

Factsheet on Austria's Residential Property Market: Documentation of Time Series

This document describes the time series contained in the “Factsheet on Austria's Residential Property Market.” Its structure follows that of the table presented in the factsheet. The additional time series used in the charts of the factsheet are described in the section “Additional Time Series – Charts.”

A Residential property market

1 Residential property prices

The Oesterreichische Nationalbank (OeNB) monitors residential property prices with time series calculated by Vienna University of Technology (TU Wien) in cooperation with the OeNB. The time series are based on hedonic price models¹ that model the effects of structural and location-specific features (including time trends) on prices.² The corresponding dataset is derived from quotation and transaction data; these data comprise price observations combined with “structural” (object-specific) variables. We thus arrive at around 10,000 observations per year, which we use to calculate indices for condominiums and single-family houses for Vienna and for Austria excluding Vienna.

Two different types of residential property price indices (RPPIs) are available for Austria. They are calculated for different break-downs (regional and type of property) and are based on different methods.

Dummy index:

The RPPi for Vienna and for Austria excluding Vienna (regional breakdown) is a so-called “dummy index.” It is calculated on the basis of the euro price per square meter for new and used condominiums and for single-family houses. The dummy index is calculated by TU Wien. The calculation uses a hedonic regression model with a fixed structure over time. This approach may produce biased estimates if the effects of the variables change over time. The overall index for Vienna is calculated as a weighted average of the prices for condominiums (93%) and single-family houses (7%). Prices for condominiums are a weighted average of new (14.5%) and used condominiums (85.5%). For Austria excluding Vienna, the overall index is calculated based on condominiums (70%) and single-family houses (30%). The price index for condominiums is based on new (12.7%) and used condominiums (87.3%). The weights for new and used condominiums are based on the shares of the respective property in the data pool, which consists of more than 27,000 observations (offer and transaction prices). The weights for the overall indices are based on transactions from the land register over the period 2008 to 2013. The index for Austria is calculated as the weighted average of the overall prices for Vienna (27%) and Austria excluding Vienna (73%), based on land register data. All weights are updated every three years.

Imputation index:

¹ Hedonic price models break down an observed price change into a quality effect and a price effect proper.

² For details on the models used, see Brunauer, W., W. Feilmayr and K. Wagner. 2013. A New Residential Property Price Index for Austria. In: OeNB.2012. Statistiken – Daten & Analysen Q3/12.

hat gelöscht: published on the web platform AMETANET run by the Austrian real estate software provider EDI-Real; these data comprise price

hat gelöscht: Residential property price indices (RPPIs) for Austria are generated with two different methods and made available in two different breakdowns – one by regions (Vienna and Austria excluding Vienna) and one by types of property (condominiums and single-family houses).¹

This RPPI is a so-called "imputation index". It is calculated in cooperation with the DataScience Service (DSS) GmbH. It is available for condominiums and single-family houses. It is based on the same data set as the dummy index, but uses a different methodological approach. The models (one for condominiums and one for single-family houses) are estimated for Austria as a whole. Hence, no regional aggregation step is needed. The estimation applies semiparametric models that consider nonlinearity and spatial heterogeneity and result in unbiased quality-adjusted time effects as omitted variable effects are modeled adequately.

More details can be found in Brunauer, W., Feilmayr, W., Wagner, K. Der österreichische Wohnimmobilienpreisindex: Methodische Verfeinerung 2017. In: Statistiken – Daten und Analysen Q4/17, OeNB.

Source: DataScience Service GmbH (DSS), Vienna University of Technology, Prof. Feilmayr, OeNB.

As part of its price stability assessments, the OeNB compiles this index for statistical purposes only. This index should therefore not be used as a reference value for financial instruments and financial contracts. The OeNB does not assume liability for the correctness of the published data and may revise these data at any time.

Statistics Austria publishes a new House Price Index since March 2015. It reflects changes in the purchasing prices of residential properties throughout Austria. Basis of the survey are the purchases made by private households for new and existing houses and flats. In addition to the overall index two separate sub-indices - "New Dwellings" and "Existing Dwellings" - are calculated. The series start in 2010Q1.

2 Rents

- Vienna – total;
- Austria excluding Vienna – Condominiums;
- Austria excluding Vienna – Single-family houses;

These time series are calculated by TU Wien in cooperation with the OeNB. They refer to *new rentals* and are adjusted for apartment quality within the hedonic model.

- **Rents excluding operational cost (as measured in the CPI):** The database for rents excluding operational cost is derived from the Austrian microcensus. Data on prices refer to average prices per square meter across all rented residences covered by the microcensus.

3 Residential and commercial property market transactions

- **Volume of transactions:** Transaction volumes refer to all residential property transactions recorded in the Austrian land register. The relevant data are recorded by IMMOUnited, a real estate service provider recording data from the land register, on the basis of the respective purchase contracts. Archiving sale contracts and including a link to the archived contract has been mandatory for all transactions recorded in the Austrian land register since 2008. These data are published by the real estate agent RE/MAX once a year in a press release.
- **Number of transactions:** The number of transactions refers to all residential property transactions recorded in the Austrian land register.

hat gelöscht: The RPPI for Vienna and for Austria excluding Vienna (regional breakdown) is a so-called "dummy index." It is calculated on the basis of the euro price per square meter for new and used condominiums and for single-family houses. The dummy index is calculated by TU Wien. The calculation uses a hedonic regression model with a fixed structure over time. This approach may produce biased estimates if the effects of the variables change over time. The RPPI for Vienna is composed of the index for condominiums and that for single-family houses at a ratio of 93% to 7%, with the aggregated index for condominiums comprising the index for new condominiums and that for used condominiums at a ratio of 14.5% to 85.5%. By contrast, the RPPI for Austria excluding Vienna is composed of the index for condominiums and the index for single-family houses at a ratio of 70% to 30%, with the aggregated index for condominiums comprising the index for new condominiums and that for used condominiums at a ratio of 12.7% to 87.3%.¶

hat gelöscht: All weightings are adjusted at three-year intervals. The weightings of the indices for new and used condominiums correspond to the respective shares of new and used condominiums in the total number of residential property offers in the data pool, which contains data on more than 27,000 individual quotation and transaction prices. The aggregated index for condominiums (used and new) and the index for single-family houses, by contrast, are weighted according to the respective shares of sales of condominiums and single-family houses in the total number of sales transactions recorded in the Austrian land register for the period from 2008 to 2013. The two regional indices (Vienna and Austria excluding Vienna) are aggregated into an overall index for Austria at a ratio of 0.27 to 0.73; this overall index is also available from the ECB's Statistical Data Warehouse. The weightings of the two regional indices correspond to the respective shares of residential property sales in Vienna and in Austria excluding Vienna in the total number of sales transactions recorded in the Austrian land register for the period from 2008 to 2013.¶ The subaggregates for used and new condominiums, single-family houses and building plots for single-family houses as well as for rents are shown in the factsheet both for Vienna and for Austria excluding Vienna.¶ The RPPI for condominiums and for single-family homes (breakdown by type of property) is a so-called "imputation index." This index is calculated using the database described above; to avoid a distortion of results, however, the calculation follows a different approach. On the one hand, model estimations are performed for Austria as a whole for each type of property, which means that regional weighting (as in calculating the overall index described above) is not necessary. The estimation is based on semiparametric models that take nonlinearity and spatial heterogeneity into account and produce unbiased quality-adjusted time effects as omitted variable effects are modeled adequately. On the other hand, the use of imputation methods ensures that structural changes in the estimated effects do not have any distorting effects.¶ The indices for condominiums and for single-family houses are then aggregated into an overall index for Austria at a ratio of 76% to 24%. The weightings of the indices for condominiums and single-family houses correspond to the respective shares of the sales of condominiums and single-family houses in the total number of sales transactions recorded in the Austrian land register for the period from 2008 to 2013.¶ Data source: OeNB; Professor Wolfgang Feilmayr (Department for Spatial Planning, TU Wien).¶

B Fundamentals

Fundamentals comprise all objective supply- and demand-side factors that affect the formation of property prices. They include demographics, the general level of prosperity, institutional factors (taxes, housing assistance, level of financial system development, etc.), the availability of land, consumer preferences (higher housing standards), expected (rental) income or interest rates. Subjective factors like personal expectations of future selling prices, by contrast, do not constitute fundamentals. A hike in property prices driven by adjustments to changing fundamentals is not considered a bubble. A bubble is deemed to exist only if prices diverge substantially and for prolonged periods from their fundamentals.

The fundamentals used in calculating the OeNB's fundamentals indicator for residential property prices are presented under item 4; additional fundamentals that do not enter the indicator are presented under item 5.

4 OeNB fundamentals indicator for residential property prices

The OeNB's fundamentals indicator for residential property prices³ is calculated for Vienna and for Austria.

- **4.1 Austria:** Results of the fundamentals indicator for residential property prices for Austria.
- **4.2 Vienna:** Results of the fundamentals indicator for residential property prices for Vienna.

It is composed of seven subindicators that address a variety of data related to households, investors and systemic factors. The *household perspective* is covered by two subindicators that represent different affordability aspects of home ownership (real residential property prices, affordability). The *investor perspective* is covered by two subindicators that reflect the profitability of real estate investments (price-to-rent ratio, price-to-build ratio). The three subindicators that capture the *systemic perspective* attempts to map interrelationships between the residential property market, macroeconomics and financial stability (ability to repay loans, housing investment-to-GDP ratio, interest rate risk).

The tables section of the factsheet on Austria's residential property market shows the contributions of the individual subindicators to the fundamentals indicator for residential property prices in Austria and in Vienna. The levels of the subindicators are evident from the charts section of the factsheet. Three subindicators (profitability [= inverse price-to-rent ratio], affordability and ability to repay loans) enter the composite indicator as inverted measures. The results indicate the percentage by which property is over- or undervalued relative to fundamentals.

Contributions of subindicators

This section presents the seven subindicators of the OeNB's fundamentals indicator for residential property prices in Austria and in Vienna. The values of the subindicators are displayed as contributions to the fundamentals indicator. Contributions are calculated by multiplying the trend deviation of each subindicator with its respective weight.

Real residential property prices

³ Schneider, M. 2013. Are Recent Increases of Residential Property Prices in Vienna and Austria Justified by Fundamentals? In: OeNB. 2013. Monetary Policy & the Economy Q4/13.

Long-term studies using international data have found that real residential property prices (adjusted for consumer price inflation) are stationary in the long run (i.e. over centuries), even if they can be nonstationary for several decades in a row. In other words, the length of the observation period is crucial in this context. A marked hike in real property prices could be an indicator of overheating, but its predictive power for anticipating short-term price corrections is limited. The following variables were used to calculate the subindicator:

- *Residential property prices*: Residential Property Price Index of TU Wien for single-family houses and condominiums in Austria.
- *HICP*: Harmonised Index of Consumer Prices (Statistics Austria).

Affordability

The level of disposable household income is a key determinant of households' purchasing power. When it comes to major purchases such as real estate, however, purchasing power is also strongly affected by the level of interest rates, since the latter determines the maximum mortgage volume affordable for a given household income. To account for the role of both income level and interest rates in loan affordability, we define a "hypothetical borrowing volume," assuming that a household will have a fixed percentage of its income $c \cdot Y_t$ available for mortgage payments. At a given interest rate R_t and a given repayment period T , the maximum borrowing volume is K . R_t is defined as the gross interest rate, which corresponds to 1 plus the nominal interest rate on mortgage loans. The repayment period was set at $T=20$ years. Based on these values, the hypothetical borrowing volume can be calculated according to the following formula:

$$K = \frac{c \cdot Y_t \left[\frac{1 - R_t^{T+1}}{1 - R_t} \right]}{R_t^T}$$

Affordability is defined as the ratio of hypothetical borrowing volume to residential property prices. This ratio reflects the affordability of properties more accurately than analyses based on household income alone, which are often used in the empirical literature. Affordability enters the composite indicator as an inverted measure. The following variables were used to calculate the subindicator:

- *Residential property prices*: Residential Property Price Index of TU Wien for single-family houses and condominiums in Austria (see section 1).
- *Disposable household income*: Disposable household income is a key demand-side factor. It measures the total income of the household sector (including nonprofit institutions serving households) after direct taxes and transfers and is calculated by Statistics Austria in the nonfinancial sector accounts.
- *Lending rates for household loans*: See section 6.3.

Price-to-rent ratio

The price-to-rent ratio represents the relative cost of home ownership versus renting and is considered one of the key fundamentals in the real estate market. In the long run, this ratio should be stationary since rising relative prices for residential properties make renting a more

attractive option, in turn leading to reduced demand for home ownership. The following variables were used to calculate the subindicator:

- *Residential property prices*: Residential Property Price Index of TU Wien for single-family houses and condominiums in Austria (see section 1).
- *Rents*: Rents for Austria were calculated as a weighted average as follows: Rents for Austria = $0.60 \times (0.1 \times \text{rents for single-family houses in Austria excluding Vienna} + 0.9 \times \text{rents for condominiums in Austria excluding Vienna}) + 0.40 \times \text{total rents in Vienna}$. Weights for Austria excluding Vienna reflect the share of rented single-family houses and condominiums; the regional weights correspond to the share of rented residences in total residences.

Price-to-build ratio

Construction costs constitute a supply-side cost factor that contributes to explaining residential property price developments in the long run. The price-to-build ratio corresponds to Tobin's q ratio, which compares the market value of a company with its replacement costs. If the resulting coefficient is greater than 1, the respective company's stock is considered overvalued. Applied to properties, this ratio is calculated by dividing the property price by construction costs. Since property prices and construction costs are only available in index form, the extent of under- or overvaluing measured by the ratio cannot be stated with absolute certainty; rather, only the change of the ratio may be interpreted. A significant limitation inherent in this concept is that it fails to consider land prices, a decisive factor in particular in urban agglomerations. The following variables were used to calculate the subindicator:

- *Residential property prices*: Residential Property Price Index of TU Wien for single-family houses and condominiums in Austria (see section 1).
- *Building costs – residential buildings*: As an input value, the building cost index captures the costs the developer has to bear for material and wages during the completion of the construction project (Statistics Austria).

Ability to repay loans

This indicator captures households' ability to repay housing loans by relating the hypothetical borrowing volume (see above) to the aggregate amount of housing loans actually granted to households. An increase in this indicator implies that higher income or lower interest rates make it easier for households to meet their current housing loan repayment obligations. In that case, banks' exposure to systemic risk will decrease. The ability to repay loans enters the composite indicator as an inverted measure. The following variables were used to calculate the subindicator:

- *Residential property prices*: See section 1.
- *Disposable household income*: See above.
- *Lending rates for household loans*: See section 6.3.

Housing investment-to-GDP ratio

The ratio of housing investment to GDP, i.e. the housing construction rate, represents the supply side. If the construction sector's share in GDP is disproportionately high, this can be considered a sign for a property price bubble. Rising property prices, in turn, stimulate

construction activity, which should dampen residential property prices in the medium term. The following variables were used to calculate the subindicator:

- *Housing investment*: Real housing investment as recorded in the national accounts is calculated by the Austrian Institute of Economic Research (WIFO) and captures residential construction activity.
- *GDP*: The gross domestic product (GDP) measures the domestic production of goods and services less intermediate consumption. It is calculated as the sum of gross value added across all sectors of the economy plus taxes less subsidies on products and imports.

Interest rate risk

The role interest rates play in the evaluation of bubbles is unclear. Interest rates are property market fundamentals. Low interest rate levels drive affordability and thus appear to fundamentally justify higher property prices. From a macroeconomic perspective, however, interest rates are an endogenous factor. Central banks set interest rates according to the prevailing macroeconomic environment, a practice that prompts concern about whether current interest rates actually suit the macroeconomic environment. If they are too low, there is an additional risk of an interest rate rise. For variable rate loans (the most common type in Austria), a rise in interest rates leads to a slump in affordability.

The adequacy of interest rates can be measured by the so-called Taylor rule, which provides a simple description central bank behavior: The appropriate interest rate depends on the equilibrium real interest rate \bar{r}_t , the target inflation rate $\bar{\pi}$, the output gap \hat{Y}_t (= percentage deviation of actual output from potential output) and the gap between the actual inflation rate π_t and the target inflation rate (equation(2)).

$$R_t^T = \bar{r}_t + \bar{\pi} + \alpha_1 * \hat{Y}_t + \alpha_2 * (\pi_t - \bar{\pi}) \quad (2)$$

We applied the Taylor rule to euro area data, with euro area trend growth serving as a proxy for the equilibrium real rate.⁴ The target inflation rate was set at 1.9%, and the adjustment coefficients selected were 0.5 (α_1) and 1.5 (α_2). The following variables were used to calculate the subindicator:

- *Three-month euro area interest rate*: Three-month average euro interbank offered rate (EURIBOR).
- *Taylor-implied rate*: Interest rate as calculated according to the Taylor rule (see above).

5 Additional fundamentals

5.1 Supply-side factors

- **Real housing investment**: The calculation of real housing investment is based on housing statistics data on newly completed dwellings and prices per square meter as well as balance sheet data of the City of Vienna.
- **Building permits – dwelling units in new residential buildings**: Building permits constitute an important source of information on future construction volumes. The respective data are

⁴ Trend growth was determined using an HP filter.

collected by Statistics Austria in their statistics of building activities. Data are derived from the Buildings and Dwellings Register, published by Statistics Austria since 2009. Given their preliminary nature, however, these data must be interpreted with caution.

- **Building permits – gross floor space of new residential buildings:** Gross floor space is given in million square meters.
- **Building prices – residential buildings:** The building price index reflects market price developments for representative construction services, i.e. the end user price the builder-owner pays to the construction company (excluding VAT).
- **Building costs – residential buildings:** The building cost index reflects the development of those costs the builder-owner incurs owing to changes in fundamental costs (material and labor) during building activities.

5.2 Demand-side factors

- **Population – Austria:** This time series captures demographic changes in Austria (quarterly averages).
- **Population – Vienna:** This time series captures demographic changes in Vienna (quarterly averages).
- **Real disposable household income:** Disposable household income is a key demand-side factor. It measures the total income of the household sector (including nonprofit institutions serving households) after direct taxes and transfers and is calculated by Statistics Austria in the nonfinancial sector accounts. It is deflated by the consumption deflator.

C Financing and indebtedness of households

6 Financing

6.1 Housing loans to households

- **Loan volume:** This measure comprises loans for home purchase and improvement granted by domestic banks to households (including nonprofit institutions serving households) as reported by Austrian MFIs for the MFI balance sheet report published by the ECB. The reporting guidelines for MFI balance sheet statistics define housing loans (specifically, “lending for house purchase”) as loans to finance housing (for own use or renting), including residential construction and renovation. Data have been available on a quarterly basis since the third quarter of 1997 and on a monthly basis since January 1999. There are two breaks in the time series: In June 2004, loans to freelance professionals and self-employed persons were reclassified from the nonfinancial corporations sector to the household sector, and since June 2005, loans must be reported inclusive of risk provisions.
- **New loans to households for housing purposes:** This measure comprises new housing loans granted by domestic banks to households (including nonprofit institutions serving households) according to the MFI interest rate statistics on new lending business published by the ECB for the euro area. The definition of housing loans corresponds to the one applied in the MFI balance sheet statistics. Since the statistics on new lending business only feature a breakdown by loan purpose of euro-denominated loans to households this item does not

contain data on new foreign currency-denominated housing loans. Monthly data under this item have been available since January 2009.

6.2 Housing loans to private nonbanks

- **Loan volume:** This measure shows the claims of the Austrian banking sector on all domestic nonbanks⁵ resulting from loans for home purchase and improvement according to the (unconsolidated) asset, income and risk statements all Austrian banks must report to the OeNB. The concept of loans applied here differs slightly from the one used in the MFI balance sheet statistics: Asset, income and risk statements record loans exclusive of risk provisions, but unlike the MFI balance sheet statistics, they include trust assets. This time series has been available on a quarterly basis since the fourth quarter of 1995 (up to December 2006, the data were also available on a monthly basis.)
- **Share of subsidized loans:** This measure captures the share of subsidized loans in total loans outstanding according to banks' asset, income and risk statements. According to the respective reporting guidelines, subsidies comprise subsidized interest rates, repayment subsidies, guarantees and earmarked deposits of public sector bodies and/or institutions established for this purpose (e.g. capital guarantee institution, guarantee fund). An important feature of subsidies is that borrowing is either made possible or made more easily affordable through the involvement of a public sector body. This time series has been available on a quarterly basis since the fourth quarter of 1995 (up to December 2006, the data were also available on a monthly basis.)
- **Share of housing loans in banks' total assets:** Claims on domestic nonbanks resulting from loans for home purchase and improvement (see section 6.1) as a percentage of the total assets/liabilities of the Austrian banking sector.

6.3 Lending rates for housing loans to households

- **Total:** This measure refers to the annualized interest rates for housing loans (new business) to households (including nonprofit institutions serving households) according to the MFI interest rate statistics compiled by the OeNB as the Austrian input for euro area aggregates. In these statistics, new business comprises all loans newly granted in the reporting month as well as all newly negotiated agreements regarding existing loans. The interest rate only refers to interest payments, not to any other related charges. Subsidies are not taken into account. The definition of housing loans is in line with the definition for MFI balance sheet statistics; housing loans are all loans (collateralized or noncollateralized) granted to households for home purchase and improvement (including residential construction and renovation). Interest rates refer exclusively to euro-denominated loans (i.e. foreign currency loans are not included). This item captures borrowers across the euro area. This item shows the capital-weighted average across all lock-in periods. Data have been available on a monthly basis since January 2003.
- **Variable rate loans (lock-in period of up to 1 year):** The definition of this interest rate corresponds to the one applied for "Lending rates for housing loans to households – Total" as described in the entry above. However, this item only covers loans with an initial lock-in period of up to one year. This category is the most relevant by far – lately, variable rate

⁵ Data cover borrowers resident in Austria; the real estate project financed by the loan in question must not necessarily be in Austria, however.

hat gelöscht: ; a breakdown showing only domestic borrowers is not possible...

loans (with a lock-in period of up to one year) have accounted for more than 80% of total housing loans.

- **Effective annual rate of interest:** The effective annual rate of interest reflects total borrowing costs (overall debt of the consumer according to Article 27 para. 2 Consumer Finance Act – Verbraucherkreditgesetz) relative to the loan amount paid out. These total costs comprise an interest-rate component (as disclosed under “Lending rates for housing loans to households – Total”) and other related charges (e.g. loan charges, commitment fees, credit commissions, noninterest rate charges, fees, etc.). The effective annual rate of interest is only available for euro-denominated loans and as an aggregate across all lock-in periods.

6.4 Housing-related aspects of bank funding

- **Housing bonds:** This measure captures the financing of banks for residential construction through the issuance of housing bonds. Around half of housing bonds are issued at fixed and variable rates, respectively; they provide a tax advantage since they are exempt from investment income tax up to a threshold of 4% of the nominal value.
- **Deposits with building and loan associations:** This measure covers deposits held with building and loan associations under building loan contracts.

7 Risk indicators (for households)

- **Indebtedness (% of GDP):** This indicator relates total household debt to Austrian GDP. An assessment of households’ debt-servicing capacity must consider all types of debt held by households, not only housing loans granted by banks. Apart from consumer and other loans, this measure also reflects housing loans granted by other economic sectors (e.g. housing loans extended by regional and local governments). Information on households’ liabilities stems from the OeNB’s financial accounts for Austria. These data cover gross household debt, i.e. household debt is not set off against household assets. By relating these data to GDP, this measure is “standardized”; moreover, this relation is relevant for international comparisons. This time series has been available on a quarterly basis since the first quarter of 2003.
- **Housing loans (% of disposable household income):** This measure relates the housing loans granted to households by Austrian banks – as described under item “Loan volume” (see section 6.2) – to available household income according to the national accounts (moving four-quarter average)⁶. It is an indicator of households’ ability to repay housing loans. This time series has been available on a quarterly basis since the first quarter of 1999.
- **Interest expenses on MFI loans (% of disposable household income):** This measure is calculated on the basis of information on interest rates on existing housing loans and the volumes reported in the MFI balance sheet statistics. The interest rate on outstanding housing loans corresponds to the capital-weighted average interest rate across all existing loans (excluding NPLs and loans that are to be restructured). Since the interest rate statistics only cover loans denominated in euro, the interest burden for foreign currency-denominated housing loans to households is approximated by using interest rates for new

⁶ It must be noted that in this case, debt is expressed in relation to the total disposable income of all households – including households that have not taken out any loans.

lending to enterprises and households denominated in Swiss franc, Japanese yen and U.S. dollar. Using data on the new lending business appears warranted considering the high share of loans with short lock-in periods in total housing loans as well as the fact that the interest rates on foreign currency loans usually mirror the prevailing money market rates. The loan volume as defined under “Loan volume” (see section 6.2) is calculated for housing loans denominated in euro, Swiss franc, Japanese yen and U.S. dollar. Housing loans denominated in other currencies are neglected; in terms of magnitude, however, they are in fact irrelevant. An arithmetical measure of interest expense and interest burden is derived by multiplying the interest rates with the volume of outstanding loans. This method, however, disregards additional costs of borrowing (other than interest rate charges) as well as subsidies, which play an important role especially for housing loans. Moreover, it covers only interest payments, not repayments of principal. Payments toward repayment vehicles for bullet loans (in particular foreign currency loans) are not included, either. The interest payments thus calculated are put in relation to a moving four-quarter average of disposable household income according to the national accounts. This time series has been available on a quarterly basis since the first quarter of 2003.

- **Variable rate loans (% of total new loans):** The data contained in the interest rate statistics on new lending business (including prolongations) reported for the aggregation of rate fixation bands into a composite measure allow for the calculation of the share of variable rate loans in new lending; in this calculation, loans with a lock-in period of up to one year are considered variable rate loans. Only euro-denominated loans are recorded. This indicator points to interest rate risk. Like all interest rate statistics data, this time series has been available monthly since January 2003.
- **Foreign currency loans (% of total loans):** This measure captures all foreign currency-denominated housing loans granted by banks to households as a percentage of all housing loans and thus indicates the exposure of household financing to exchange rate risks. For a definition of these measures, see section 6.1 (“Loan volume”). As foreign currency loans are valued at the respective current exchange rate, the time series fluctuates not only in line with newly granted (or redeemed) loans, but also as a result of exchange rate fluctuations. This measure also reflects conversions from foreign currency loans to euro-denominated loans. Data have been available on a quarterly basis since the third quarter of 1997 and on a monthly basis since January 1999.

Additional Time Series – Charts

The charts show additional time series from the bank lending survey (BLS). These series are based on the Austrian results of the euro area bank lending survey, which has been conducted on a quarterly basis since January 2003. The BLS questionnaire contains 18 qualitative questions about past and expected future changes in lending to enterprises and households. The breakdown of the survey by sectors and loan purposes more or less reflects that of the MFI balance sheet statistics. Currently, seven Austrian banks participate in the BLS. Answers are aggregated by means of a diffusion index that weights the possible answers “somewhat” and “basically unchanged” by the factor 0.5 and the option “considerably” by the factor of 1. This corresponds to the format in which the OeNB regularly publishes the national results of the BLS.

Credit Standards and Loan Demand (Bank Lending Survey)

- **Demand for housing loans:** Aggregate answers to question 13: “Over the past three months, how has the demand for loans to households changed at your bank, apart from normal seasonal fluctuations?” – Loans for house purchase.
- **Credit standards for housing loans:** Aggregate answers to question 8: “Over the past three months, how have your bank’s credit standards as applied to the approval of loans to households changed?” – Loans for house purchase. The BLS glossary defines credit standards as the internal guidelines or criteria that reflect a bank’s lending policy. They are the written and unwritten criteria, or other practices related to this policy, which define the types of loan a bank considers desirable and undesirable.

Terms/Conditions for Housing Loans (Bank Lending Survey)

- **Collateral requirements:** Aggregate answers to question 10: “Over the past three months, how have your bank’s conditions and terms for approving loans to households for house purchase changed? – B) Other conditions and terms – Collateral requirements.” The BLS glossary defines collateral as follows: The security given by a borrower to a lender as a pledge for the repayment of a loan. This could include certain financial securities, such as equity or debt securities, real estate or compensating balances. (A compensating balance is the minimum amount of a loan that the borrower is required to keep in an account at the bank.)
- **Loan-to-value ratio:** Aggregate answers to question 10: “Over the past three months, how have your bank’s conditions and terms for approving loans to households for house purchase changed? – B) Other conditions and terms – ‘Loan-to-value’ ratio.” The BLS glossary defines the loan-to value ratio as follows: The ratio of the amount borrowed to the appraisal or market value of the underlying collateral, usually employed in relation to loans for real estate financing.