

Price indicators for the housing market

Prices on the housing markets have aroused greater general interest during the past few years. To some extent, this is due to the fact that in some countries there have been marked price increases, which have provided house owners with significant gains and thereby indirectly fostered private consumption. At the beginning of the 1990s the correction of the housing price bubble brought entire economies into crisis and endangered the stability of the financial systems concerned.

In recent times there have not been any even remotely similar developments in Germany. However, studies on price movements on the property markets and their macroeconomic causes and effects have so far been difficult owing to the lack of suitable price indicators. The official statistics cover only the prices of building land and the prices of constructing residential buildings. In addition, the consumer price index contains a rent component.

The following article examines the theoretical and practical problems encountered in drawing up price indices for residential property. Furthermore, the Bundesbank has calculated price indicators for terraced houses and flats; these indicators are presented below, and their strengths and weaknesses analysed.

Problems of measurement and ways to solve them

Particular problems in calculating house price indices

Calculating property price indices gives rise to conceptual and, more importantly, practical problems which are far in excess of the difficulties encountered in the case of other price indicators.¹ The main reason for this is that in the case of residential property it is not possible to monitor prices for identical properties on a continuous basis. It is true that a secondary market for second-hand houses and flats exists alongside the primary market for new property, but these older properties are normally put on the market much later. Consequently, any ongoing price observation must relate to different properties. The frequently applied "matched models" method, under which prices are recorded over time for goods and services with substantial levels of sales and unchanged characteristics, is not suitable in the case of property. Apart from that, residential buildings are extremely heterogeneous. No single property is completely identical to the next. It is therefore difficult to meet the principles of pure price comparison and representativeness that are essential for price statistics.

Importance of location

Owing to the immobility of dwellings, which makes regional equalisation more difficult, location is the most important pricing determinant, regardless of whether the comparison is being made between or within cities and towns. According to surveys by Bulwien AG, the resale value of a typical flat in Munich, for example, averaged €2,750 per square metre in 2002 while a similar flat in Frankfurt am Main cost €2,350 but only €1,900 in

west Berlin. In smaller towns such as Brunswick, Aachen or Ulm the price per square metre was even lower at between €1,200 and €1,600. However, substantial differences also exist within the towns mentioned. For example, properties in outlying areas, as a rule, fetch prices that are far below average. According to the regional committee of surveyors in Lower Saxony (Niedersächsischer Oberer Gutachterausschuss), for example, benchmark prices of building land for individual dwellings in Brunswick at the beginning of 2003 ranged from €105 to €270 per square metre depending on the site.

Diverging trends are more important for the purposes of a price comparison over time than these differences in levels. While the prices of second-hand flats in Frankfurt am Main have increased by almost 45% since 1990, they have increased by about 35% in Munich. Property in west Berlin became considerably more expensive in the run-up to German reunification and immediately afterwards but subsequently fell in price again. Differing price trends can also be observed in smaller towns.

The size of the plot or living space as well as the characteristics and configuration of the dwellings are also major price determinants. Changes in these features over time are of particular importance for preparing data for an intertemporal price comparison. After all,

Necessity of quality adjustment

¹ For an overview of the problems associated with a property price index see, for example, G Thwaites and R Wood, The measurement of house prices, *Bank of England Quarterly Bulletin*, Spring 2003, pp 38-46, and International Monetary Fund, Compilation guide on financial soundness indicators, Chapter 9, Real estate price indices, Draft, March 2003.

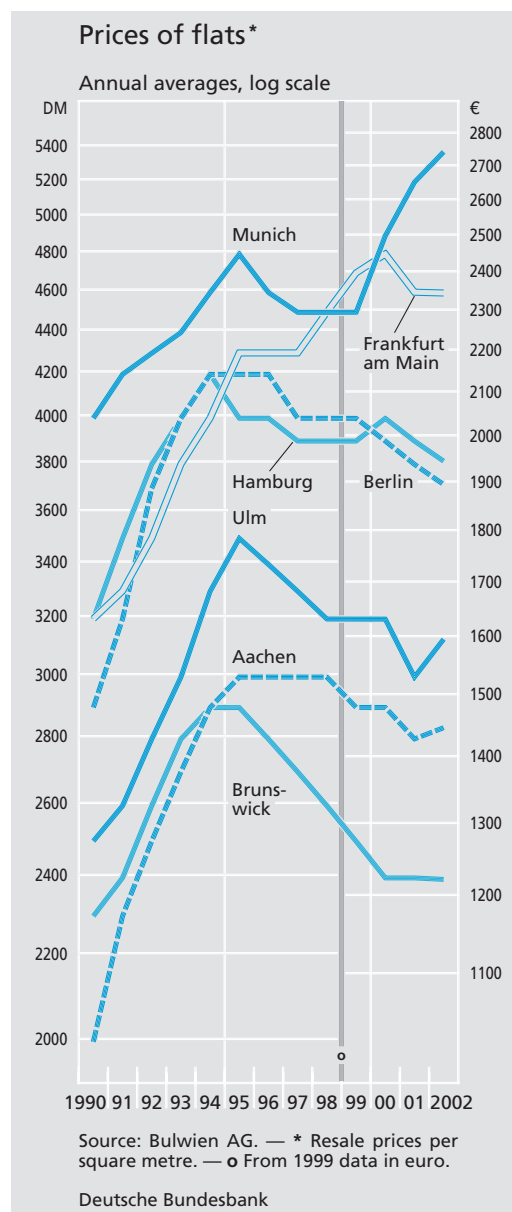
the purpose of a price index is not to indicate changes in average expenditure to acquire houses and flats where that includes a greater or lesser outlay for differences in location or changes in quality. Instead, the aim is to show nothing more than price movements for a fixed quality in a given location. To that end, prices must be reduced to a uniform standard and quality-related differences eliminated.

Quality trends

It can be assumed that major technical advances are steadily being made in the quality of residential property. Considerable progress is being achieved in the case of insulation and heating technology, in particular. Then there are more sophisticated floor coverings and more lavish sanitary fittings. On the other hand, owing to the increasing shortage of land as a result of the growing population density, especially in the conurbations, a tendency to build dwellings more closely together has been observed. As a rule, terraced houses are now being erected on smaller plots of ground than was the case 20 years ago. Another point is that in the thriving conurbations new buildings are frequently being erected farther from the town and city centres than before. Building regulations are also being relaxed, and accustomed standards diluted (for example, the absence of cellars).

Impact of age

Finally, the year in which a dwelling was built is important in the case of second-hand property. However, the decline in the value of a property associated with wear and tear and increasing age can be offset by renovation and maintenance. Often extensions and re-modelling projects of a value-enhancing na-



ture are also undertaken. It can therefore be readily argued that there is no firm connection between the age of a property and its price.² There are also indications that properties dating from certain periods sell at a premium over other houses because they meet

² See A C Goodman and T G Thibodeau, Dwelling-age-related heteroskedasticity in hedonic house price equations: An extension, *Journal of Housing Research*, Vol 8 (1997), pp 299-317.

more adequately the wishes and tastes of specific categories of buyers or because their substance is of better quality.³

*Unit value
method*

The simplest method of calculating a property price index is the unit value method. Here, the average of the aggregate prices or of the prices of a sample of the houses and flats sold in a given period is compared with the average figure obtained in the comparable period. Consequently, such an index shows the change in the average transaction value, including all differences in quality and location. It is therefore not entirely suited to analysing price developments with respect to the property stock. Structural effects dominate the flow of the index and obscure the really interesting feature, namely the price movements themselves, especially in the case of small samples and fairly extensive changes in the composition of the whole. When, for example, a year with many transactions in Munich follows a year with many transactions in Berlin, a unit value index rises if only because of the higher price level in Munich, even if prices did not change either in Munich or in Berlin.

*Typical case
method*

To limit such structural effects the typical case method uses only prices of similar properties such as terraced houses, new dwellings, satisfactory level of comfort, average to good location and floor area of approximate 100 square metres. Sometimes a further specification, the price per square metre, is added. To counteract the effects of location, separate sub-indexes are calculated for various regions. By using suitable weightings, it is possible to combine these regional indexes to

obtain an indicator for a specific type of dwelling. Finally, a general index for the housing market can be calculated from the individual indexes.⁴

Owing to the elimination of the crudest structural effects, indexes based on typical cases are far superior methodologically to the unit value method. As the types of accommodation are usually broadly defined, however, quality differences and structural effects cannot be completely avoided by this method. Furthermore, qualitative standards such as level of comfort change over time, and this may lead to distortions or inaccuracies in the intertemporal price comparison.

A widely used method for calculating price indexes of the housing stock, especially in Anglo-Saxon countries, is based on observations of dwellings that have been sold and resold several times and is therefore similar to the "matched models" method commonly used in other price statistics. As the location component and the physical features of a house usually do not change much over time (except for the fact that a residential area may increase or decrease in value owing, for example, to traffic-related measures, re-assessment of risk factors or population fluctuations), this method is used only for comparing prices of properties that are largely

*Indexes based
on multiple
sales*

³ See J M Clapp and C Giaccotto, Residential hedonic models: A rational expectations approach to age effects, *Journal of Urban Economics*, Vol 44 (1998), pp 415-437.

⁴ Depending on the type of weighting, it is possible to differentiate between transaction-based indexes and stock-based indexes. In a transaction-based index the weights are derived from a compilation of the transactions, and in a stock-based index from the structure of the accommodation stock.

identical. Adjustments in the form of discounts and add-ons naturally have to be made for wear and tear and for renovation and remodelling work.

Housing price indices based on resales promise satisfactory results where many dwellings are frequently bought and sold. If there are fairly long intervals between any two transactions, by contrast, there is the problem of spreading the total price difference over shorter periods such as years or quarters.⁵ Furthermore, marketable properties which are frequently bought and sold can show in the short to medium term a different price trend from dwellings that change hands less often, with the result that an index derived from resale data can be distorted.⁶ Owing to the comparatively small share of owner-occupied housing and the consequent lower frequency in housing turnover, indexes drawn up with this method are less suitable for Germany.

Hedonic regressions

Finally, there is the direct evaluation and elimination of quality differences widely used in price statistics. However, while in the case of housing rents the need for a correction of this kind arises only for wear and tear, renovation, remodelling or new buildings and the data for a specific property – otherwise – flow unaltered under the “matched models” method into the index, there is always the problem of quality adjustment when observing prices for houses and flats. Furthermore, the features that potentially affect prices are very considerable, and their combinations are varied.

The hedonic method where the price of a dwelling is explained using regression analysis in terms of its features has been developed for solving complex quality adjustment problems.⁷ The information on the implicit market evaluation of various features taken from the overview can then be used for calculating the mean price change of an average bundle of features – in other words, of an artificially devised dwelling. However, preparing a hedonic index requires extensive amounts of information not only on transaction prices but also on the specifications of the traded dwellings. Such comprehensive collections of data are still not available for Germany as a whole.⁸

⁵ As a rule, this is done by means of an econometric procedure which explains the price differences through the timing of the transactions. See, for example, K E Case and R J Shiller, Prices of single-family homes since 1970: New indexes for four Cities, *New England Economic Review*, September/October 1987, pp 45-56.

⁶ See R A Meese and N E Wallace, The construction of residential housing price indices: A comparison of repeat-sales, hedonic-regression and hybrid approaches, *Journal of Real Estate Finance and Economics*, Vol 14 (1997), pp 51-73.

⁷ For the application of hedonic regression method for housing markets see the overview in S Sheppard, Hedonic analysis of housing markets, *Handbook of Regional and Urban Economics*, Vol 3 (1999), Chapter 41, pp 1595-1635. One practical problem of hedonic indexes is that not all features and their interdependencies can be taken into account and therefore quality adjustment remains incomplete. Consequently, an attempt is sometimes made to combine indexes based on repeat sales with hedonic methods or hedonic indexes with information on repeat sales. For such hybrid models see, for example, B Case and J M Quigley, The dynamics of real estate prices, *The Review of Economics and Statistics*, Vol 73 (1991), pp 50-58, and R Carter Hill, J R Knight and C F Sirmans, Estimating capital asset price indexes, *The Review of Economics and Statistics*, Vol 79 (1997), pp 226-233.

⁸ The situation is in some cases more favourable for individual regions of the country. For example, R Schulz and A Werwatz, A state space model for Berlin house prices, SFB 373 Discussion Paper, December 2002, estimate a more extensive hedonic model for the Berlin housing market based on the data from surveyor committees, and an article on a Lower Saxony real estate index based on a multiple regression model was published in the *Land real estate market report (Landesgrundstücksmarktbericht)* of the regional committee of experts on land values in Lower Saxony, 2003 issue, p 61.

Official data on German housing market prices

The official German statistics reflect prices on the real estate market by listing the prices of building land, construction prices and housing rents.

Building land prices

To compile building land price statistics the Federal Statistical Office collects transaction values for plots of land in designated building areas. Different average purchase prices per square metre are calculated depending on the type of building land, size category of the community concerned and region. However, the Federal Statistical Office points out that the average values listed can be used only to a limited extent for an intertemporal comparison because the statistical data from which they are derived may consist of varying individual components.⁹ For this reason no rates of change are given either. The statistics go back to 1962; from 1992 there are also separate data on eastern Germany and Germany as a whole.¹⁰

If, despite these difficulties, a longer-term comparison is made to ascertain the trend, it shows that average prices for building land have risen significantly. In 2002 they were approximately four times higher than in 1975. Owing to the absence of an adjustment for differences in location, however, this figure gives no direct indication of the "true" extent of the increase. The particularly sharp price rises shown for the early 1980s and the mid-1990s coincided, for example, with a low number of transactions and a general downturn on the housing market. The high aver-

age prices in these periods might be the result of an absence of transactions in the low-price sector.

The purpose of the construction price index for residential buildings is to show developments in the cost of building houses and flats. It comprises highly detailed prices for the labour and materials deployed in constructing single and multi-family houses and multi-purpose buildings. Quality differences have to be eliminated when calculating the index. Given the complexity of building work and the extensive progress that has been made in this area, this poses a considerable challenge.

Construction prices

According to the official statistics, construction prices have risen by 125% since 1975. The bulk of this increase took place in the second half of the 1970s. A further substantial spurt occurred in the first half of the 1990s. Since then construction prices have stagnated.

The rent component of the consumer price index (CPI) reflects the quality adjusted trend in rents, excluding heating, plus ancillary costs (notably water supply and sewage disposal as well as refuse collection but not energy). The compilers of the index essentially use the "matched models" method although deductions are made for fairly large main-

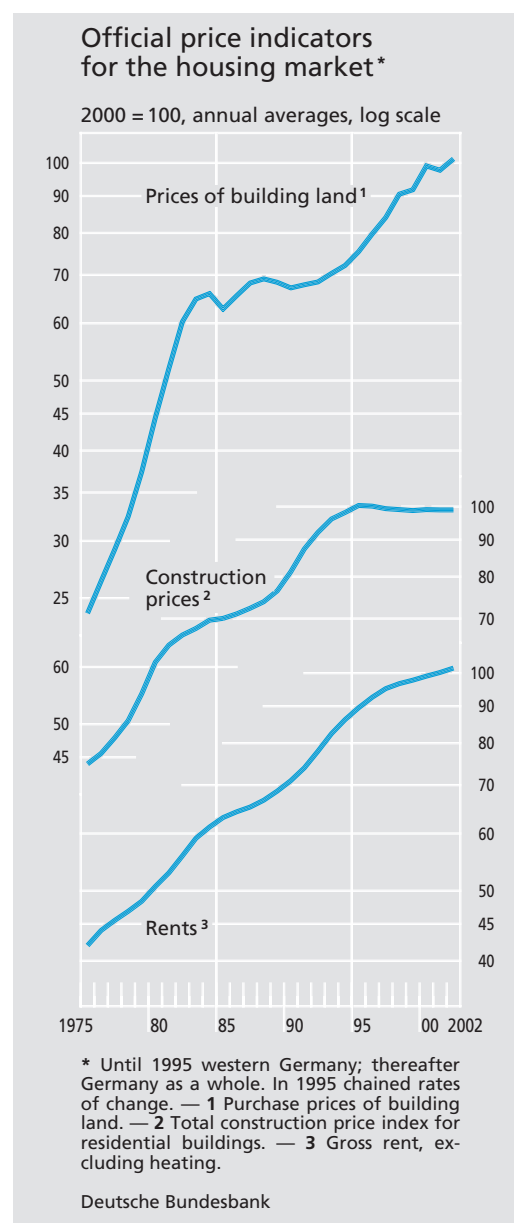
Residential rents

⁹ Statistisches Bundesamt (*Federal Statistical Office*), Fachserie 17, Reihe 5, Kaufwerte für Bauland 2001, Wiesbaden 2002, p 5.

¹⁰ To show long-term movements and average rates of change, in 1995 the data for the whole of Germany were linked for all series to the west German figures by using rates of change, thereby eliminating the jump in levels associated with German reunification.

tenance and repair work and account is taken of flats coming on to the market in line with their share of the total stock. Ancillary costs have been shown separately since 1995. Most of the rents captured are those stemming from existing contracts. According to the official statistics, rents, including ancillary costs, rose by more than 140% between 1975 and 2002. Comparable calculations using the hedonic method based on rent surveys undertaken under the auspices of the German Socio-Economic Panel produced similar results for the period between 1985 and 1998 as the official rent index.¹¹ This suggests that the CPI provides a more or less accurate reflection of the trend in rents.

An approximation of the trend in the cost of living in owner-occupied dwellings is given in the CPI by means of the trend in residential rents, their weighting being more or less doubled for this purpose.¹² Owner-occupied dwellings, by contrast, have not yet been included in the Harmonised Index of Consumer Prices (HICP), which was introduced in connection with European monetary union. This means that the cost of accommodation for more than two-fifths of the households in Germany is still largely uncaptured. In other euro-area countries the proportion of households that are not taken into account is actually even greater owing to the larger share of owner-occupied housing. However, as part of a special Europewide study test calculations of the price component of expenditure on newly built owner-occupied houses and flats are now taking place in Germany and elsewhere. If the quality of these is satisfactory, they may be integrated into the HICP



11 See J Hoffmann and C Kurz, Rent indices for housing in West Germany, 1985 to 1998, Economic Research Centre of the Deutsche Bundesbank, Discussion paper 01/02.

12 A proxy solution of this kind is justified in that the user cost of capital is approximately equivalent to the rents obtained on the market if there is a neutral tax system and market equilibrium. However, using such approaches presupposes that the CPI follows the concept of a cost-of-living index. For information on the various concepts see W E Diewert, Harmonized indexes of consumer prices: Their conceptual foundations, *Schweizerische Zeitschrift für Volkswirtschaft und Statistik*, Vol 138 (2002), pp 547-637. For the significance of taxes see, for example, A Dougherty and R van Order, Inflation, housing costs, and the consumer price index, *American Economic Review*, Vol 72 (1982), pp 154-164.

in only a few years.¹³ The initial results of this so-called experimental house price index are expected in the middle of next year.

Price indices for residential property

*Price indicators
for Germany*

Indices on developments in property prices in Germany are based on raw data emerging from the work undertaken by surveyor committees, estate agents, building and loan associations and mortgage banks.¹⁴ It is mainly a question of determining the right valuation of a property at a specific time compared with other properties. Such data cannot be used without qualification for a longitudinal comparison. This is particularly true if they are based on qualitative judgements because opinions on which features are "up-market" or which location is "good" will probably change in the course of time.

The indices calculated by the various institutions differ mainly with respect to the extent to which Germany or the housing stock is covered and the manner in which the "average" is determined. Some indices are restricted to incorporating data on specific types of property in only a few towns while others cover the entire market. The informative value of the indices is often limited by the fact that prices are averaged without any weighting for differences in quality, location and site and changes are calculated from this.

*BIS real estate
price index*

The real estate price index for Germany prepared by the Bank for International Settlements (BIS) has achieved international recognition. This index shows that between 1995

and 2001 prices for residential property in Germany declined by as much as an annual average of 2.5%. This figure was calculated from the change in the (unweighted) average price of flats of average living quality in four German cities.¹⁵ These statistics are often considered to be representative for the whole of Germany and have been seen as a sign of a deflationary trend.

The new price indices for residential property based on raw data from Bulwien AG and briefly presented in the May issue of the Bundesbank's *Monthly Report* cover 60 fairly large towns, including 10 in eastern Germany.¹⁶ The intention is to take account of

*New
Bundesbank
real estate price
index*

¹³ The fundamental purpose of the HICP is to show price movements related to the monetary consumption expenditure of households, ie it follows the net acquisition approach and not, in contrast to the German or US consumer price indices, the rental equivalence approach. In a number of other countries the change in the user cost of capital is included in the calculation of the index. See H-A Leifer, Zur Behandlung dauerhafter Güter in einem Verbraucherpreisindex und in einem Lebenshaltungskostenindex, *Allgemeines Statistisches Archiv*, Vol 85 (2001), pp 301-318.

¹⁴ Many of the indices calculated by third parties are based on raw data provided by the German Real Estate Agents' Association (*Ring Deutscher Makler*), which collects market information for the whole of Germany. GEWOS GmbH (the Institute of Urban, Regional and Housing Research) and the institute for urban development, housing and saving schemes for housing purposes (*Institut für Städtebau, Wohnungswirtschaft und Bau-sparwesen*) have been publishing an index of owner-occupied property on a regular basis since 1996. The index goes back to 1989 and is designed to show developments in the prices of detached houses and flats on the basis of data provided by the surveyor committees of municipalities and local authorities.

¹⁵ See Bank for International Settlements, 72nd Annual Report, Basel 2002, p 130. The BIS is now using the real estate price indicators calculated by the Bundesbank.

¹⁶ Deutsche Bundesbank, New price indices for housing in Germany, *Monthly Report*, May 2003, p 38. As part of its property market analyses Bulwien AG calculates rents and purchase prices of typical industrial and residential real estate. It uses information derived from the work of its own experts and from building and loan associations, research establishments, surveyor committees, real estate associations, chambers of trade and industry and independent experts etc.

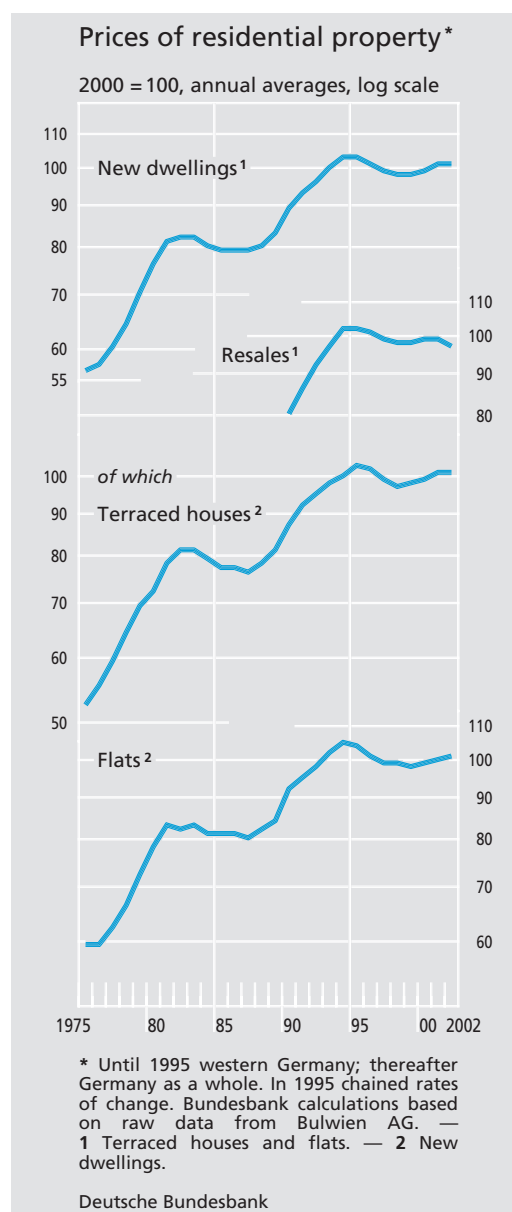
the regional differences in price movements although rural areas are still not captured. In accordance with the typical case method, the indices are calculated separately for various types of property and region in order to eliminate the most serious structural effects and are then condensed into overall indicators by means of suitable weightings.

Typical cases

The typical properties are terraced houses offering a satisfactory living standard in average to good locations with approximately 100 square metres of living space and owner-occupied dwellings, likewise providing satisfactory living conditions in average to good locations, with approximately 70 square metres of living space. The total price is shown in the case of terraced houses and the price per square metre in the case of owner-occupied dwellings. Bulwien AG calculates retrospectively to 1990 average prices for new dwellings and for second-hand accommodation separately; the data prior to 1990 refer to new dwellings.

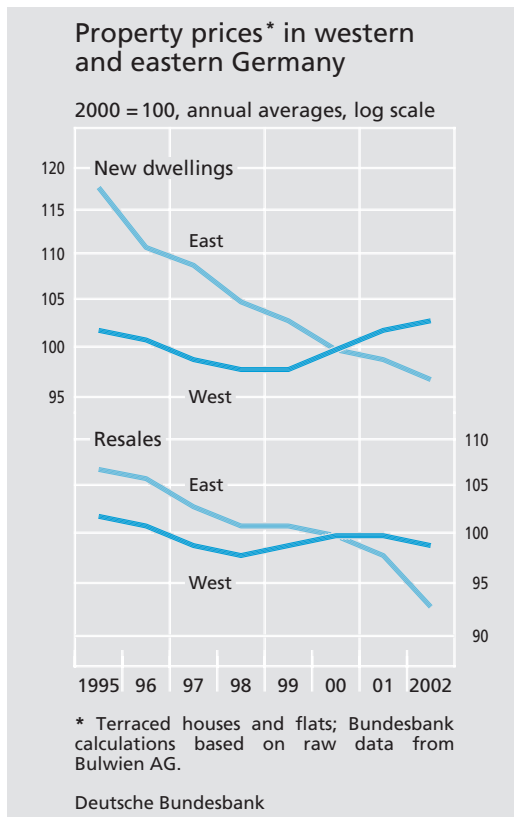
Calculating indexes

The Bundesbank weights the results from the individual towns with the respective population figures in 2000. The constant weightings used for the combined weighting of the data on terraced houses and flats are based on the estimated costs recorded for newly completed buildings between 1999 and 2001. In the case of resales the constant shares of the relative size of living space in terraced houses and owner-occupied dwellings were derived from the additional microcensus survey in 1998 and construction statistics between 1996 and 2000.¹⁷ Regional breakdowns were made of the indexes for western Germany



and from 1995 for eastern Germany and Germany as a whole. The long series of the price index for newly built dwellings goes back to 1975.

¹⁷ The indexes for newly constructed dwellings and for second-hand dwellings were not combined because it was precisely as a result of separate observation of the primary and secondary markets that useful information was obtained.



Index
development

According to this calculation, the prices of new terraced houses and owner-occupied dwellings hardly changed in Germany in the 1980s following a sharp increase in the 1970s. With the cyclical upturn in the second half of the 1980s and the opening of the borders in 1989 prices rose continually until the mid-1990s, but a slight downward correction set in later. Adjustment was much more pronounced in eastern Germany than in western Germany. Although this meant that the prices of houses and flats have fallen by a total of approximately 2% in Germany since 1995, they have not declined by up to 15% as they would have done according to other calculations.

Volatility

The new housing price data show no sign of the very pronounced cyclical fluctuations for

Germany as a whole that occur in many other countries. Instead, the rises and falls in housing prices are much more moderate. Whereas in the United Kingdom, for example, annual growth rates of far more than 10%, and substantial price reductions, too, have not been unusual, price changes in Germany in the past 25 years have ranged from -2½% to +9%.¹⁸

The discrepancies, in some cases fairly large ones, between movements in the prices of new and second-hand dwellings are striking. According to the available information, prices of houses and flats on the secondary market increased by 20% between 1990 and 2002 but only by 14% on the primary market. This might be connected with the fact that living in town centres is again being regarded as more attractive and therefore demand for second-hand property has increased. However, it is probable that at least part of the reason for the differences is the changed composition of the stock, notably of newly built dwellings, due, for example, to a shift in building to the outskirts of towns or a reduction in the size of building plots owing to the increasing scarcity of building land.¹⁹

Differences between new and secondhand dwellings

¹⁸ According to calculations by the European Central Bank, Structural factors in the EU housing markets, March 2003, p 19, the volatility of the trend-adjusted real house prices, measured in terms of the standard deviation in many European countries, has been greater than 10 percentage points in the past 20 years. A similar calculation based on the new data for Germany shows a standard deviation in the trend-adjusted prices of around 7 percentage points.

¹⁹ The German index of residential property prepared by the Institut für Städtebau, Wohnungswirtschaft und Bausparwesen and GEWOS shows a momentum that is somewhat more sharply directed upwards than the index based on second-hand dwellings.

Property prices in a macroeconomic context

*Long-term and
cyclical
plausibility*

In view of the many methodological and practical difficulties encountered in calculating property price indices, the question arises as to the plausibility of the indicators for German residential property presented here. An appropriate plausibility check may be made by undertaking a comparison with the official price indicators for the housing market and key macroeconomic variables. First, the long-term quality of the indicators is to be examined, and, second, the plausibility of the cyclical fluctuations. The comparison is essentially restricted to the index for new dwellings available in a long series.

*Long-term
trends*

It is immediately striking that, according to the available statistics, the major cost factors for housebuilding, namely land and construction work, rose much more sharply, at around an average of 5½% and 3% respectively per year, between 1975 and 2002 than those for new residential dwellings, which rose at an average of no more than 2¼%. There may be a number of reasons for such a large discrepancy between costs and prices. It is conceivable, for example, that there was a statistically unrecorded deterioration in the quality of houses and flats, which was due, among other things, to the use of smaller plots of building land. Another possible reason which cannot be ruled out is that the official data on land prices and construction prices show an upward distortion. It might be, for example, that quality improvements were not adequately eliminated from the construction prices.

At almost 3¼% per year, residential rents likewise rose much faster over the long term than property prices. Undoubtedly this was partly due to the ancillary housing costs, which are included in the rents contained in the consumer price index and which increased much more quickly over extensive periods of the years under review than the net rents excluding ancillary costs. Even so, this factor alone can hardly explain the total difference between movements in rents and movements in prices. Over the medium term rents and prices should actually move at the same pace because rents represent the opportunity costs of own use and, conversely, tenants can also switch to buying their own accommodation.²⁰ This means that, if, from an economic point of view, renting accommodation had really become discernibly more expensive than buying during the period under review, there would have to have been a significant shift towards ownership. However, the proportion of households living in owner-occupied dwellings in western Germany rose by no more than approximately 36% in 1975 to slightly more than 44% in 2002.²¹ Over the longer term any lagging of property prices behind rents might be due to the current reduction in population; however, it is unclear to what extent this has already played a role in the period under review.

²⁰ However, the larger transaction costs and the need to have ready capital for home ownership will probably check price equalisation. Fiscal and statutory promotional provisions and regulations governing the rented housing sector and the use of land also play a role.

²¹ In Italy the proportion of households living in owner-occupied property rose from 61% to 81% in the period from 1980 to 2000 and in the Netherlands from 42% to 53%. See European Central Bank, *Structural Factors in the EU Housing Markets*, Frankfurt am Main, 2003, p 26.

Comparing the official price indicators for the housing market suggests that the housing price index possibly does not fully capture the long-term price rise on the housing market. Comparing housing prices with disposable income also points in this direction. Since 1975 disposable income has risen by an average of 4½% per year, ie about twice as fast as the prices of houses and flats. Even in per-inhabitant terms it was still as much as 4¼%. That would mean that the prices of houses and flats would not only have risen more slowly than disposable income but also more slowly than the cost of living, which had risen by just over 2½%. This is rather unlikely even if, at the beginning of the observation period, relatively high rates of inflation and tax measures to foster home ownership could have inflated prices.²² Sluggish price movements during the 1980s would then have been seen to some extent as a correction of excessive prices after expectations with respect to inflation had moderated and the fiscal promotion of home ownership had been reduced. However, the faster growth in the selling prices of second-hand dwellings in the 1990s indicates that the aforementioned factors presumably cannot fully explain why the price rise observed in the case of new properties lagged behind building prices, rents and disposable income. A long-term analysis must therefore take account of an area of uncertainty that cannot be exactly quantified. The series for new properties probably tends to understate the longer-term price trend in the property sector somewhat.

The short to medium-term trend in property prices and the extent to which these led or

followed other indicators are relevant to the cyclical analysis. This is to be shown by taking as an example the timing of the responses to the demand shock at the end of the 1980s and beginning of the 1990s which resulted, in part, from the opening of the borders and economic unification. The largest annual increase in property prices, ie just over 7%, was recorded in 1990. This was also the year with the sharpest growth in disposable income (+8.2%). Building prices reached their highest growth rate, 7.6%, a year later. Only the official rent index, with a maximum increase in 1993 (+5.8%) and building land, likewise with +5.8%, were slower to respond.

In the case of rents this can be explained by the special features of pricing on this market. While new rents can be freely set within certain limits, increases in rents on existing contracts follow with a time lag as a result of the usual longer-term contracts and the comparable rents system. Indices for newly contracted rents, drawn up on the basis of data provided by Bulwien AG, show the greatest rate of increase, namely 12½% in 1990, but in the long term the trend is not much different from the rent index of the consumer price index.²³ The delayed response of building land prices, as shown in the statistics, is pre-

²² For the impact of general price movements on property prices in Germany in the 1970s and 1980s see B Felderer and W Rippin, Inflation, real estate and stock prices: Evidence from West Germany, Institut für Höhere Studien, *Forschungsbericht* (research report) No 352, December 1994.

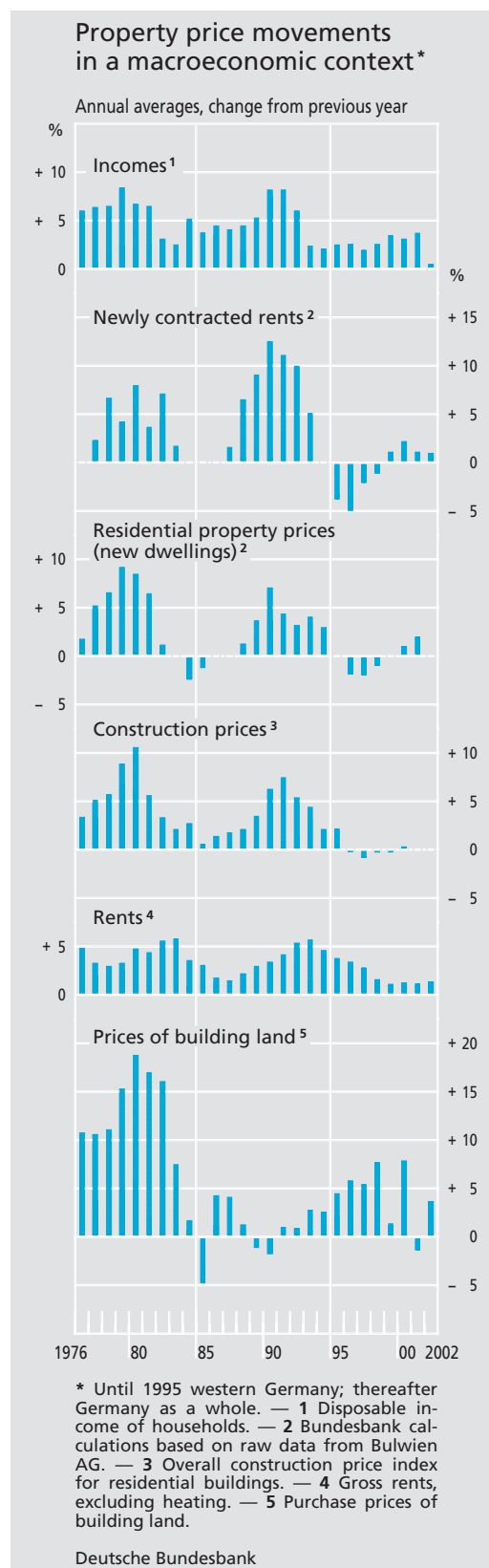
²³ Bulwien AG calculates for 60 German towns average rents for dwellings of approximately 70 square metres in average to good locations. Rents for newly built property and for relets are taken into account. The index of new rents is calculated using weights for population percentages in 2000 and with a weight of 0.5 for relets and for newly built property.

sumably an artefact which has arisen as a result of changes in the composition of the stock. The sharp rise in investment in construction between 1991 and 1994 was associated with the provision of additional building land; probably less expensive plots of land were frequently involved here. This confirms the opinion of the Federal Statistical Office that the officially determined average prices for building land are not entirely suitable for an intertemporal comparison.

From an economic point of view the timing of price responses is therefore largely plausible. Property prices increased in step with the rise in newly contracted rents; construction prices followed with a slight delay. Rents agreed in newly signed contracts began to fall again as early as 1995 owing to the increasing supply that resulted from the elastic response of construction investment – the number of new dwellings ready for occupation went up in western Germany from 239,000 in 1989 to more than 500,000 in 1994²⁴ – and the almost complete stop in the increase in incomes. The prices of houses and flats and building prices followed suit a year later. The smallest increase was recorded in 1999. There was no decline in the official rents index. This means that the indicators calculated on the basis of data supplied by Bulwien AG are also proving to be correct during the fall in the housing market.

Generally speaking, the pattern of the changes suggests that the property price in-

²⁴ See Deutsche Bundesbank, The housing market during the nineties, *Monthly Report*, January 2002, pp 27-37.



dexes presented here accurately reflect cyclical movements and that there are statistical interrelationships between the time series for house prices, building prices, rents and incomes which can be interpreted in economic terms.²⁵ Even so, the index based on resale prices might be slightly more suited to capturing the long-term price trend. Relevant price data are available only from 1990, however, with the result that a longer-term check on this hypothesis is not yet possible.

Outlook

Even if there are doubts about whether the price indicator for new terraced houses and flats in Germany, presented here, fully reflects the long-term upward trend in property prices, there is much to be said for the fact that it accurately reflects the cyclical fluctuations. Consequently, it may be just as important a source of additional information for the short to medium-term analysis of economic developments in Germany as the index on second-hand property. The leading indicator property of house prices vis-à-vis the official rent indexes in the CPI and HICP is also important here. However, property price indi-

cators have so far been calculated only as an annual average. Efforts are being made to extend this to once a quarter.

The stagnation in prices of residential property evident at the current end of the series is to be seen in connection with the sluggish growth in disposable incomes or the unfavourable incomes outlook and the ample supply of accommodation. There are no signs of a slump in property prices, which could jeopardise the stability of the financial system. The reason for this is that, owing to the elastic supply of construction services, Germany, traditionally, does not experience such sharp fluctuations in the prices of residential property as is reported to be the case in other countries. Furthermore, the lending limits imposed by the banks tend to be fixed very cautiously, and interest rates are locked in long-term, as a rule.

It is planned to update the property price indicators regularly in future.

²⁵ This judgement can also be confirmed with advanced econometric methods. Whereas the relationships between incomes, building prices, property prices and residential rents can be depicted as cointegration models, this is not possible with building land prices.