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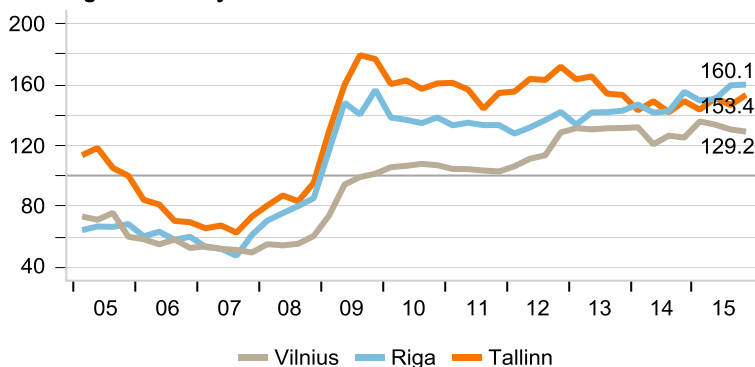
Baltic Housing Affordability Index

The housing affordability index (HAI) increased to 129.2 in Vilnius, 160.1 in Riga, and 153.4 in Tallinn

- In Tallinn, affordability rose by 4.2 points in the fourth quarter last year compared with the same period in 2014, mainly due to a 6.6 % rise in net wages, which continued to surpass the apartment price growth.
- In Riga, the HAI increased by 4.7 points also due to 7.7% higher wages.
- In Vilnius, the HAI rose by 4 points because of 4.3% higher wages and slowly rising flat prices.
- The time needed to save for a down payment decreased by 3 weeks in Tallinn, to 28.5 months, by 1 month and 1 week in Riga, to 24.6 months, and by 1 month in Vilnius, to 36.8.

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.

Housing affordability index



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



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

Apartment prices and real estate market developments

Apartment price growth further slowed down in Tallinn, but remained the highest among Baltic countries. Price growth was the smallest in Vilnius partly due to high base as prices rose significantly at the end of 2014 before the euro introduction due to spike in demand.

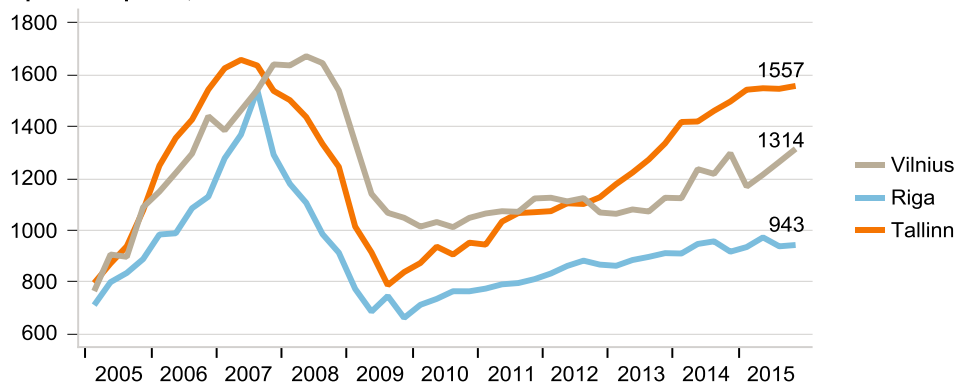
Annual growth, 4th quarter, %

Tallinn: 4.0

Riga: 2.8

Vilnius: 1.3

Apartment prices, EUR/m²



Source: Estonian Land Board, Latvian State Lands Service, Lithuanian Centre of Registers

The activity in residential real estate market in **Riga** continued to recover from the lows of the first quarter of 2015, with the total number of transactions in the last quarter growing by 9% annually and reaching a level slightly above the 2013-2014 average. The activity pickup-up remains to be resident-driven, while non-resident demand in the last quarter continued to be sluggish. The improved resident sentiment is partly supported by a state-guarantee mortgage loan programme for families with children. In the period of mid-March, when the programme gained momentum, until the end of 2015 ca 7-8% of resident deals in Riga were with the state-guarantee. With the currently available funding for the programme, it is expected that it will continue to support resident activity also in the first half of this year, while the funding for further periods is currently uncertain. New mortgage lending grew by 17% annually in the last quarter; household mortgage credit stock, however, was still by 4.4% lower than a year ago.

The average apartment price grew by 2.8% annually in the fourth quarter of 2015. Prices of Soviet-time apartments in the suburbs, which form the majority of the supply of the apartments in Riga, kept growing moderately for the second consecutive year (up by 4.5% annually in the last quarter). New projects in the city centre in the fourth quarter were by 11% cheaper than a year ago. This is to a large extent explained by new cheaper construction projects coming into market, which, given the rather small total number of the deals in this segment, can considerably lower the average price. Overall, the supply of new apartments remains to be balanced with the demand. In the economic segment, which still forms the major part of apartments bought by the residents, there are currently ca 1000 unsold apartments and another 300 apartments under construction. With the current turnover in the primary market, this makes it less than two years of sales – this will have a limiting effect on the price growth, yet is unlikely to hinder it.

Real estate market is stabilizing in **Tallinn**, which is in line with our expectations. The growth in apartment prices as well as in the number of deals is slowing down. The annual growth in the number of deals dropped to 16% in the fourth quarter, having previously been as high as 28% in the second quarter of 2015. The annual growth of apartment prices has also continued deceleration – from nearly 6% in the third to 4% in the last quarter of 2015. Fourth quarter apartment prices in the city center were 4% lower than a year earlier due to changes in the average price of newer apartments. Preliminary data for February though, shows some recovery of price growth in the city center. In other major regions of the city, fourth quarter's price growth remained in the range of 5-11%, year on year.

At the same time, average annual median price growth has continued, at around 7%, exceeding the mean value since September 2015. Furthermore, in the second half of 2015, price statistics by year of construction show a gradual decrease in prices of apartments built after 2011. Therefore, the prices of newer and more expensive apartments have contributed more to the slowdown of price growth in Tallinn in recent quarters.

The number of new apartment constructions completed has increased substantially in the fourth quarter. Inventory of new unsold apartments in Harju County has grown very high. At the same time, the number of construction projects started has remained on the same level,

keeping up the supply of new apartments in the near future. On the other hand, consumers' willingness to build or purchase a new home within the next 12 months has dropped two quarters in a row, suggesting a possible drop in demand in the future. We therefore expect continued pressure on real estate prices that should keep the price growth of apartments in Tallinn relatively stable.

In **Vilnius**, activity last year decreased by 3.3%. However, that was mainly due to weak first quarter of 2015 and after that we saw a gradual recovery. Average price rose by 1.8%. Even though the supply of new apartments last year was high, it seems that the demand remained rather strong as well. Accelerating wage growth, high affordability, low interest rates, high rent yields and lack of alternative profitable investments should continue to fuel demand for real estate this year as well. For example in January the stock of loans for house purchase increased by 5% compared with the same period a year – this was the fastest growth since 2009. However, as the supply of new apartments is expected to remain sufficient, we do not expect apartment prices rising faster than wages this year.

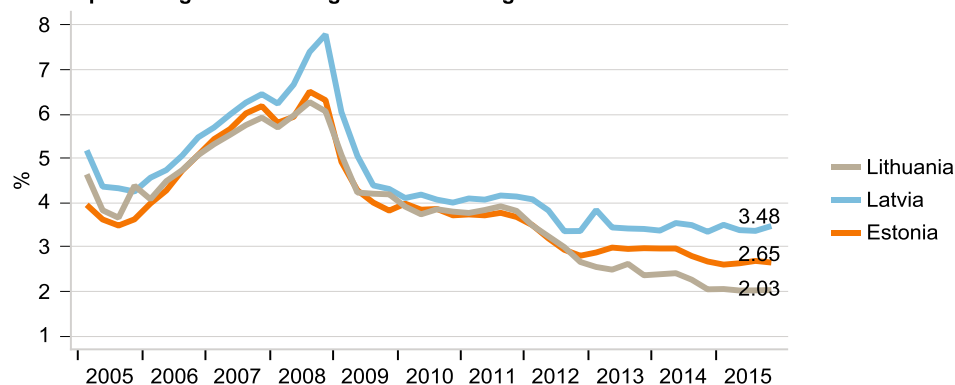
Interest rates on mortgages

Mortgage interest rates decreased on an annual basis in Lithuania and Estonia, but rose in Latvia. The six-month euro interbank offered rate (Euribor), which is most commonly used for mortgage interest rates, decreased from 0.18% in the fourth quarter of 2014 to -0.01% in the fourth quarter of last year.

Annual growth, 4th quarter, basis points

Estonia: -2
Latvia: 13
Lithuania: -2

Annual percentage rate of charge for new mortgages to households



Source: European Central Bank

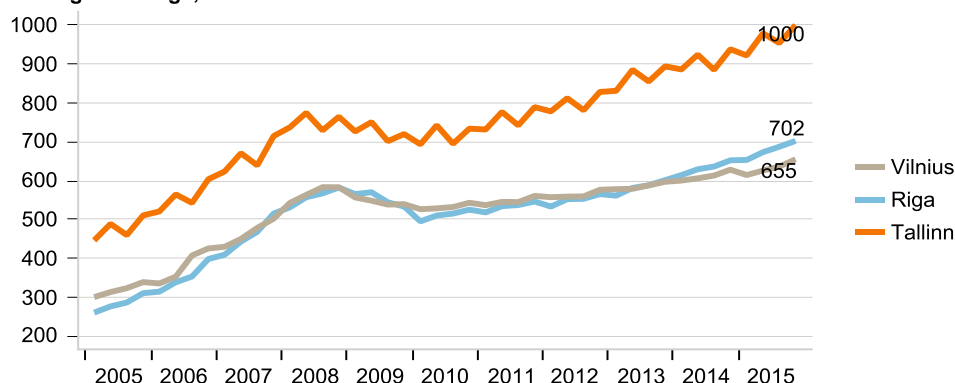
Average net wages

Annual wage growth remained rapid in Riga and Tallinn and accelerated somewhat in Vilnius as well.

Annual growth, 4th quarter, %

Tallinn: 6.6
Riga: 7.7
Vilnius: 4.3

Average net wage, EUR



Sources: National statistical departments

The HAI value of 153.4 in Tallinn means that household net wages in this city are 53.4% 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 60.1% higher – and, in Vilnius, 29.2% higher – than required to fulfil this norm.

Months to save for the down payment

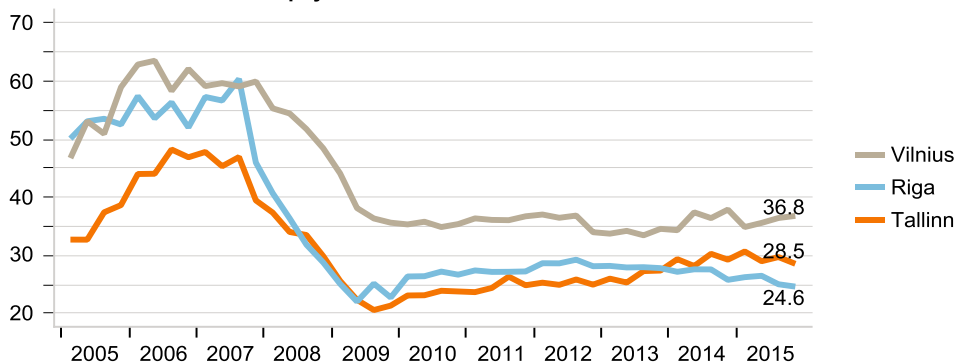
Over the past year, the number of months needed to save for a down payment, which equals 15% of an apartment price, decreased by 1 month in Vilnius, by 1 month and 1 week in Riga, and by 3 weeks in Tallinn due to wages rising faster than housing prices.

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

Annual growth, 4th quarter, months

Tallinn: -0.7
Riga: -1.2
Vilnius: -1.1

Months to save for a down payment

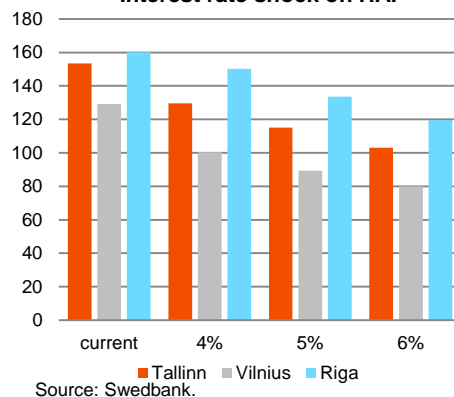


Sources: National statistical departments, Lithuanian Centre of Registers, Latvian State Land Service and National Real Estate Cadastre, Estonian Land Board and Swedbank

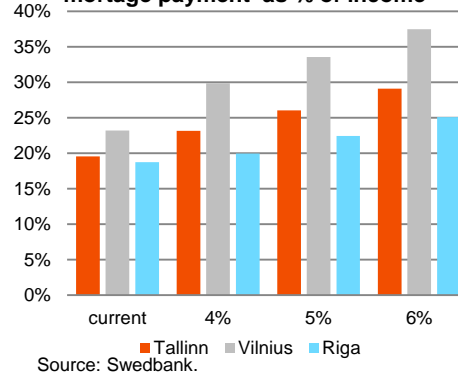
Sensitivity analysis

Sensitivity analysis shows that, if interest rates rose to 4% or mortgage term decreased to 25 years, apartments would remain affordable in all three cities, however, apartments would be unaffordable if interest rates rose to more than 4.0% or mortgage term decreased by more than 8 years in Vilnius. In Riga apartments would still be affordable if mortgage term decreased by 15 years, however our average household would then have to pay almost 30% of its income as a monthly mortgage payment. In Tallinn apartment would still be affordable if interest rates increased to 6%, but they would become unaffordable if mortgage term decreased by more than 13 years.

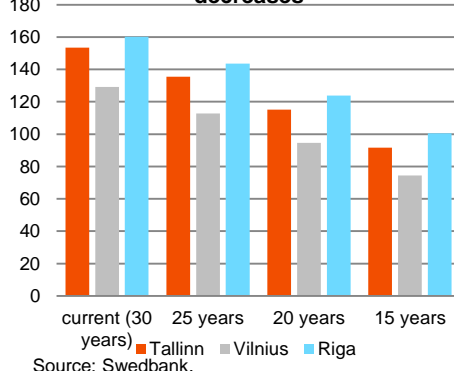
Interest rate shock on HAI



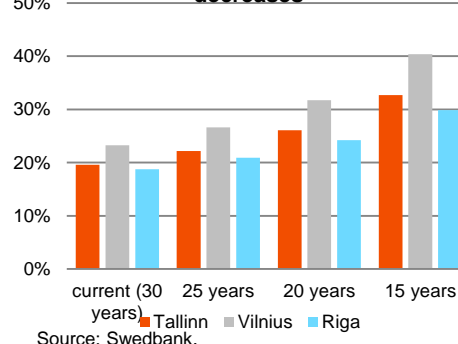
Interest rate shock effect on mortgage payment as % of income



Change in HAI as mortgage term decreases



Change in mortgage payment as % of income as mortgage term decreases



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 capital cities.
- 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 -- 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	73.3	32.7	50.1	46.7
2005 Q2	118.4	66.7	71.1	32.7	53.1	53.1
2005 Q3	105.2	66.4	75.6	37.4	53.5	50.9
2005 Q4	100.1	68.3	59.9	38.6	52.5	58.9
2006 Q1	84.2	60.2	58.3	44.0	57.4	62.8
2006 Q2	81.2	63.2	54.9	44.0	53.6	63.5
2006 Q3	70.4	57.9	58.1	48.2	56.3	58.3
2006 Q4	69.5	59.9	52.5	46.9	52.0	62.1
2007 Q1	65.5	53.1	53.6	47.8	57.3	59.1
2007 Q2	67.4	52.0	51.9	45.3	56.6	59.6
2007 Q3	62.6	47.4	51.2	46.9	60.4	59.1
2007 Q4	73.2	61.1	49.6	39.5	46.0	59.9
2008 Q1	80.5	70.6	55.0	37.3	40.7	55.3
2008 Q2	87.1	75.5	54.3	34.0	36.4	54.4
2008 Q3	83.3	80.1	55.3	33.5	31.8	51.7
2008 Q4	95.4	85.3	60.4	29.8	28.8	48.4
2009 Q1	129.6	116.8	73.9	25.6	25.1	44.1
2009 Q2	160.0	148.2	94.3	22.3	22.0	38.1
2009 Q3	179.5	140.4	99.3	20.6	25.1	36.3
2009 Q4	176.9	156.6	101.4	21.3	22.7	35.6
2010 Q1	160.5	138.5	105.8	23.1	26.4	35.3
2010 Q2	162.9	136.9	106.6	23.1	26.4	35.8
2010 Q3	157.3	134.8	107.9	23.9	27.2	34.9
2010 Q4	160.9	138.5	107.1	23.8	26.7	35.4
2011 Q1	161.3	133.3	104.6	23.7	27.4	36.4
2011 Q2	156.9	135.0	104.5	24.4	27.1	36.1
2011 Q3	144.3	133.4	103.5	26.3	27.2	36.0
2011 Q4	154.7	133.5	102.9	24.8	27.2	36.7
2012 Q1	155.5	127.9	106.3	25.3	28.6	37.0
2012 Q2	163.8	131.9	111.3	24.9	28.6	36.5
2012 Q3	163.2	136.8	113.6	25.8	29.2	36.8
2012 Q4	172.0	142.1	128.6	24.9	28.1	34.0
2013 Q1	163.6	133.8	131.5	26.0	28.2	33.7
2013 Q2	165.5	141.8	130.7	25.3	27.9	34.2
2013 Q3	154.2	142.0	131.4	27.3	28.0	33.4
2013 Q4	153.4	143.0	131.5	27.4	27.8	34.6
2014 Q1	143.2	147.0	132.0	29.3	27.2	34.3
2014 Q2	149.2	141.7	120.8	28.2	27.6	37.4
2014 Q3	141.9	142.6	126.5	30.3	27.6	36.4
2014 Q4	149.2	155.4	125.2	29.3	25.8	37.9
2015 Q1	143.6	149.7	135.9	30.7	26.2	34.9
2015 Q2	151.3	150.6	133.8	29.0	26.5	35.6
2015 Q3	146.7	159.7	130.6	29.7	25.0	36.4
2015 Q4	153.4	160.1	129.2	28.5	24.6	36.8
High	179.5	160.1	135.9	48.2	60.4	63.5
Low	62.6	47.4	49.6	20.6	22.0	33.4
Average	130.3	113.3	94.7	31.0	34.9	43.5

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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