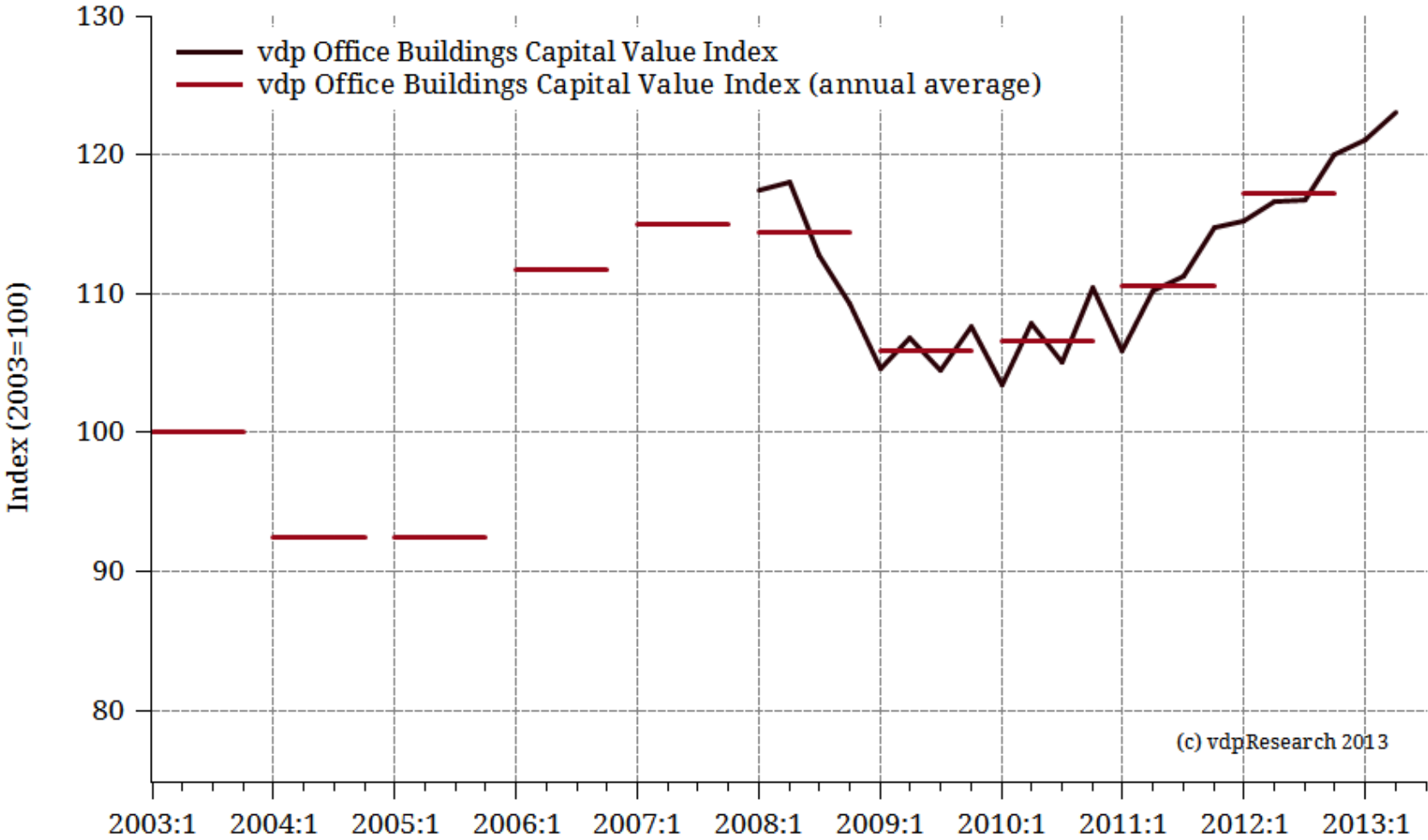
(c) vdpResearch 2013

Commercial Property Prices – vdp Office Buildings Cap Rate Index



(c) vdpResearch 2013

Commercial Property Prices – vdp Office Buildings Capital Value Index



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Regulations relevant to the monitoring of values:

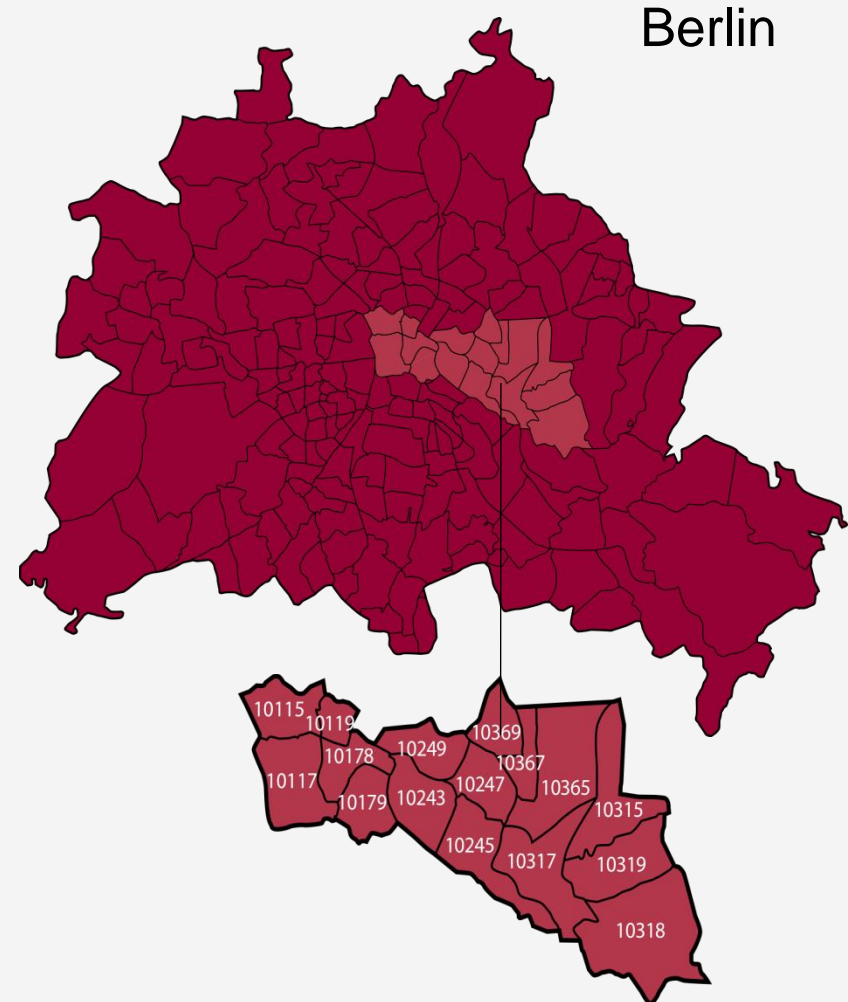
§ 20 a Para. 6 of the German Banking Act (KWG)

§ 20 a Para. 6 of the German Banking Act (KWG) states that the value of a property must be monitored at regular intervals:

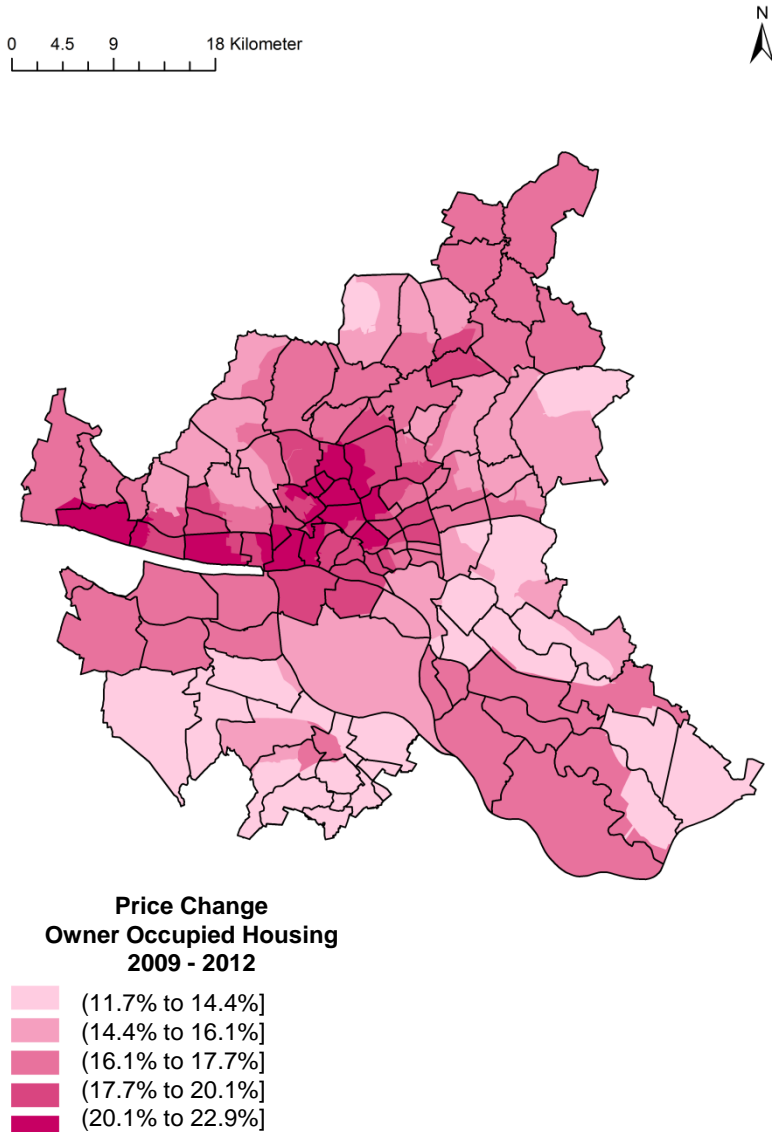
- Every year in the case of commercial properties,
- Every three years in the case of residential properties,

Statistical methods can be used to identify properties which need to be revalued or have their value monitored.

| ZIP-Code | Price Change from 1.1.2012 to 1.1.2013 | | |
|----------|---|-------------------|---------------------|
| | Single Family Houses | Condo- miniums | Multi Family Houses |
| | Change % | Change % | Change % |
| 10115 | 5.7 | 9.3 | 9.7 |
| 10117 | 6.2 | 10.5 | 11.7 |
| 10119 | 5.7 | 9.6 | 10.1 |
| 10178 | 5.7 | 10.0 | 11.1 |
| 10179 | 5.7 | 9.1 | 9.5 |
| 10243 | 5.7 | 8.1 | 8.6 |
| 10245 | 5.7 | 8.3 | 8.6 |
| 10247 | 6.2 | 8.4 | 8.7 |
| 10249 | 5.7 | 8.5 | 8.7 |
| 10315 | 5.7 | 6.8 | 7.9 |
| 10317 | 5.7 | 7.8 | 8.0 |
| 10318 | 5.7 | 7.1 | 7.9 |
| 10319 | 5.7 | 8.4 | 7.8 |
| 10365 | 5.2 | 7.3 | 7.9 |
| 10367 | 5.7 | 8.4 | 8.0 |
| 10369 | 5.7 | 8.4 | 7.8 |



Hamburg – Price Trend and Price Level



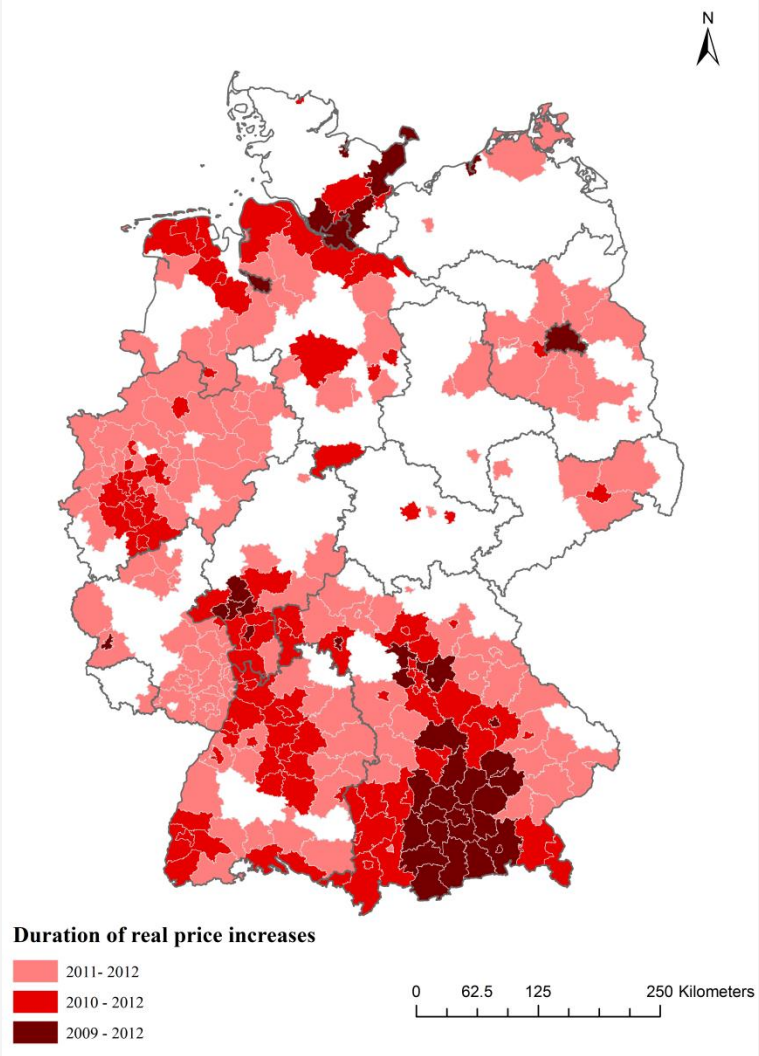
Source: vdpResearch

| Hamburg Houses | | Location | | | |
|----------------|-----------|--------------------------------------|------|---------|----------|
| | | very good | good | average | mediocre |
| | | Euro per m ² living space | | | |
| Fit-out | very good | 3725 | 3230 | 2935 | 2715 |
| | good | 3240 | 2810 | 2555 | 2365 |
| | average | 2930 | 2540 | 2310 | 2140 |
| | mediocre | 2925 | 2535 | 2305 | 2135 |

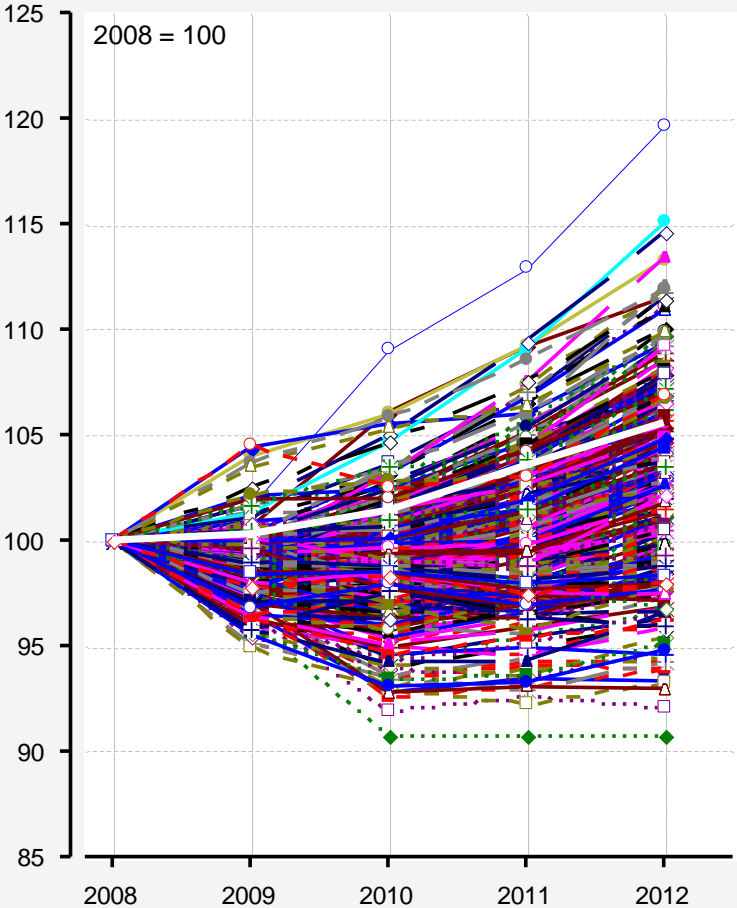
| Hamburg Condominiums | | Location | | | |
|----------------------|-----------|--------------------------------------|------|---------|----------|
| | | very good | good | average | mediocre |
| | | Euro per m ² living space | | | |
| Fit-out | very good | 5155 | 4045 | 3660 | 3140 |
| | good | 4415 | 3465 | 3135 | 2690 |
| | average | 4140 | 3245 | 2940 | 2520 |
| | mediocre | 3675 | 2880 | 2610 | 2235 |

Source: vdpResearch,

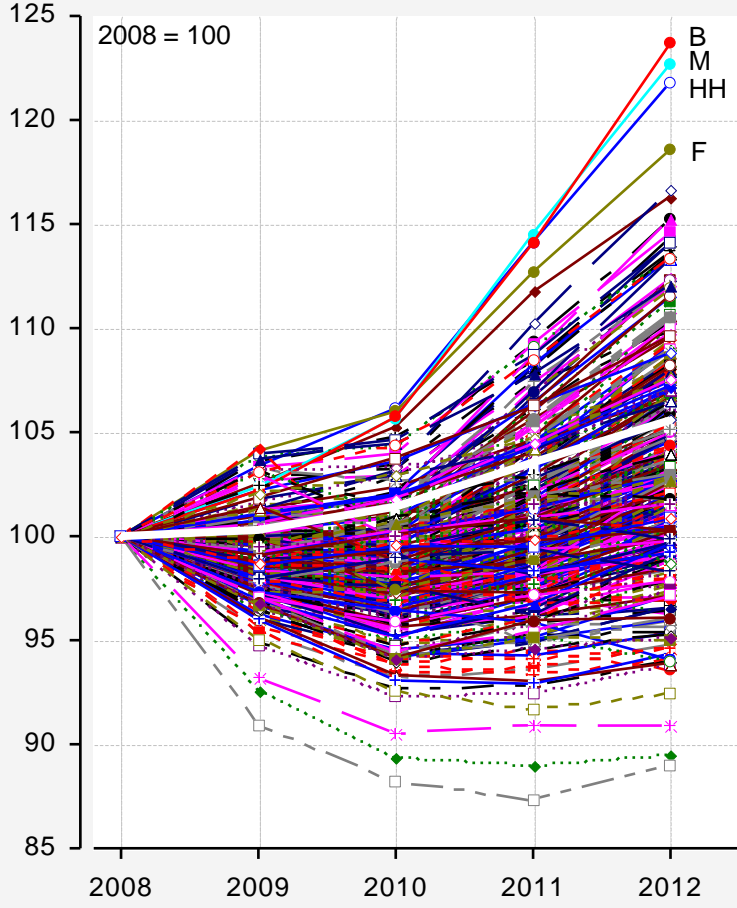
Monitoring Valuses Residential Property Prices – Owner Occupied Housing



Houses

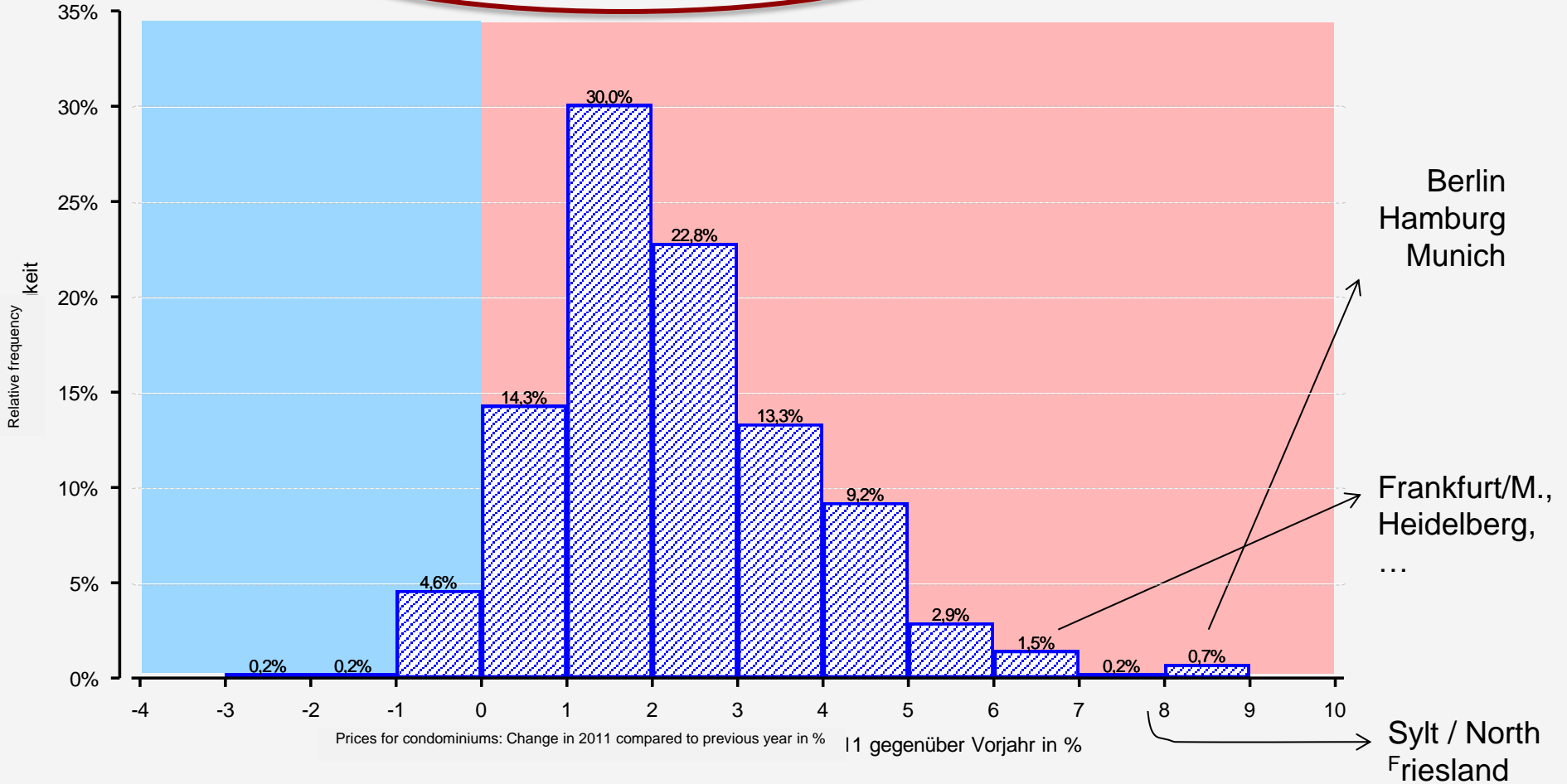


Condominiums



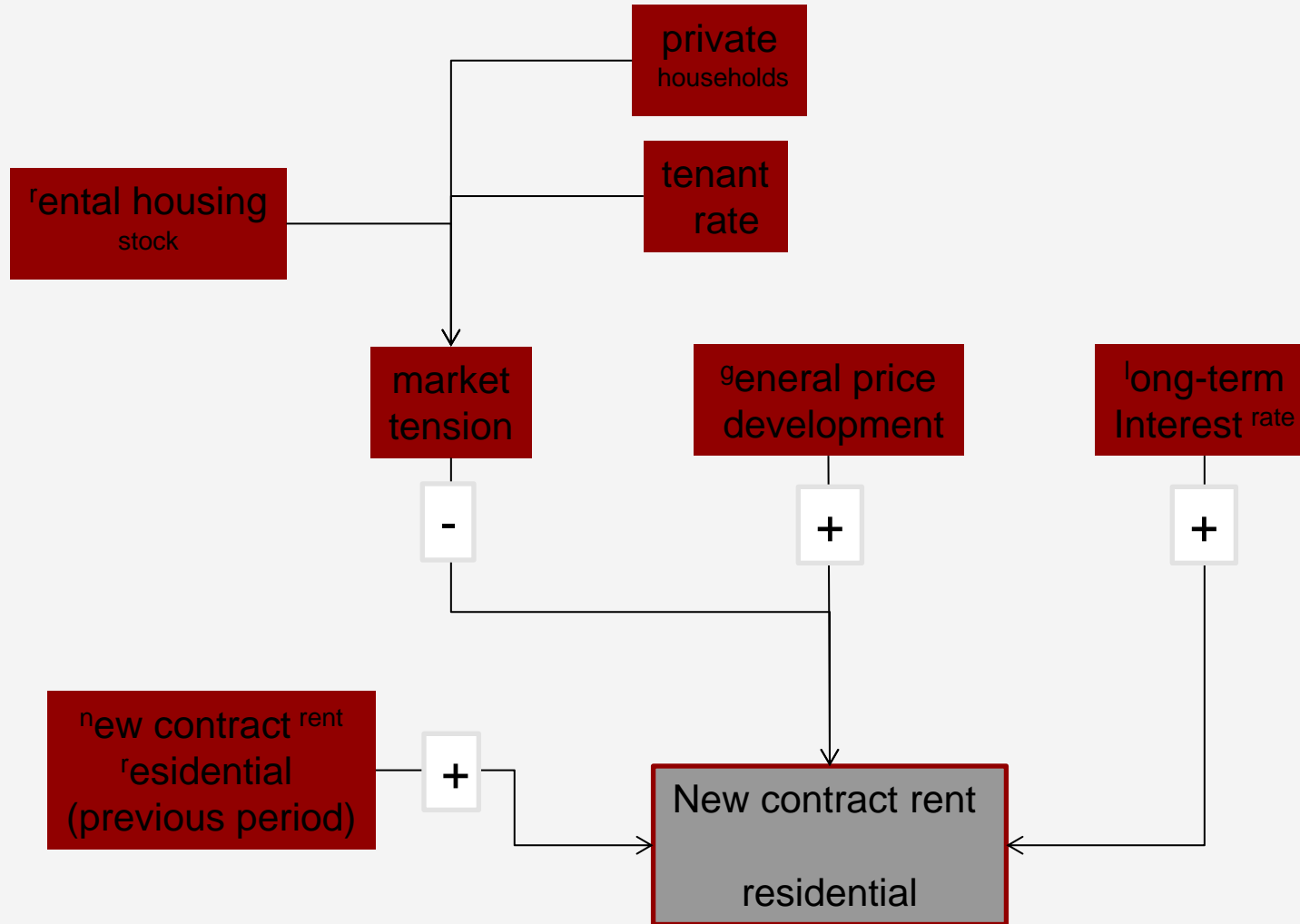
Distribution of the price trend for condominiums in 412 districts in 2011/12

No price bubble in Germany!



Prognosis residential market

Prognosis approach residential rent for new contracts



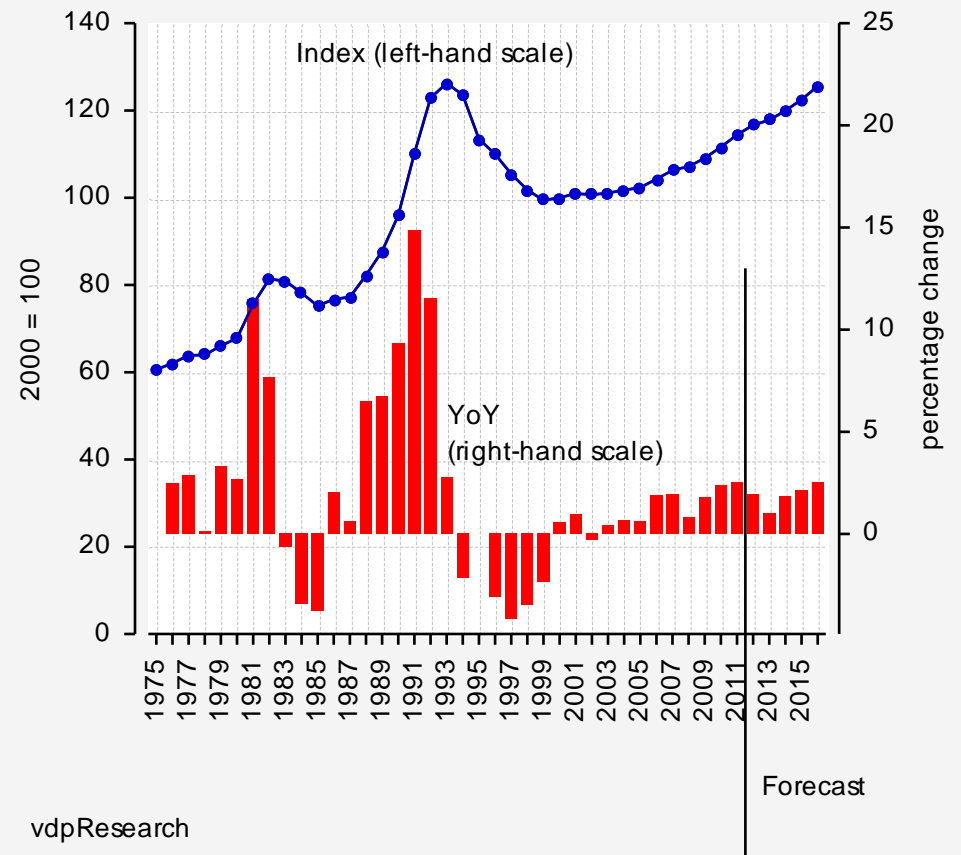
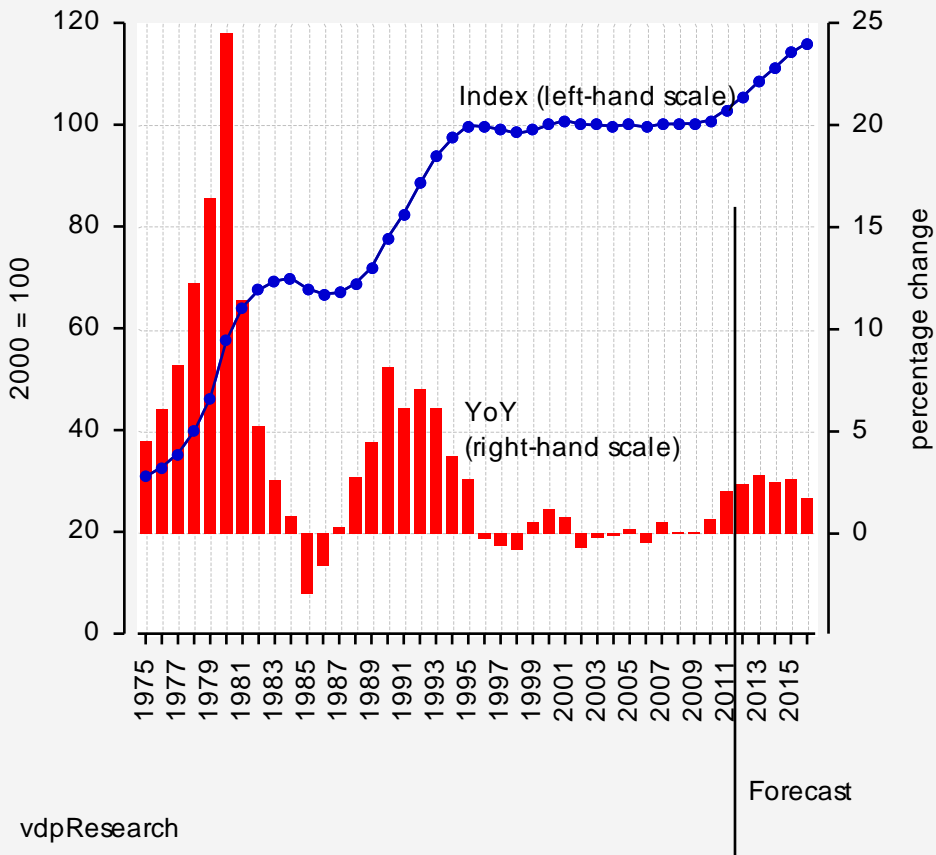
House prices vs. Rents: Prognosis

Ownership rate: 0,46 %

Tenancy rate: 0,54 %

Prognosis for house prices

Prognosis of new contract rents



| Indicator | | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|-----------------------|--------------------------------------|-------|------|------|-------|-------|-------|-------|--------------|
| Rent Index | 2005 = 100 | 103,9 | 96,5 | 94,6 | 100,0 | 108,6 | 119,2 | 123,5 | 108,7 |
| Cap Rate | in percent | 9,0 | 8,5 | 7,9 | 7,3 | 7,0 | 6,5 | 7,1 | 8,3 |
| Value Index | 2005 = 100 | 84,2 | 83,1 | 87,8 | 100,0 | 114,2 | 133,7 | 127,5 | 95,6 |
| | changes of the previous year in % | -1,3 | -1,3 | 5,7 | 13,9 | 14,2 | 17,1 | -4,6 | -25,0 |
| Result of | | | | | | | | | |
| - rent | in percentage | -3,7 | -7,1 | -2,0 | 5,7 | 8,6 | 9,8 | 3,7 | -12,0 |
| - Cap Rate | in percentage | 2,5 | 6,3 | 7,8 | 7,7 | 5,2 | 6,6 | -8,0 | -14,8 |
| - interactive effects | in percentage | -0,1 | -0,4 | -0,2 | 0,4 | 0,4 | 0,6 | -0,3 | 1,8 |

- A unique feature of the vdp transactions database is the fact that besides the transaction price the database also contains the price building characteristics.
- Due to new participating banks the database will increase at a higher rate.
- We have received the first delivery of transaction data (about 1.1 Mio. datasets) from the National Association of Cooperative Banks (BVR) in September 2013. BVR members represent about 20% of market volume in real estate financing.
- All vdp price indices are published quarterly, six weeks after end of the preceding quarter on the vdp and vdpResearch websites.

www.vdpResearch.de