

An Assessment of Recent Increases of House Prices in Austria through the Lens of Fundamentals

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1 Introduction

The housing sector is one of the most important sectors of an economy. Since residential property is the most important component of households' wealth, house prices affect household's consumption and investment decision via wealth effects. The construction sector impacts on the overall business cycle and on employment trends. As real estate is often used as collateral for loans, changes in house prices affect households' debt and their ability to repay loans and, as a result, also have an impact on the banking sector. The housing sector of a country has therefore far-reaching implications for the overall economy and for financial stability.

An increasing number of central banks are monitoring developments of real markets on a regular base. The European Central Bank publishes a misalignment indicator for residential property markets in a number of euro area countries in its Financial Stability Review (ECB, 2011). It is based on four different measures (house price-to-rent ratio, house price-to-income ratio, a demand equation approach and an asset pricing approach). The Deutsche Bundesbank publishes regular analysis of the German residential property market since 2009. In October 2013, the Deutsche Bundesbank found overvaluations of house prices of up to 20% in attractive cities (Bundesbank, 2013). The Schweizerische Nationalbank (SNB) is involved in a new macroprudential framework. The SNB's duty is to analyze risks to the banking sector, including the monitoring of real estate and mortgage markets.

Given the recent surge in house prices in Austria and above all in Vienna, fears of an emerging real estate price bubble in Austria evoked. The Oesterreichische Nationalbank (OeNB) has therefore developed a fundamentals indicator for residential property prices, which serves to assess deviations of house prices from fundamentally justified prices (Schneider, 2013). This indicator tracks developments in the residential property market and serves as an alert mechanism, helping to identify adverse developments in good time.

This paper gives an overview of the construction of the indicator and the empirical results for Austria and Vienna. In addition, the indicator is implemented for a number of euro area countries where sufficient data are available.

2 The Indicator

The fundamentals indicator for residential property prices combines seven subindicators that monitor a variety of data related to households, investors and systemic factors (real residential property prices and affordability, price-to-rent ratio, price-to-build ratio, ability to repay loans, housing investment-to-GDP ratio, interest rate risk). Representing the aggregate result of these seven subindicators, the fundamentals indicator for residential property prices reflects the percentage by which residential property prices deviate from the prices of the underlying fundamentals.

2.1 Real Residential Property Prices

Real residential property prices are obtained by dividing residential property prices by the consumer prices. This ratio represents the price of housing relative to a basket of consumer goods. Long-term studies using international data have found that real property prices (corrected for consumer price inflation) are stationary in the long run. Here, the length of the observation period is crucial, and in this context, “long term” implies centuries, since there may even be periods of several decades during which real property prices are nonstationary. Therefore, a marked hike in real prices may be an indicator of overheating, while the predictive power for short-term corrections is low.

2.2 Affordability

Affordability is an important measure for assessing residential property prices. The simplest measure of affordability – the ratio of residential property prices to household income – has important shortcomings. When it comes to purchases of big-ticket items such as real estate, however, the level of interest rates also plays a crucial role, since it determines the maximum affordable mortgage payment based on a given household income. To account for both, income level and interest rates, a “hypothetical borrowing volume” (see Schneider, 2013 for details on the calculation), which defines the maximum affordable mortgage volume for a given household income and interest rate. Affordability is defined as the ratio of hypothetical borrowing volume to property prices. That ratio reflects the affordability of properties more accurately than analyses based on household income alone, such as are

often found in empirical studies. The inverted affordability is included in the composite indicator.

2.3 Price-to-Rent Ratio

The price-to-rent ratio represents the relative cost of home-ownership versus renting. In the long term, the 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.

2.4 Residential Property Prices to Construction Costs

Construction costs are an important supply-side cost factor, an element that contributes to explaining the development of residential property prices in the long term. The association between construction costs and property prices is measured by Tobin's q , a company performance indicator calculated by dividing the market value of a company by its replacement cost. If the resulting coefficient is greater than 1, a company's stock is considered overvalued. Applied to properties, the cost factor is calculated as the property price divided by the construction costs. Since property prices and construction costs are available only in index form, the extent of overvaluation or undervaluation cannot be stated with absolute certainty; rather, only the change may be interpreted. An inherent limitation in this concept is that it fails to consider land prices, a decisive factor in urban agglomerations.

2.5 Loan-Bearing Capacity

This indicator measures households' ability to repay home loans by relating the hypothetical borrowing volume to the aggregate amount of home loans actually granted to them by Austrian banks. An increase in this indicator implies that higher income or lower interest rates place households in a better position to meet the repayment obligations for their outstanding loans, thereby reducing banks' exposure to systemic risk. The inverted loan-bearing capacity is included in the composite indicator.

2.6 Housing Investment-to-GDP Ratio

The ratio of housing investment to GDP, the housing construction rate in short, represents the supply side. A building sector that accounts for a disproportionately high percentage of GDP implies a state of overheating, which can be interpreted as a sign of a housing bubble. Conversely, rising property prices stimulate construction, which should dampen price spikes in the medium term. Nationwide, the

housing construction rate peaked out in the mid-1990s and has been declining ever since. In Vienna, that trend is even more pronounced than in the rest of Austria.

2.7 Interest Rate Risk

The role interest rates play in the evaluation of bubbles is unclear. Interest rates are a fundamental factor in real estate markets: Low interest rate levels drive improved housing affordability and thus appear to fundamentally justify higher property prices. From the 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 a subsequent interest rate rise, which leads to a slump in affordability wherever variable-interest loans (the most common type in Austria) are involved. The question of whether interest rates are suited to the macroeconomic environment can be answered by using the “Taylor rule,” which provides a simple description of a central bank’s behavior: The appropriate interest rate depends on the equilibrium real interest rate, the target inflation rate, the output gap (percentage deviation of actual output from potential output) and the gap between the actual inflation rate and the target inflation rate.

To ensure comparability with other subindicators, a hypothetical borrowing volume (see above) is calculated at different interest rates (i.e., the three-month interest rate and the Taylor interest rate). The subindicator represents the ratio of the two resulting hypothetical borrowing volumes.

3 Trend Adjustment and Weighting

Based on the subindicators discussed in the foregoing sections, the fundamental residential property price indicator was calculated in two steps.

3.1 Trend Adjustment

The percentage of deviation from a historical average was calculated for each subindicator with mean values adopted for most indicators (real property prices, affordability, property prices versus construction costs, property prices versus rentals, interest rate risk). A linear trend was applied to the housing construction rate since – as with all other components of domestic demand – it shows a downward trend spurred by steadily increasing internationalization. To account for the distortion caused by foreign currency bullet loans, a smooth HP trend was used for the loan-bearing capacity. Affordability and loan-bearing capacity were inverted to

enable comparability with the other subindicators (a positive value indicates overvaluation).

3.2 Weighting

The indicator is determined by calculating a weighted sum of the subindicators. The required weighting factors were determined by applying a principal components analysis. This approach has the advantage to take the correlation between the subindicators into account. The number of factors used was selected to permit explanation of the highest possible fraction of variance in the dataset using the smallest possible number of factors.

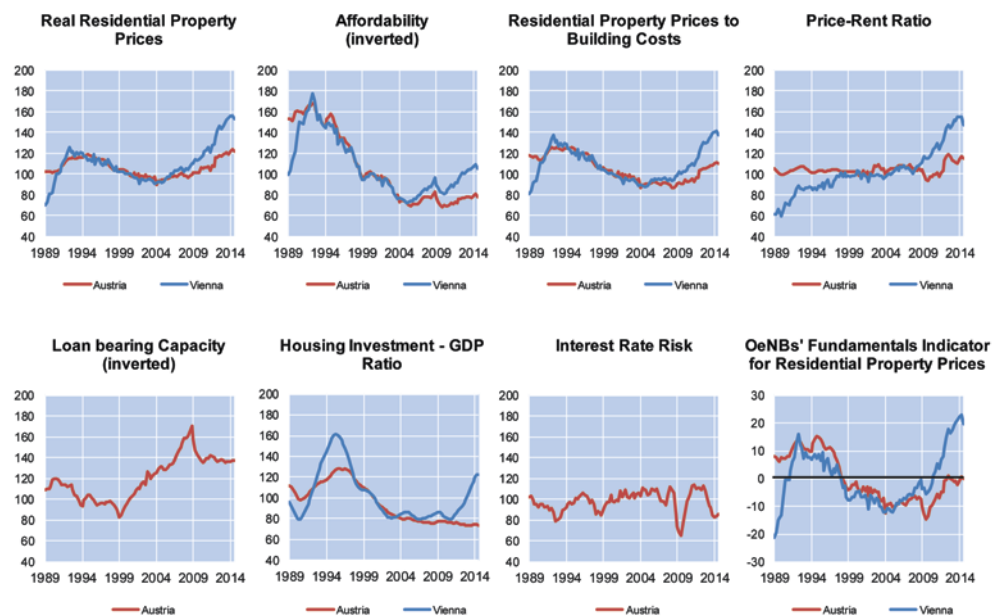
4 Results of the Indicator

4.1 Results for Austria and Vienna

Chart 1 shows the detailed results of the fundamentals indicator for residential property prices including its subindicators for Vienna and Austria. For Vienna, the indicator reflects a pattern of overvaluation, which currently (third quarter of 2014) stands at 20% (right chart in second row). Five out of seven subindicators point to an overvaluation of house prices in Vienna, since they are above their long-term averages. This holds especially for real house prices and the price-rent ratio, which are more than 50% above their means. Only affordability and the interest risk are currently below their long-term averages and thus have a dampening effect on overvaluation. That conclusion coincides with recent findings by the Deutsche Bundesbank (2013), which identified overvaluations of 5% to 10% in urban housing markets and up to 20% in attractive major cities.

For Austria as a whole, the indicator shows that residential property prices are in line with fundamentals and even correspond exactly to these in the third quarter of 2014, having remained practically unchanged against the second quarter.

Chart 1: Detailed Results of the Fundamentals Indicator for Residential Property Prices for Austria and Vienna

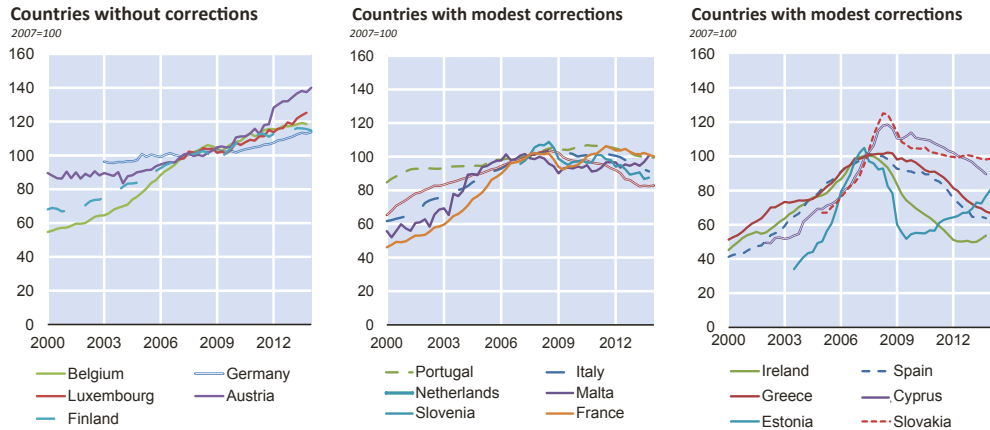


Source: Author's calculations.

4.2 Results for Selected Euro Area Countries

Chart 2 shows the development of house prices for 17 euro area countries. The countries are grouped into three groups. The first group consists of five countries where no house price correction occurred (Austria, Belgium, Finland, Luxembourg and Germany). The second group consists of six countries with modest corrections (France, Italy, Malta, Netherlands, Portugal and Slovenia). The countries of the third group (Cyprus, Estonia, Greece, Ireland, Spain and Slovakia) have experienced strong corrections of house prices. While it can easily be seen that countries in group three have seen unsound developments, the situation is not clear for countries in the first two groups. Simple eyeballing does not help much in assessing house price developments.

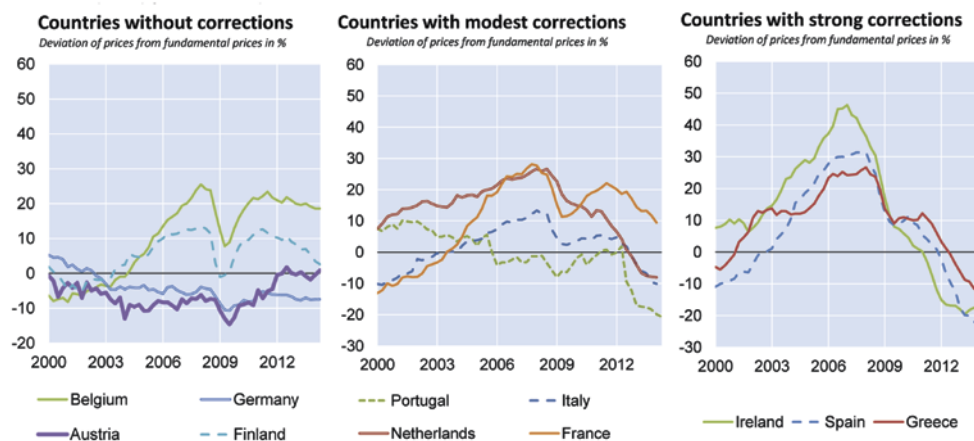
Chart 2: House Price Developments in Euro Area Countries



Source: ECB (Statistical Data Warehouse).

Chart 3 shows the results of the Fundamentals Indicator for Residential Property Prices for those euro area countries, where sufficient data are available. It demonstrates the ability of the indicator to distinguish between sound and unsound developments. From the group of countries without correction Belgium stands out with the highest degree of overvaluation of house prices. In Austria and Finland prices are in line with fundamentals, whilst in Germany house prices seem to be undervalued. From the group with countries with modest corrections, France seems to be the only country where prices are overvalued, although the degree of overvaluation is declining. In the other three countries (Italy, Netherlands and Portugal), house prices are below fundamentals. In Greece, Ireland and Spain (which saw strong corrections), prices are currently clearly below fundamentals.

Chart 3: Fundamentals Indicator for Residential Property Prices for Euro Area Countries



Source: Author's calculations.

References

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- ECB (2011): Tools for detecting a possible misalignment of residential property prices from fundamentals. Box 3 in Financial Stability Review 57 (June 2011), 57–59.
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