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vdp property Price Index

Q1. 2019

First signs of the price increase decelerating

Compared with the corresponding quarter the previous year:

Property market as a whole: **+7.0%**

Housing: **+7.0 %**

Owner-occupied housing: + 7.2 %

Multi-family houses: + 6.9 %

Housing top 7 markets: **+5.6 %**

Owner-occupied housing: +4.7 %

Multi-family houses: +5.8 %

Commercial: **+6.7 %**

Office properties: +10.2 %

Retail properties: -0.2 %



First signs of the price increase decelerating

Market as a whole

In the first quarter of 2019, German property prices continued to rise. The vdp property price index climbed by 7% compared with the corresponding quarter one year earlier. In the meantime, however, a glance at the sub-indices comprised in the overall index reveals a very mixed picture. Whereas the price growth momentum in the residential property market appears to be gradually slowing down, office properties recorded the strongest hike in prices in the entire observation period. By contrast, retail properties saw a slight drop in capital values.

Economic momentum has slackened pace. This was attributable, last year, to special factors such as the problems facing the automotive sector and low water levels in the River Rhine, which depressed production. The growing international uncertainties such as the smoldering trade conflict between the United States and China and the postponement of Brexit are also having a burdening effect. Nevertheless, capacity utilization remains high. The same is true of demand in the labor market, which is serving to push household incomes up.

The Governing Council of the ECB has decided that interest rate levels will be kept low at least until the end of this year. This means that the framework conditions for taking out a mortgage remain favorable for the time being.

Housing market

Despite the rising number of building permits awarded in many places, new construction activity is not really taking off. Amongst other reasons, this is mainly because construction firms are already experiencing very high capacity utilization levels, notably in high-growth town and cities, which prevents them from realizing construction projects in a timely fashion. This means that the excess demand can only be reduced very slowly. As a result, residential property prices climbed by 7.0% in the first quarter of 2019 compared with the corresponding figure one year earlier.

Prices increased by 6.9% in the market for multi-family houses. The supply is too low to satisfy investor demand; this caused the cap rate index to fall by 1.6%. Over the same period, new lease rentals went up by 5.2%, which points to a persistently tense situation in the rental markets in the prosperous regions. That said, the rate at which prices are rising currently seems to be slowing down.

Prices for owner-occupied housing likewise continued on an upward projection, rising this time by 7.2%. While single-family house prices increased especially strongly, by 7.4% compared with the first quarter of 2018, the rate of growth in prices for condominiums was less pronounced, at 6.0%. The persistently strong rates of increase in this market segment indicate that home ownership, whether for own use or as an investment, remains highly attractive given the low interest rate levels.

Top 7 housing market

Compared with the first quarter of 2018, prices for residential properties in the top 7 markets rose by 5.6%. The slowing price growth momentum is clearly noticeable in this market segment. The price and rent levels that have been reached to date mean that it is much more difficult to achieve the price growth seen in recent years. It is noticeable that home-seekers are instead turning to the more affordable surrounding areas. This is reflected, amongst other things, by the less dynamic growth in prices for owner-occupied housing here compared with Germany as a whole. Thus, the difference compared with price growth in the overall market in Germany has become more clearly measurable.

The prices for multi-family houses in the top 7 cities likewise saw a slightly weaker increase, rising by 5.8%. However, the difference compared with the results for Germany as a whole is not as pronounced. New lease rentals were 4.3% higher than in the corresponding quarter one year earlier. The cap rate

index for multi-family houses, already at a relatively low level, dropped by only 1.4%. This leaves comparatively little scope for further decreases. It is not surprising, therefore, that towns and cities outside the top 7 markets accounted for as much as roughly half of the transaction volume in the first quarter.

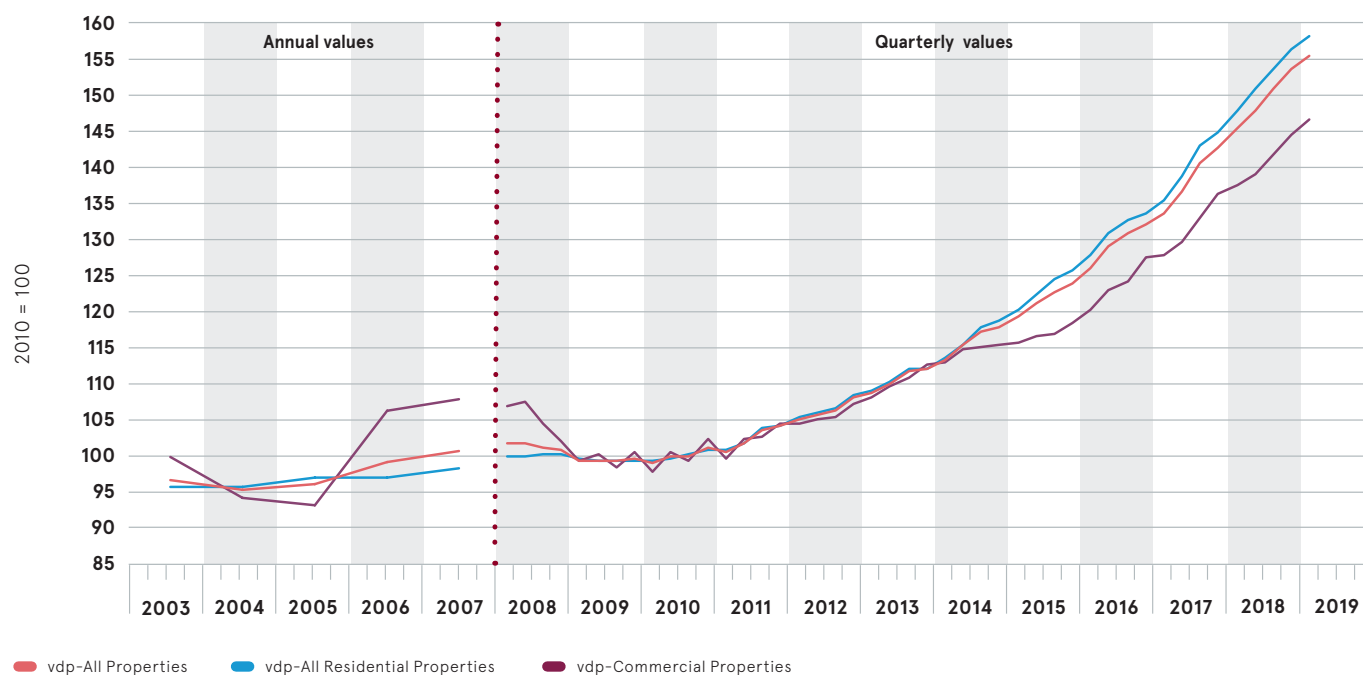
Commercial property market

Commercial property prices moved up by 6.7% in the first quarter of 2019, and the difference in trend between office and retail properties that has been observed since the end of 2018 continued. In view of the ongoing, strong demand for office premises shown by domestic and foreign investors, these properties rose in price by 10.2% in the first quarter of 2019, and the cap rate index decreased by a further 2.9%. The market for office space continued to experience very strong demand which in many places could not be met due to very low vacancy rates and insufficient new construction activity paired with high prelease rates. In consequence, rents in the office market advanced by 7.0%, the sharpest rate of increase recorded in the entire observation period.

By contrast, retail property prices retreated slightly for the second consecutive quarter, and the retail capital value index edged down 0.2% while the cap rate was unchanged compared with the first quarter of 2018. Investors give particular preference to specialist stores and supermarkets as well as to specialist retail centers; these are considered to be less risky investments in the face of online traders, above all in connection with food stores. Demand for retail space remained subdued. Particularly in the textiles sector, the rise in online retailers is having an increasingly dampening effect on demand for space. This fact led to a further slight decrease in rents.

Real estate market as a whole

Price growth slowing down

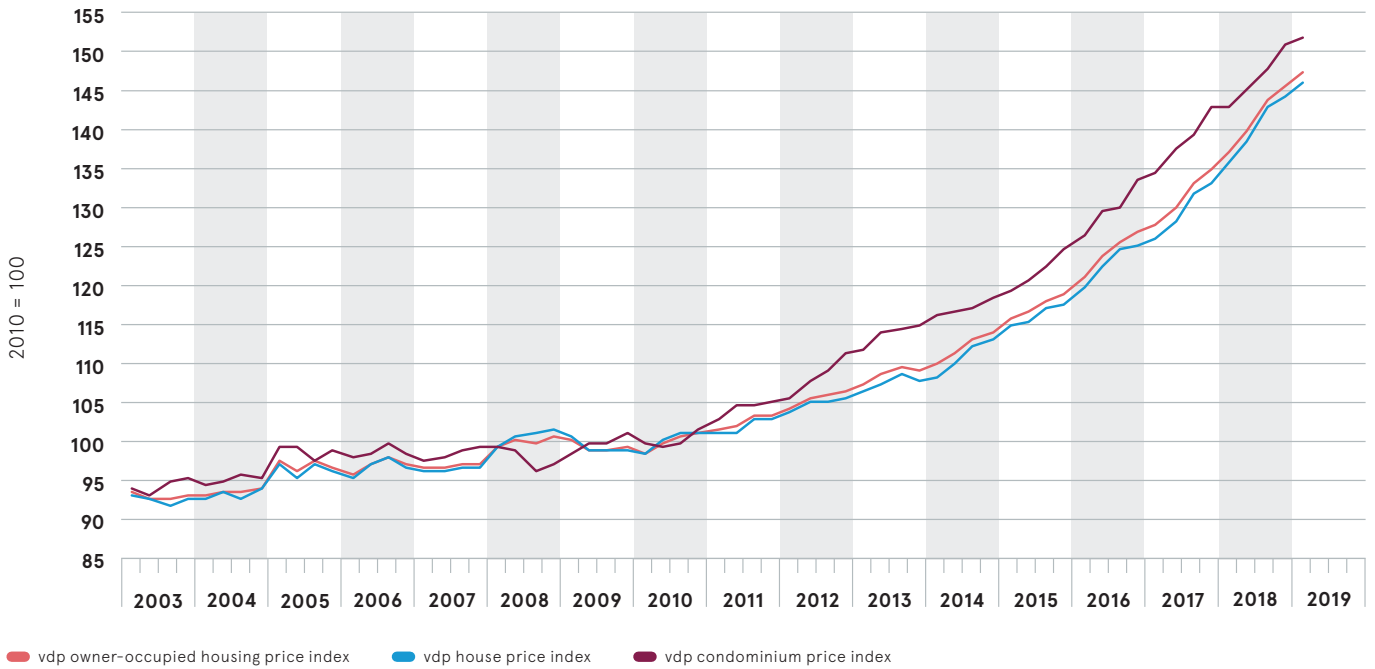


Year	All properties		All residential properties		All commercial properties	
	Index	y-o-y change in %	Index	y-o-y change in %	Index	y-o-y change in %
2008	101.4	1.1	100.2	2.0	105.2	-1.2
2009	99.5	-1.9	99.4	-0.8	99.7	-5.3
2010	100.0	0.5	100.0	0.6	100.0	0.4
2011	102.7	2.6	102.7	2.7	102.4	2.4
2012	106.4	3.7	106.7	3.8	105.5	3.0
2013	110.7	4.1	110.9	3.9	110.4	4.6
2014	115.9	4.7	116.4	5.0	114.6	3.8
2015	121.7	5.0	123.3	5.9	117.0	2.1
2016	129.5	6.4	131.4	6.5	123.7	5.8
2017	138.3	6.8	140.5	6.9	131.8	6.5
2018	149.4	8.0	152.2	8.3	140.7	6.8

Quarter	All properties		All residential properties		All commercial properties	
	Index	y-o-y change in %	Index	y-o-y change in %r	Index	y-o-y change in %
Q2 2017	136.5	5.8	138.7	5.9	129.7	5.4
Q3 2017	140.6	7.5	143.1	7.7	132.9	7.0
Q4 2017	142.7	8.0	144.8	8.3	136.3	7.0
Q1 2018	145.3	8.8	147.8	9.2	137.5	7.4
Q2 2018	147.9	8.3	150.8	8.7	139.0	7.1
Q3 2018	150.8	7.3	153.7	7.4	142.0	6.8
Q4 2018	153.5	7.6	156.4	8.0	144.5	6.0
Q1 2019	155.4	7.0	158.2	7.0	146.7	6.7

Owner-occupied housing

Single-family houses record a stronger price increase than condominiums

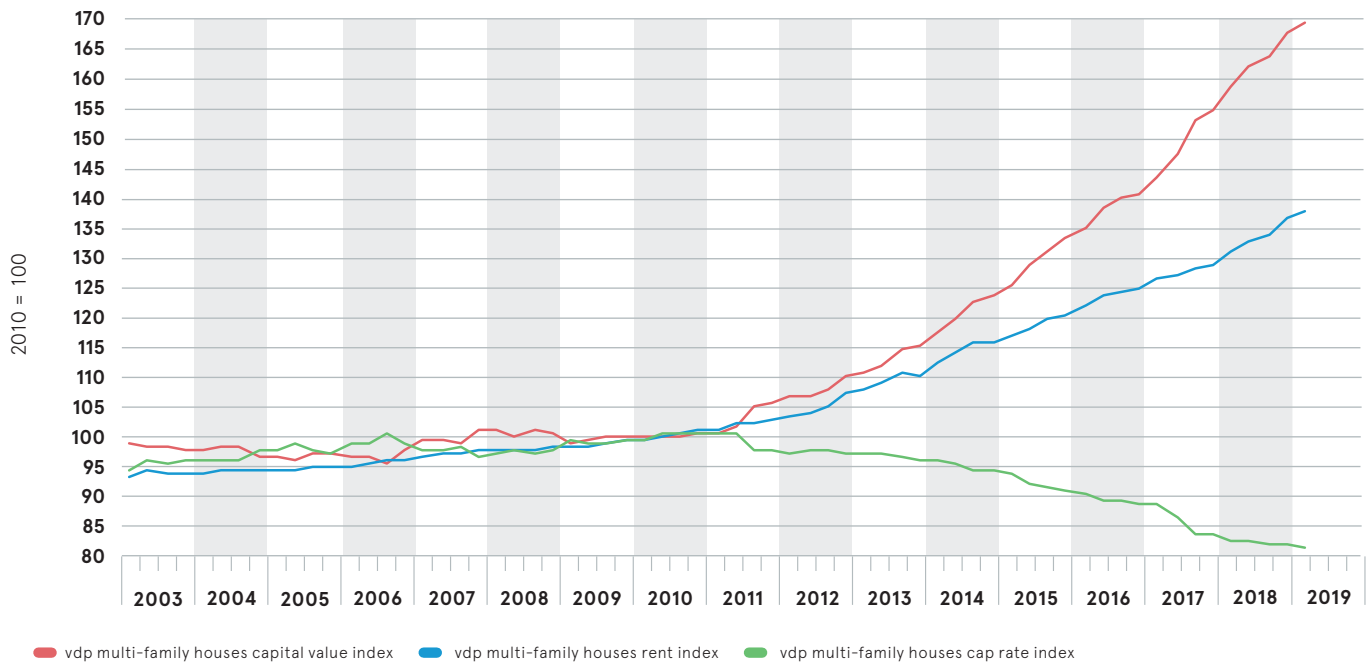


Year	Owner occupied housing		Single family houses		Condominiums	
	Index	y-o-y change in %	Index	y-o-y change in %	Index	y-o-y change in %
2008	100.0	3.3	100.6	4.3	97.9	-0.6
2009	99.4	-0.6	99.3	-1.3	99.8	2.0
2010	100.0	0.6	100.0	0.7	100.0	0.2
2011	102.4	2.4	101.9	1.9	104.3	4.3
2012	105.5	3.0	104.7	2.7	108.3	3.9
2013	108.7	3.1	107.5	2.6	113.6	4.9
2014	112.1	3.1	110.8	3.1	117.0	3.0
2015	117.2	4.6	116.0	4.7	121.7	4.0
2016	124.2	6.0	122.8	5.8	129.6	6.5
2017	131.4	5.8	129.6	5.5	138.5	6.8
2018	141.5	7.7	140.2	8.2	146.6	5.8

Quarter	Owner occupied housing		Single family houses		Condominiums	
	Index	y-o-y change in %	Index	y-o-y change in %	Index	y-o-y change in %
Q2 2017	129.9	5.1	128.0	4.8	137.6	6.4
Q3 2017	133.0	6.0	131.4	5.6	139.3	7.4
Q4 2017	134.9	6.6	133.0	6.4	142.6	7.0
Q1 2018	137.1	7.4	135.7	7.8	142.9	6.3
Q2 2018	139.7	7.5	138.4	8.1	145.0	5.3
Q3 2018	143.8	8.1	142.8	8.7	147.8	6.1
Q4 2018	145.3	7.7	143.9	8.2	150.6	5.6
Q1 2019	146.9	7.2	145.8	7.4	151.5	6.0

Multi-family houses:

Shortage of supply for both renters and buyers drives prices up further

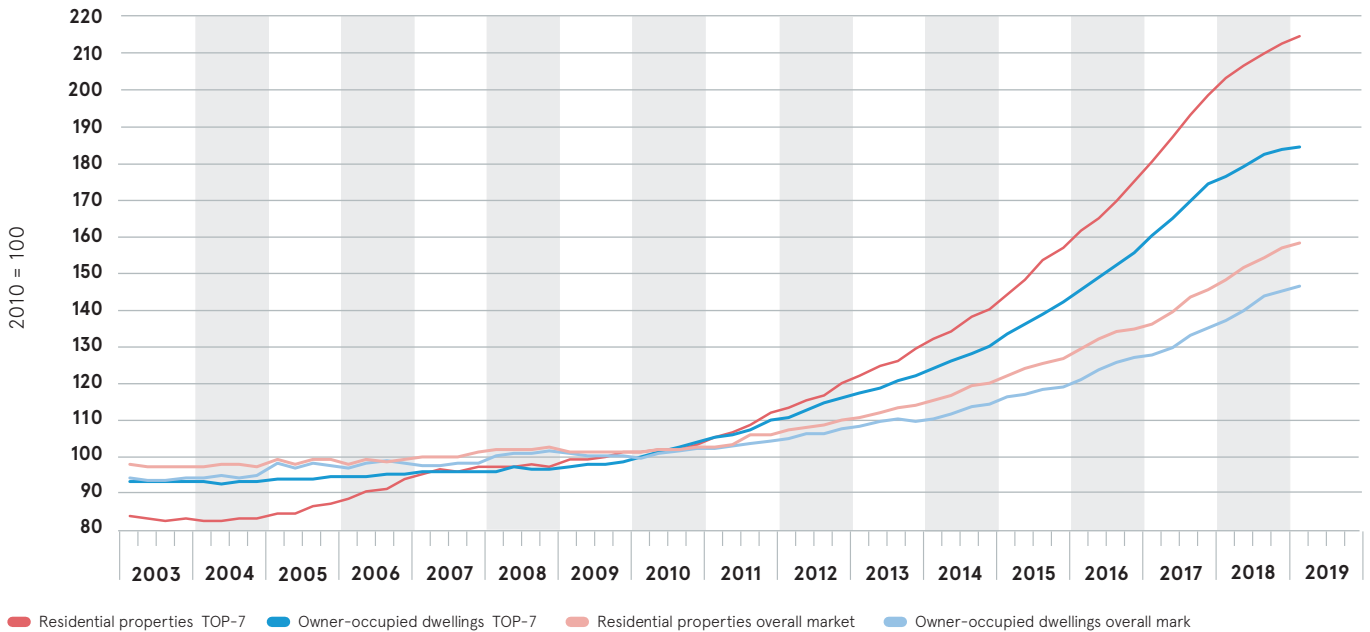


Year	Capital value		Residential rents		Cap rate	
	Index	y-o-y change in %	Index	y-o-y change in %	Index	y-o-y change in %
2008	100.4	0.7	97.7	0.8	97.4	0.1
2009	99.5	-0.9	98.5	0.8	99.1	1.7
2010	100.0	0.6	100.0	1.5	100.0	0.9
2011	103.0	3.0	102.1	2.1	99.1	-0.9
2012	107.9	4.8	104.8	2.7	97.1	-1.9
2013	113.1	4.8	109.3	4.2	96.6	-0.5
2014	120.8	6.8	114.5	4.8	94.8	-1.9
2015	129.5	7.3	118.9	3.9	91.8	-3.2
2016	138.7	7.1	123.7	4.0	89.1	-2.9
2017	149.7	7.9	127.7	3.2	85.3	-4.3
2018	163.2	9.0	133.6	4.6	81.9	-4.0

Quarter	Capital value		Residential rents		Cap rate	
	Index	y-o-y change in %	Index	y-o-y change in %	Index	y-o-y change in %
Q2 2017	147.8	6.6	127.2	2.9	86.1	-3.5
Q3 2017	153.4	9.3	128.2	2.9	83.6	-5.8
Q4 2017	154.9	9.9	128.8	3.3	83.2	-6.0
Q1 2018	158.9	10.9	130.9	3.5	82.4	-6.6
Q2 2018	162.1	9.7	133.1	4.6	82.1	-4.7
Q3 2018	163.8	6.8	133.8	4.4	81.7	-2.3
Q4 2018	167.8	8.4	136.6	6.0	81.4	-2.2
Q1 2019	169.8	6.9	137.7	5.2	81.1	-1.6

Owner occupied housing – Top 7*

Price growth considerably weaker than in Germany as a whole



For all the individual figures of the TOP-7 cities, go to www.vdpresearch.de

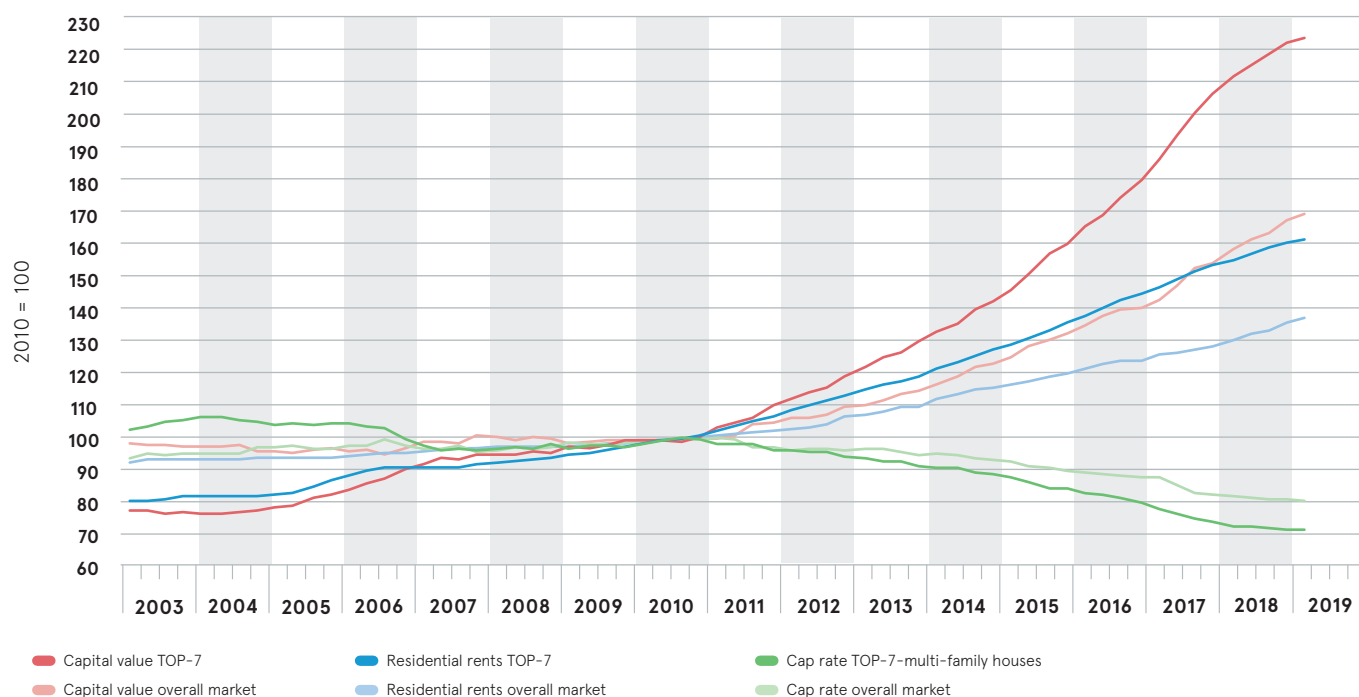
Year	Residential properties TOP-7		Owner occupied housing TOP-7	
	Index	y-o-y change in %	Index	y-o-y change in %
2008	95.4	1.6	94.5	0.7
2009	97.9	2.5	96.1	1.6
2010	100.0	2.2	100.0	4.1
2011	106.3	6.3	105.4	5.4
2012	114.9	8.1	112.0	6.3
2013	124.4	8.3	118.4	5.8
2014	135.3	8.7	125.9	6.3
2015	150.0	10.9	136.7	8.6
2016	167.6	11.7	150.0	9.7
2017	190.5	13.7	167.3	11.5
2018	209.3	9.9	180.7	8.0

Quarter	Residential properties TOP-7		Owner occupied housing TOP-7	
	Index	y-o-y change in %	Index	y-o-y change in %
Q2 2017	187.7	14.0	164.8	11.0
Q3 2017	194.1	14.5	169.8	12.0
Q4 2017	199.6	14.1	174.4	12.3
Q1 2018	204.3	13.1	176.8	10.4
Q2 2018	207.8	10.7	179.5	9.0
Q3 2018	211.2	8.8	182.5	7.5
Q4 2018	214.0	7.2	184.1	5.5
Q1 2019	215.6	5.6	185.0	4.7

*Berlin, Cologne, Dusseldorf, Frankfurt am Main, Hamburg, Munich, Stuttgart

Multi-family houses – Top 7*

Very little scope for further decrease in cap rates



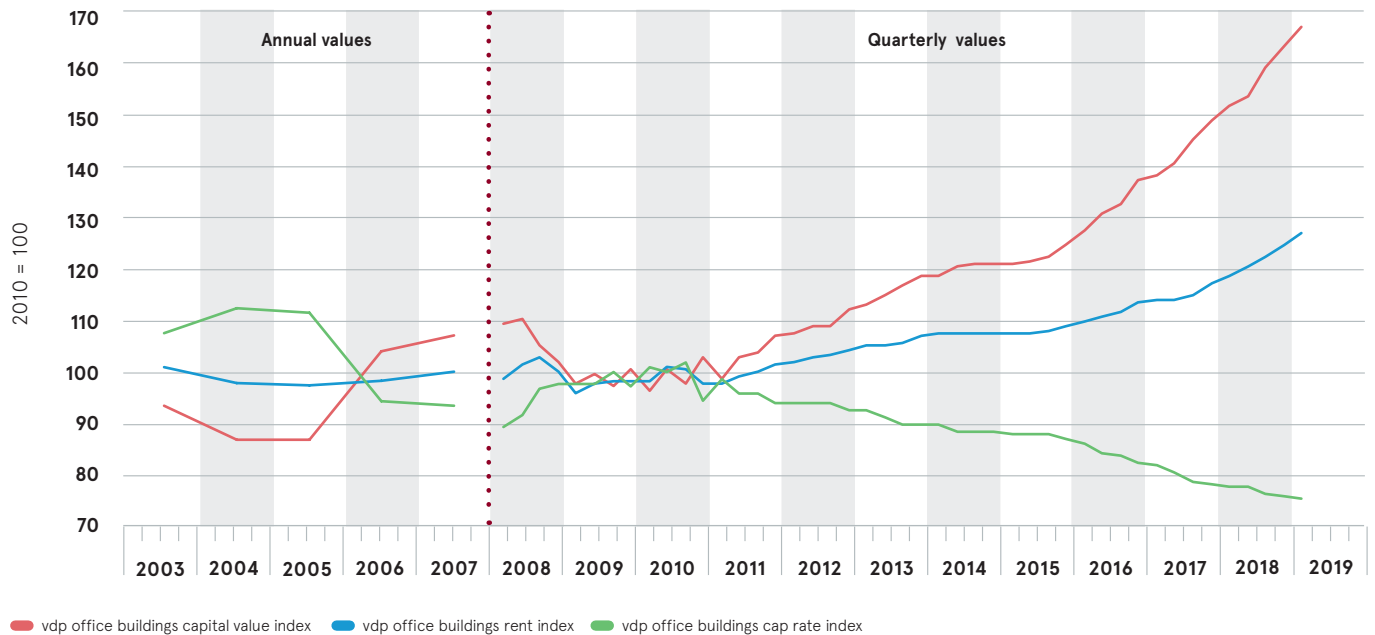
Year	Capital value TOP-7		Residential rents TOP-7		Cap rate TOP-7	
	Index	y-o-y change in %	Index	y-o-y change in %	Index	y-o-y change in %
2008	95.7	1.8	93.7	2.4	97.9	0.5
2009	98.4	2.8	96.4	2.9	98.0	0.1
2010	100.0	1.6	100.0	3.7	100.0	2.0
2011	106.6	6.6	104.9	4.9	98.4	-1.6
2012	115.8	8.6	111.4	6.2	96.2	-2.2
2013	126.2	9.0	117.6	5.6	93.2	-3.1
2014	138.0	9.4	125.0	6.2	90.5	-2.9
2015	153.8	11.4	132.8	6.3	86.4	-4.6
2016	172.6	12.3	142.0	6.9	82.3	-4.8
2017	197.1	14.2	150.7	6.1	76.5	-7.1
2018	217.6	10.4	158.4	5.1	72.8	-4.8

Quarter	Capital value TOP-7		Residential rents TOP-7		Cap rate TOP-7	
	Index	y-o-y change in %	Index	y-o-y change in %	Index	y-o-y change in %
Q2 2017	194.3	14.7	149.7	6.3	77.0	-7.4
Q3 2017	201.2	15.2	152.2	6.2	75.6	-7.8
Q4 2017	206.9	14.6	153.9	5.8	74.4	-7.6
Q1 2018	212.3	13.7	155.6	5.8	73.3	-7.0
Q2 2018	216.0	11.2	157.5	5.2	72.9	-5.3
Q3 2018	219.5	9.1	159.5	4.8	72.6	-3.9
Q4 2018	222.7	7.6	161.2	4.7	72.4	-2.7
Q1 2019	224.5	5.8	162.3	4.3	72.3	-1.4

*Berlin, Cologne, Dusseldorf, Frankfurt am Main, Hamburg, Munich, Stuttgart

Office and administration buildings

Users and investors must pay more once again

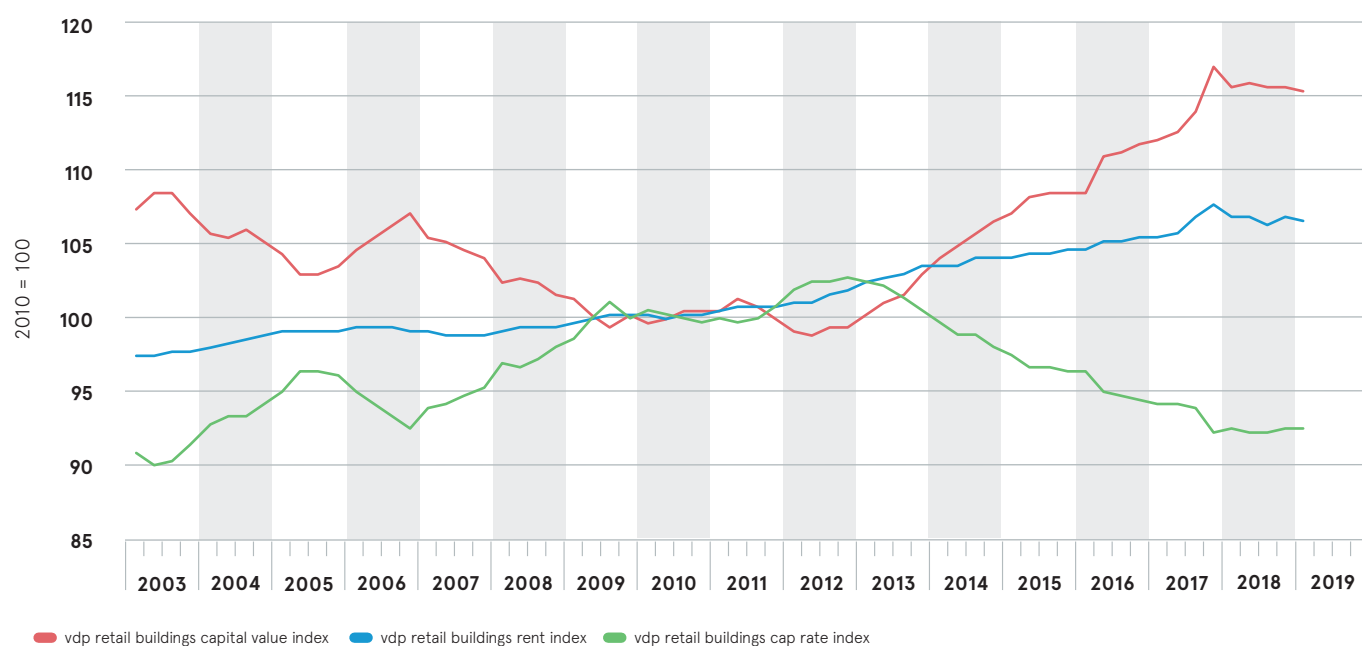


Year	Capital value		Residential rents		Cap rate	
	Index	y-o-y change in %	Index	y-o-y change in %	Index	y-o-y change in %
2008	107.2	-0.7	101.3	0.6	94.5	1.3
2009	99.3	-7.3	98.1	-3.1	98.8	4.5
2010	100.0	0.7	100.0	1.9	100.0	1.2
2011	103.6	3.6	100.2	0.2	96.7	-3.3
2012	109.9	6.0	103.6	3.4	94.3	-2.5
2013	116.4	5.9	106.4	2.7	91.5	-3.0
2014	120.9	3.9	108.0	1.5	89.3	-2.3
2015	122.9	1.7	108.7	0.6	88.4	-1.1
2016	132.4	7.7	112.1	3.2	84.7	-4.2
2017	143.6	8.4	115.7	3.2	80.6	-4.9
2018	157.4	9.6	122.1	5.5	77.6	-3.7

Quarter	Capital value		Residential rents		Cap rate	
	Index	y-o-y change in %	Index	y-o-y change in %	Index	y-o-y change in %
Q2 2017	141.2	7.5	114.7	3.0	81.2	-4.2
Q3 2017	145.6	9.5	115.7	3.2	79.5	-5.8
Q4 2017	149.3	8.3	117.9	3.1	79.0	-4.8
Q1 2018	152.1	9.7	119.1	4.1	78.3	-5.1
Q2 2018	154.2	9.2	121.1	5.6	78.5	-3.3
Q3 2018	159.5	9.6	122.8	6.1	77.0	-3.1
Q4 2018	163.7	9.7	125.4	6.4	76.6	-3.0
Q1 2019	167.6	10.2	127.4	7.0	76.0	-2.9

Retail buildings

Rents and capital values see a further slight fall



Year	Capital value		Residential rents		Cap rate	
	Index	y-o-y change in %	Index	y-o-y change in %	Index	y-o-y change in %
2008	102.2	-2.5	99.1	0.4	97.1	2.9
2009	100.1	-2.0	99.9	0.7	99.7	2.7
2010	100.0	-0.1	100.0	0.1	100.0	0.3
2011	100.6	0.6	100.5	0.5	100.0	0.0
2012	99.0	-1.5	101.2	0.7	102.2	2.3
2013	101.3	2.3	102.8	1.6	101.4	-0.8
2014	105.2	3.8	103.7	0.9	98.6	-2.8
2015	108.0	2.7	104.3	0.5	96.6	-2.1
2016	110.6	2.5	105.0	0.7	94.9	-1.7
2017	113.9	2.9	106.4	1.3	93.4	-1.6
2018	115.8	1.7	106.7	0.3	92.1	-1.3

Quarter	Capital value		Residential rents		Cap rate	
	Index	y-o-y change in %	Index	y-o-y change in %	Index	y-o-y change in %
Q2 2017	112.5	1.5	105.7	0.6	94.0	-1.0
Q3 2017	114.0	2.5	106.7	1.6	93.6	-0.9
Q4 2017	117.0	4.5	107.6	2.1	92.0	-2.3
Q1 2018	115.8	3.4	106.8	1.4	92.3	-1.9
Q2 2018	116.1	3.1	106.8	1.0	92.0	-2.1
Q3 2018	115.6	1.4	106.3	-0.4	91.9	-1.8
Q4 2018	115.6	-1.2	106.7	-0.8	92.3	0.4
Q1 2019	115.5	-0.2	106.6	-0.2	92.3	0.0

Methodology

Data basis

German financial institutions participating in the transaction database provide transaction details from their real estate financing business for input into the database. The database has been maintained since 2004 and provides statistically evaluable information on actual real estate transactions. Data are captured by the participating institutions in the form of appraisals of market and mortgage lending values that are prepared in the course of their mortgage lending activities. Property valuations are determined within each financial institution by certified property valuers or specially trained bank personnel. In addition to purchase price and date of purchase, the appraisal includes information about the property's macro and micro location, its age, layout and other price-influencing variables. In the case of certain types of property, information is also collected with regard to rental agreements and the date they were concluded. Information used to derive market and mortgage lending values is ascertained partly from submitted documentation and partly by valuers working in accordance with codified procedures. Table 1 provides an overview of the variables most frequently applied in the specification of individual indices for various market segments.

Substantive definitions of individual variables are coordinated with financial institutions via the contractual relationship between them and the vdp. In addition, property valuation in Germany is subject to strict regulations, which ensure that the valuation processes of individual institutions are harmonised to the greatest extent

Table 1: Variables from the vdp's transaction database

Variable	Scaling	Characteristics
Makrolage	Nominal	Landkreis oder kreisfreie Stadt in Deutschland
Micro location	Ordinal	Very good - good - average - moderate - poor - catastrophic
Living /usable space	Metric	Living or usable space m ²
Plot size	Metric	Plot size of property in m ²
Year built	Metric	Year property built
Layout	Ordinal	Very good - good - average - moderate - poor - catastrophic
Condition	Ordinal	Very good - good - average - moderate - poor - catastrophic
Saleability	Ordinal	Very good - good - average - moderate - poor - catastrophic
Sub-property type	Nominal	Division of market segment into sub-segments
Purchase price	Metric	Purchase price of property in Euros
Rent	Metric	Contractual rent of property in Euros per m ²

possible, especially as a result of the Verordnung über die Grundsätze für die Ermittlung der Verkehrswerte von Grundstücken (Regulation on the Principles for Determining the Market Value of Property – abbreviated to ImmoWertV) and the Beleihungswertermittlungsverordnung (Regulation on the Determination of the Mortgage Lending Value – abbreviated to BelWertV). Because the purchase prices and significant price-influencing characteristics of individual properties are determined in a uniform manner and because they are input into a uniform database structure, it is possible to analyse the data with the help of complex statistical procedures.

Calculation

As a result of the distinct heterogeneity of real estate properties and in order to be able to measure pure price changes, it is necessary to take account of the varying quality of the

properties concerned when measuring prices. Various procedures exist which take explicit account of the differences in the quality of individual properties in order to be able to measure pure price changes.

All vdp real estate indices are calculated by making use of so-called hedonic models. The hedonic model is based on the idea that heterogeneous commodities can be described by reference to their characteristics. In other words, a commodity can be represented as the sum of its characteristics. With regard to real estate, this means that this set of attributes might include, for example, details of physical characteristics such as plot size, living area, year built and details as to the property's location. Each of these named attributes has a specific influence on the price of the property, but there is no market for the attributes themselves; they cannot be sold separately and therefore cannot be viewed

in isolation. It is possible, nonetheless, implicitly to determine the proportion of the overall price of the property which each individual attribute makes up by examining real estate supply and demand. Multivariate regression models are used for this purpose, helping to provide a statistical estimate of the marginal contribution of each attribute. It is assumed that the model incorporates all relevant attributes and that deviations occur simply by coincidence and are not indicative of any systematic structures.

Weighting

The overall index is the weighted arithmetical average of the various price indices for residential and commercial real estate. The weightings used correspond to the share of monetary turnover in the German real estate market constituted respectively by residential and commercial real estate. Based on details provided by valuer committees (Gutachterausschüsse), these averaged 75.6% and 24.4%, respectively, between 2007 and 2012.

The weights used correspond with the percentage share of households in Germany living in their own home. For the year 2011 this share stood at 50.7%. Accordingly, 49.3% lived in a rented dwelling. The weights were derived on the basis of the building and housing census conducted by the Federal Statistical Office in 2011. The price index for owner-occupied housing is calculated as a weighted arithmetic mean of the percentage of households living in their own single-family house or condominium. In 2011 these shares amounted to 79.7% for single-family houses and 20.3% for condominiums.

For the commercial property price index, the weightings attributable to the office property capital value index and the retail property capital value index

correspond to the proportion of loans in the accounts of Pfandbrief Banks that were granted to these two categories. The figures for office property and retail property amount to 60% and 40%, respectively.

Top 7 residential properties

The top 7 residential property indices are calculated analogously to the calculation for the vdp's nationwide property price indices. The indices are estimated separately for each of the cities on the basis of the transaction database. Then, the seven individual indices of the relevant market segment are aggregated according to the respective shares to form a top 7 index. For more information, please visit the website of vdpResearch.

Base year

Starting from this edition, the base year for the indices is 2010.

Publication

All vdp real estate price indices are published on a quarterly basis. Each year's first quarter index figures are published on 10 May of the same year (six weeks after the end of the quarter under review). Other publication dates are as follows:

- 10 August, 2nd quarter
- 10. November, 3. Quartal
- 10 February of the following year, 4th quarter (including figures for the year as a whole)

The index figures are released at 2:00 p.m. on the respective publication dates. Where the publication date falls on a Saturday, Sunday or public holiday, the index figures are published on the next working day at 2:00 p.m.

The accompanying press releases are published in German and English on

the websites of the Verband deutscher Pfandbriefbanken e.V. (vdp) www.pfandbrief.de and vdpResearch GmbH www.vdpresearch.de. They are also published via press agencies.

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The member institutions of the **Association of German Pfandbrief Banks** (Verband deutscher Pfandbriefbanken, vdp) have been the market leaders in commercial real estate finance in Germany and hold sizeable market shares in residential real estate finance as well. As the representative of its member banks, the vdp performs this function vis-à-vis all executive bodies of politics on both the national and the European stage and a wider public.

The vdp's know-how is tailored towards the specific interests of the Pfandbrief issuers, namely, the Pfandbrief business and the underlying business fields property finance, public-sector lending, ship and aircraft finance. The vdp assists its member banks also in regulatory matters and represents them vis-à-vis national regulatory authorities. By means of group governance, member institutions exchange information and experiences in vdp committees, which are then summarized and developed into market standards. The vdp also assists its member banks in the efficient structuring of their specialized loan or issuance businesses.

Scientific editing:

vdpResearch GmbH
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vdpResearch GmbH, a subsidiary of the Association of German Pfandbrief Banks (vdp), works intensively on compiling, analyzing and forecasting property prices in the context of real estate finance. Its remit includes measuring and forecasting trends in rents and prices in the residential and commercial property sectors at the regional and national level.

To measure the movements of rents and prices, vdpResearch makes use of a unique transaction database that is also used to provide property-related comparative prices, comparative rents and other valuation parameters. These parameters are central to specially developed software solutions for valuing standard and individual properties and are fully compliant with regulations governing market and property valuation.

Today, the products and services of vdpResearch are a key component for many credit institutions in the evaluation and assessment of property and market price risks. The nationwide property price indices that vdpResearch prepares for the Association of German Pfandbrief Banks are geared to an interested public and offer an overview of general price trends in Germany's real estate markets.

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