

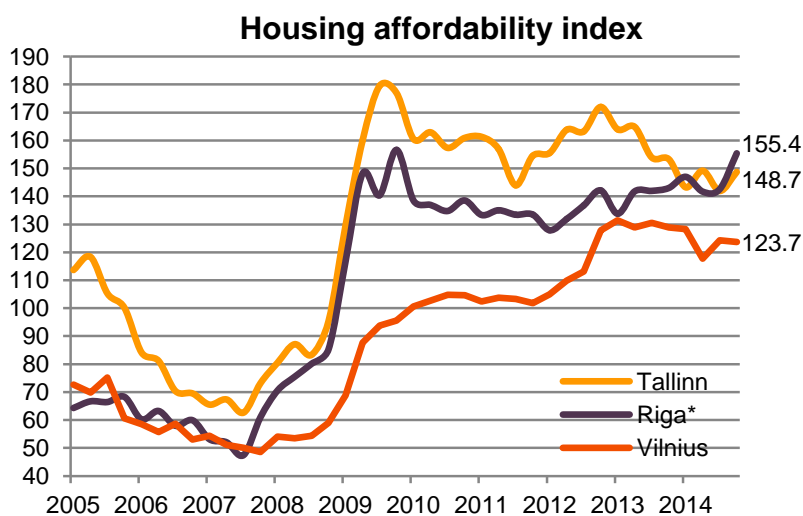
6 March, 2015

## Baltic Housing Affordability Index

**The housing affordability index (HAI) decreased to 148.7 in Tallinn and 123.7 in Vilnius, but increased to 155.4 in Riga**

- In Tallinn, affordability diminished by 4.6 points in the fourth quarter last year compared with the same period in 2013, due to a 12.1% annual increase in apartment prices.
- In Riga, the HAI rose by 12.4 points because wage growth outpaced apartment price growth.
- In Vilnius, the HAI fell by 5.2 points because of a 15.1% annual increase in apartment prices.
- The time needed to save for a down payment increased over the past year by two months in Tallinn, to 29.3 months, and by three months and one week in Vilnius, to 37.8 months. It decreased in Riga by two months, to 25.8 months.

*The housing affordability index (HAI) is calculated for a family whose income is equal to 1.5 of average net wages with an average-sized apartment of 55 square meters. The HAI is 100 when households use 30% of their net wages for mortgage costs. When the HAI is at least 100, households can afford their housing, according to the established norm. The higher the number, the greater the affordability.*



Sources: National central banks, ECB, National statistical departments, Lithuanian Centre of Registers, Latvian State Land Service and National Real Estate Cadastre, Estonian Land Board and Swedbank.

\* price data from 2011 was revised in Riga



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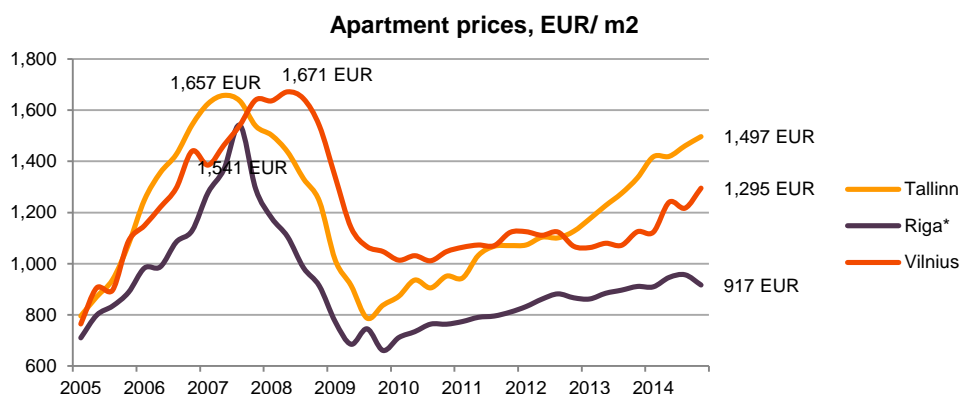
## Components of HAI: apartment prices, interest rates, and wages

### Apartment prices and real estate market developments

Apartment prices continued their rapid pace of growth in Tallinn and in Vilnius, whereas in Riga they almost did not change in a year.

#### Annual growth, 4<sup>th</sup> quarter, %

Tallinn: 12.1  
Riga: 0.6  
Vilnius: 15.1



\* price data from 2011 was revised in Riga

In the fourth quarter of 2014, annual apartment price growth in **Tallinn**, although still fast, decelerated somewhat for the third quarter in a row, to 12%. In a quarterly comparison, prices grew slightly over 2%. Prices grew in all regions; the fastest in the city centre and in northern Tallinn. One of the main reasons for the price growth was the sales of new and more expensive apartments. Prices were about 10% lower than during their peak in 2007. Despite high price growth, activity, which had been decreasing for two previous quarters, improved somewhat and was basically flat in the last quarter of the year, as the number of deals decreased only by -0.8% year on year (YoY). The activity on the loan market remained solid – housing loan stock grew by 2.85% and new loans by 18% YoY in the fourth quarter, supported by wage growth and low interest rates. Interest rates are expected to remain low in the near future. To minimize the probability of a housing loan boom, the central bank introduced three housing loan restrictions as of March 1. These limits – loan-to-value ratio of 85%, debt service-to-income ratio of 50%, and maximum maturity of loans of 30 years - are in line with the existing conditions in the commercial banks and will not have a significant impact on the volume of housing loans issued. To soften the impact of the new restrictions, an exception is also being made that 15% of new housing loans issued do not need to meet the new criteria.

**In Riga**, activity in the residential real estate market cooled down in the last quarter of 2014, with the number of transactions declining by 12.7% annually. Decrease in demand was the main reason for the slowdown. Nonresident demand, a large proportion of which is generated by citizens of Russia, was hindered by the weaker Russian economy and its rouble, and to some extent also by legislative changes making it more costly for foreign investors to obtain residence permits from buying a property. Domestic legal framework changes had some negative impact on the resident demand. The parliament had introduced a nonrecourse clause for mortgage loans (i.e., in case of a default, debt is limited only to the value of the property at market price), which resulted in a sharp increase in the required down payment and thus impaired the ability of households to obtain a mortgage loan. Recently, however, the legal framework was modified again, and the nonrecourse clause was made optional (i.e., households are now able to choose whether to take a loan with or without a nonrecourse clause, the down payment for the latter being considerably lower). These amendments are in force as of March 1, 2015. Lower demand decelerated annual price growth, which was at a marginal 0.6% in the fourth quarter of last year, compared with 6-7% in the first three quarters. The decline in nonresident demand might have had an effect on the price of new projects in the suburbs, which decreased by 5.3% in annual terms. While falling on a quarterly basis, the price of new projects in the city centre, demand for which has usually been particularly high among nonresidents, maintained a solid annual growth rate of 26.4%. Prices of old projects in the city centre continued to decline in annual terms, by a noticeable 14.4% in the last quarter of 2014. Prices of old projects in the suburbs, which form the majority of the supply of the apartments in Riga, maintained a moderate 6% annual growth.

In **Vilnius**, the activity decrease in the real estate sector accelerated to 8.8% in the fourth quarter of last year compared with the same period a year ago. Annual price growth remained high, at 15.1% in the fourth quarter. Activity decreased due to a fall of 21.4% in the number of deals in the old apartment segment (two-three years and older), while activity growth in the new apartment segment remained rapid (33.3% higher than a year ago). This

shows that both supply and demand for new apartments remained quite high. Even though the number of completed apartments slightly decreased in a year, the number for apartments for which building permits were granted was, in the fourth quarter of last year, twice as high as a year ago. This means that supply of new apartments will remain sufficient and should prevent such rapid price growth, going forward. The price growth in the fourth quarter was driven by the new apartment segment. The price of new apartments in the fourth quarter of last year was higher by 20% than a year ago, while price growth of old apartments decelerated to a more sustainable level - 8%. Price growth in the new apartment segment could be at least partly explained by the larger share of purchases of more luxurious apartments.

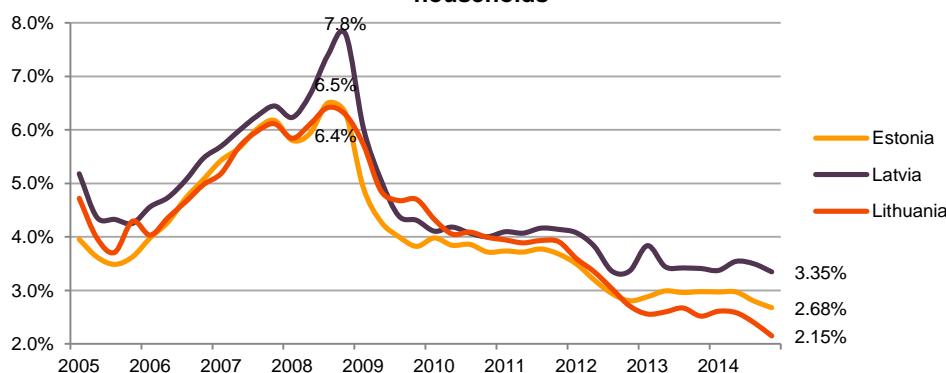
### Interest rates on mortgages

Mortgage interest rates decreased on an annual basis in all three countries. The six-month euro interbank offered rate (Euribor), which is most commonly used for mortgage interest rates in Estonia and Lithuania, decreased from 0.35% in the fourth quarter of 2013 to 0.18% in the fourth quarter last year. The three-month Euribor (most commonly used for mortgage interest rates in Latvia) also decreased, by 16 basis points, during the same period.

#### Annual growth, 4<sup>th</sup> quarter, basis points

**Estonia: -30**  
**Latvia: -6**  
**Lithuania: -37**

Annual percentage rate of charge for new mortgages to households



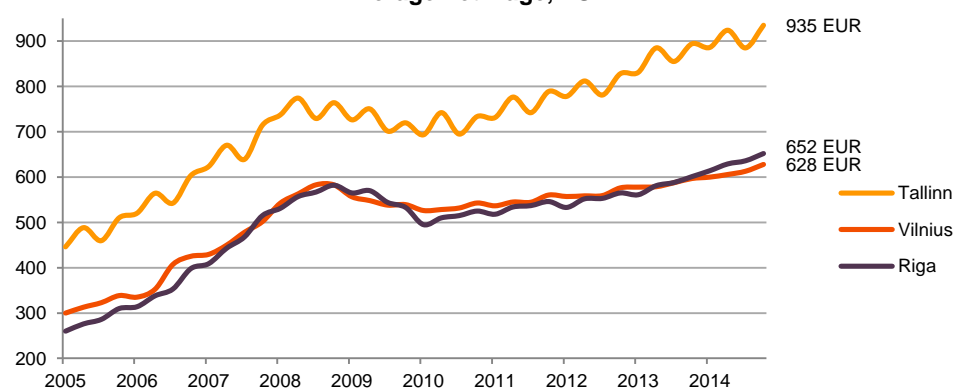
### Average net wages

Annual wage growth accelerated in Tallinn and Vilnius, but growth in Riga remained the highest.

#### Annual growth, 4<sup>th</sup> quarter, %

**Tallinn: 4.6**  
**Riga: 8.5**  
**Vilnius: 5.2**

Average net wage, EUR



Sources: National statistical departments.

The HAI value of 148.7 in Tallinn means that household net wages in this city are 48.7% higher than required to afford an apartment, according to our norm (mortgage costs account for 30% of net wages of a household that earns 1.5 of the average net wage). In Riga, meanwhile, household net wages are 55.4% higher – and, in Vilnius, 23.7% higher – than required to fulfil this norm.

### Months to save for the down payment

Over the past year, the number of months needed to save for a down payment, which equals 15% of an apartment price, increased by two months in Tallinn and by three months

and one week in Vilnius. Due to wages rising faster than housing prices, the number decreased by two months in Riga.

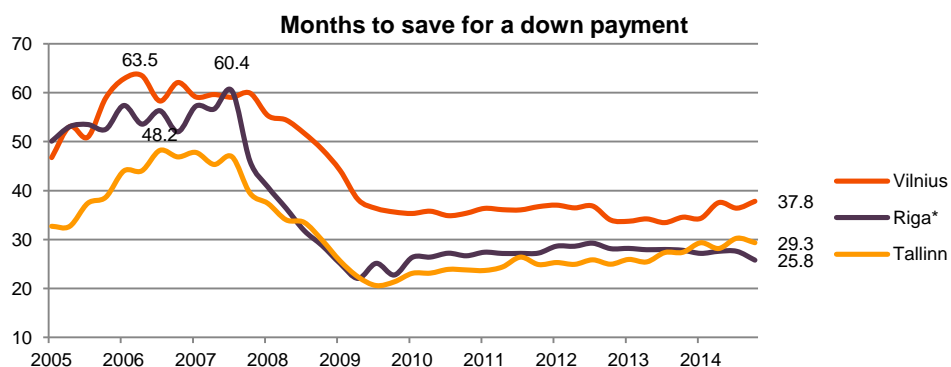
It is assumed that a household saves 30% of its net wages every month for a down payment.

### Annual growth, 4<sup>th</sup> quarter, months

Tallinn: 2.0

Riga: -2.0

Vilnius: 3.3



Sources: National statistical departments, Lithuanian Centre of Registers, Latvian State Land Service and National Real Estate Cadastre, Estonian Land Board and Swedbank.

\* price data from 2011 was revised in Riga

### Sensitivity analysis

Sensitivity analysis shows that, if apartment prices were to rise by 20%, apartments would remain affordable in all three cities. The affordability margin would narrow by 20.6 points in Vilnius, by 25.9 points in Riga, and by 24.8 points in Tallinn, to 103.1, 129.5, and 123.9, respectively.

The margins would disappear in each of the three Baltic capitals if apartment prices were to increase by more than 23.7% in Vilnius, by 55.4% in Riga, and by 48.7% in Tallinn – i.e., by the amount of the current margins. Households would no longer be able to afford apartments if interest rates were to increase by more than 1.7 percentage points in Vilnius, more than 3.9 percentage points in Riga, and more than 3.4 percentage points in Tallinn, if other variables remained unchanged.

**Housing affordability index: method**

**Purpose** Measure changes in household buying power, primarily as this relates to apartment purchases but also act as an indicator for existing housing.

**Norm** Household mortgage costs, according to our definition, should not exceed 30% of net wages of a household.

**Definition of housing affordability index** Actual income in relation to income required to meet the "norm," where mortgage costs account for 30% of net wages of a household. If the index = 100, households are using 30% of their net wages. If the index > 100, household buying power exceeds the norm. And if the index < 100, household buying power is below the norm. The index is calculated according to the following formula:

$$HAI = \frac{AverageINC}{NINC} * 100$$

where

$$NINC = \frac{PMT}{30\%}$$

*HAI* – housing affordability index  
*AverageINC* – 1.5 of average monthly net wages  
*NINC* – net wages that would satisfy the "norm"  
*PMT* – monthly mortgage payment

**Variables**

- Three-month average prices of apartments of average size (55 sq. m.) in capitals.
- Average net wages of a household, equal to 1.5 of average monthly net wages in capital cities.
- Three-month average interest rates and other related charges (or annual percentage rate of charge - a rate that comprises an interest component and a component of other charges) for new housing loans to households issued in euros for Latvia and Estonia and weighted against different currencies (the litas and the euro) in Lithuania -- produce the monthly mortgage cost, assuming a 15% down payment and 30-year term.

**Limits** The housing affordability index includes mortgage costs but excludes taxes and subsidies, including property tax and interest deductions. The index provides an indication of the situation for households composed of one or two working people who, combined, earn one-and-a-half times the average monthly wage; however, it does not reflect conditions for individual households. The index does not provide any direct guidance for business decisions, including lending and interest rate decisions. It reflects household buying power, based on apartment purchases that have been made, but says nothing about opportunities for apartment sales.

The housing affordability index is of an informative nature and reflects macroeconomic developments, rather than banks' decisions and lending policies or possible decisions made by individual households.

**Periodicity** Quarterly

**Geography** Vilnius, Riga, Tallinn

## Appendix 1

	Housing affordability index			Months to save for the down payment		
	Tallinn	Riga	Vilnius	Tallinn	Riga	Vilnius
2005 Q1	113.7	64.3	72.6	32.7	50.1	46.7
2005 Q2	118.4	66.7	69.8	32.7	53.1	53.1
2005 Q3	105.2	66.4	75.2	37.4	53.5	50.9
2005 Q4	100.1	68.3	60.5	38.6	52.5	58.9
2006 Q1	84.2	60.2	58.6	44.0	57.4	62.8
2006 Q2	81.2	63.2	55.8	44.0	53.6	63.5
2006 Q3	70.4	57.9	58.6	48.2	56.3	58.3
2006 Q4	69.5	59.9	53.1	46.9	52.0	62.1
2007 Q1	65.5	53.1	54.4	47.8	57.3	59.1
2007 Q2	67.4	52.0	51.1	45.3	56.6	59.6
2007 Q3	62.6	47.4	50.0	46.9	60.4	59.1
2007 Q4	73.2	61.1	48.5	39.5	46.0	59.9
2008 Q1	80.5	70.6	54.1	37.3	40.7	55.3
2008 Q2	87.1	75.5	53.5	34.0	36.4	54.4
2008 Q3	83.3	80.1	54.4	33.5	31.8	51.7
2008 Q4	95.4	85.3	59.0	29.8	28.8	48.4
2009 Q1	129.6	116.8	68.8	25.6	25.1	44.1
2009 Q2	160.0	148.2	87.7	22.3	22.0	38.1
2009 Q3	179.5	140.4	93.9	20.6	25.1	36.3
2009 Q4	176.9	156.6	95.5	21.3	22.7	35.6
2010 Q1	160.5	138.5	100.6	23.1	26.4	35.3
2010 Q2	162.9	136.9	102.7	23.1	26.4	35.8
2010 Q3	157.3	134.8	104.9	23.9	27.2	34.9
2010 Q4	160.9	138.5	104.6	23.8	26.7	35.4
2011 Q1	161.3	133.3	102.4	23.7	27.4	36.4
2011 Q2	156.9	135.0	103.8	24.4	27.1	36.1
2011 Q3	144.0	133.4	103.4	26.4	27.2	36.0
2011 Q4	154.5	133.5	101.8	24.9	27.2	36.7
2012 Q1	155.5	127.9	104.9	25.3	28.6	37.0
2012 Q2	163.8	131.9	109.8	24.9	28.6	36.5
2012 Q3	163.2	136.8	113.2	25.8	29.2	36.8
2012 Q4	172.0	142.1	127.9	24.9	28.1	34.0
2013 Q1	164.0	133.8	131.4	25.9	28.2	33.7
2013 Q2	164.9	141.8	128.9	25.4	27.9	34.2
2013 Q3	153.9	142.0	130.6	27.3	28.0	33.4
2013 Q4	153.3	143.0	128.9	27.4	27.8	34.6
2014 Q1	143.2	147.0	128.2	29.3	27.2	34.3
2014 Q2	149.2	141.7	117.7	28.2	27.6	37.5
2014 Q3	141.9	142.6	124.3	30.3	27.6	36.4
2014 Q4	148.7	155.4	123.7	29.3	25.8	37.8
High	179.5	156.6	131.4	48.2	60.4	63.5
Low	62.6	47.4	48.5	20.6	22.0	33.4
Average	128.4	109.1	89.2	31.1	35.8	44.3

Sources: National central banks, National statistical departments, Lithuanian Centre of Registers, Latvian State Land Service and National Real Estate Cadastre, Estonian Land Board, Swedbank



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