



## Abbreviations

BCBS	Basel Committee on Banking Supervision
CCyB	countercyclical capital buffer
CRD IV	Capital Requirements Directive IV
DSTI	debt service-to-income ratio
ECB	European Central Bank
EEA	European Economic Area
ESRB	European Systemic Risk Board
GDP	gross domestic product
HPI	housing price index calculated by Statistics Lithuania
MFI	monetary financial institution (bank and credit union)
p.p.	percentage points
RE	real estate
RLR	Responsible Lending Regulations

The publication has been prepared by the Economics and Financial Stability Service of the Bank of Lithuania. It is available in PDF format on the Bank of Lithuania website [www.lb.lt](http://www.lb.lt).

Unless otherwise indicated, data up to 30 September 2017 was used.

Periods indicated in chart subtitles also include end-of-period (year, quarter, etc.) data.

## Decision basis for setting the countercyclical capital buffer rate

On 20 December 2017, the Board of the Bank of Lithuania took a decision\* to set the CCyB rate at 0.5 per cent, which will come into effect on 31 December 2018. The decision was based on observations of domestic financial system and economic trends, core and complementary indicators for setting the CCyB rate, as well as the analysis of the lending and RE markets, which so far indicate no imbalances in the financial system. However, activity in the credit and RE markets remains robust, banks' profitability is healthy, hence now is a good time to increase resilience reserves to withstand potential adverse shocks in the future.

In Q3 2017, Lithuania's portfolio of loans to the private non-financial sector continued on an upward path, nevertheless, the situation in individual segments was diverse. Recently the growth of the housing loan portfolio has been accelerating, to stand at 8.2 per cent, while the role of credit in the housing market continues to be significant. The growth of the portfolio of loans to enterprises, which increased by more than 7 per cent in the middle of the year, scaled back to 6.3 per cent in September. The portfolio is characterised by high volatility that are driven by large-scale individual transactions. Last year larger individual loans boosted corporate lending, hence the comparative base is currently relatively broad. For the last few quarters, the share of the portfolio of loans granted to RE and construction companies has been showing the largest decrease, while that of companies engaged in trade, manufacturing and administration activities has been increasing. With the economy expanding and investments growing, corporate lending might pick up steam in the near future – this is also evidenced by the banking survey results.

Activity in the housing market remains robust, even though the volume of transactions in Q3 2017 reduced (a year-on-year decrease of 3.4%). The annual increase in housing prices in Q2 2017 was as high as in Q1, standing at 10.2 per cent, yet preliminary data for Q3 shows deceleration of housing prices. For several consecutive years quantitative models have been pointing to undervalued domestic housing prices; however, in the first two quarters of 2017 they have already reached their fundamental values. The supply of apartments offered directly by RE developers continued expanding in terms of both finished apartments and those under construction, while the volume of unsold newly-built apartments\*\* in Vilnius has reached its peak level last seen in 2008.

Over the quarter, the gap between the credit-to-GDP ratio and its long-term trend has showed no significant signs of change and remained negative. Other indicators used to assess the formation of imbalances in the financial system have also displayed no warning signs. For example, the loan-to-deposit ratio, which was widening last year, dropped to 103.8 per cent this year, whereas the current account deficit has been moderating. The composite early warning indicators of crisis were at the zero mark, i.e. the probability of systemic crisis is low. On the other hand, the stable state urges to think about making duly preparations for adverse situations.

The expanding domestic economy, crediting that has been on an upward trajectory after a quick rebound 2 years ago, a rapid upswing in the RE market, as well as adequate bank profitability indicators show that now is the best time for accumulating additional capital buffers. They would increase financial system resilience to both potential cyclical risks and external economic shocks, which may appear even when the financial stance is sustainable. As long as there are no imbalances in the financial system and the economy, the consistently and gradually accumulated countercyclical capital buffer is likely to weigh less on crediting and the real economy as well as reduce the possibility that the CCyB accumulated prior to a shift in the financial cycle will be insufficient. When faced with economic shocks or recession, the capital requirement would be relaxed, thus widening the possibilities for credit institutions to maintain credit supply (for more information, see 'Setting a positive CCyB rate'). Should the current economic trends as well as trends in the financial system prevail, the CCyB rate might be set to 1 per cent in 2018.

\*Resolution No. 03–204 of the Board of the Bank of Lithuania of 20 December 2017 on the application of the countercyclical capital buffer.

\*\*Unsold apartments in the primary market include fully constructed objects and those under construction.

## LENDING AND REAL ESTATE MARKET DYNAMICS

In Q3 2017, Lithuania's portfolio of MFI loans continued to grow, though the growth rate has been slower over the past few months. In September 2017, the annual portfolio of MFI loans to the private non-financial sector expanded by 5.6 per cent year on year, while the growth rate exhibited in the beginning of the year reduced by 2.6 p.p. The most distinct changes were observed in the segments of non-financial corporations. The annual growth rate of the portfolio of corporate loans was 5.0 p.p. slower than 6 months ago. This was mainly driven by the fast amortisation of loans granted to enterprises engaged in real estate activities and individual large-scale loans, due to which the comparative base is currently broader. Consumer loans granted to households added to the overall slowdown in the growth of the loan portfolio. While it was expanding relatively rapidly (September 2017 – 7.6%), since the start of this

year the rate of growth has eased. The annual growth of the consumer loan portfolio stood at 10–11 per cent a year ago, thus the broader comparative base also added to the current slowdown.

**For quite some time, housing loans have been showing the most rapid growth.** The annual growth of the housing loan portfolio was 8.2 per cent at the end of Q3 2017. A similar rate of growth has been recorded for four consecutive months. The flow of new housing loans over the first three quarters of 2017 amounted to EUR 0.9 billion and was 13.5 per cent larger compared to the same period a year ago. The role of credit in the housing market has continued to be strong – based on value, in Q3 2017 approximately 70 per cent of housing transactions were concluded using borrowed funds (40% when calculating by total number of transactions). While the interest rates on housing loans inched up over the year and banks themselves indicated in surveys that they somewhat tightened credit standards for housing loans in Q3, in the beginning of 2017, however, the average ratio of housing loans to pledged assets was 79.9 per cent, an increase of 1.6 p.p. year on year. RLR exceptions due to the loan-to-income ratio over H1 of this year accounted for 0.6 per cent of the flow of new housing loans<sup>1</sup>, increasing moderately (by 0.2 p.p.) year on year.

**As the volume of housing loans increases, crediting of RE development and construction companies continues to decline; more loans are granted to manufacturing and trade sectors.** At the end of September 2017, the portfolio of loans issued to RE (including construction) companies was almost 9.1 per cent (EUR 250 million) smaller year on year, whereas financing of manufacturing and trade sectors increased by 6.6 and 6.4 per cent respectively (EUR 76.3 million and EUR 116.1 million respectively). The fact that changes, in terms of loans to enterprises, are traditionally determined by individual large-scale loans has to be taken into account; therefore, one or more larger loans to specific economic sectors can significantly affect the annual growth of the portfolio of corporate loans. For example, twenty largest loans issued to non-financial corporations over H1 2017 amounted to almost a third of total new loan contracts<sup>2</sup> concluded over the same period, while approximately 30 per cent of the value of these large-scale loans was attributed to the aforementioned manufacturing and trade sectors.

**Activity in the housing market has remained robust, even though signs of a slowdown have been observed over the past quarter.** Housing market activity indicators pointed to relatively active trading in housing in Lithuania: the number of housing transactions per capita in major cities was close to the peak level of activity that had been reached in 2006–2007 and substantially exceeded the long-term average. However, signs of a slowdown in the housing market have been observed recently. According to the data of the Centre of Registers, 11.8 thousand apartments and private house transactions were concluded over Q3 2017 in Lithuania, a 3.4 per cent decrease year on year. The most significant slowdown in the housing market was observed in the capital, where over the quarter 8.3 per cent less transactions were concluded on a year-on-year basis. Vilnius newly-built apartment market saw a significant slowdown in activity: according to the data from UAB Eika, purchases of newly-constructed apartments directly from developers decreased by a fifth (20.7%) year on year. In the remaining part of the country, activity in the housing market decelerated at a slower pace: in Q3, 1.8 per cent less houses and apartments were sold year on year.

**The growth of housing prices in Lithuania has remained robust, however, preliminary data points to a possible slowdown.** According to the data of Statistics Lithuania, in Q2 2017 the annual growth rate of domestic housing prices was 10.2 per cent – the same as in Q1. Such price growth was one of the fastest in the EU – more rapid growth was exhibited only in the Czech Republic (13.3%) and Ireland (10.6%). Other data sources (that had already submitted data for Q3 2017) indicate that the growth of housing prices eased. For example, according to the data of UAB Ober-Haus, over Q3 2017 the annual growth rate of apartment prices declined from 4.5 to 4.1 per cent in major Lithuanian cities. Preliminary data from the Centre of Registers indicates that the annual growth rate of actual average prices of apartments sold in Q3 2017 also decreased from 7.2 to 5.4 per cent; advertisement statistics of Aruodas.lt that reflect asking price developments indicated that the annual growth rate of the prices of apartments for sale scaled back from 7.3 to 4.8 per cent over the quarter.

**The number of apartments for sale and the volume of investment in construction have been among the largest in the past decade; however, it is likely that housing supply will start to drop.** According to the latest data of Statistics Lithuania, the annual amount of investments in housing construction in Q2 2017 amounted to 3.1 per cent of GDP – 0.9 p.p. above the long-term average. This ratio remained unchanged over the quarter and has been the highest since the end of 2009. While the popularity of single-family homes was increasing in the newly-built housing market, the number of unsold newly-built apartments increased noticeably. According to the data from UAB Eika, the number of new apartments for sale offered by RE developers at the end of Q3 2017 in the Vilnius newly-built apartment market (the largest in Lithuania) increased by 15 per cent year on year. According to market participants, after the start of advertising apartments that currently are not being offered to purchase, at the end of the year developers could increase the supply for newly-built apartments by a fifth. Were sales to remain the same as in Q3, a year and a half would be needed to sell apartments that are up for sale. However, data on new building permits and fully-built housing indicates that in the future housing supply will start decreasing. Over Q2 2017, 10.1 per cent less hous-

<sup>1</sup>A bank may grant a housing loan after evaluating that the applicant will be solvent if up to 60 per cent of monthly income is allocated to repay all credits received. Such an exception may be granted to a maximum of 5 per cent of the total amount of new housing loans granted in a year.

<sup>2</sup>Including renegotiations.

ing was built, compared to the same period a year ago, and 14.6 per cent less building permits were issued. These changes were largely driven by the decreased number of fully-built apartments in residential apartment buildings – over Q2 the number of such apartments decreased by a third (33.1%) year on year. Furthermore, the number of building permits for apartments in residential apartment buildings decreased at a similar pace. Supply trends for single-family dwellings were the opposite: the number of houses completed amounted to 15.6 per cent, while the number of building permits increased by 6.7 per cent year on year.

**Activity in Vilnius, Kaunas and Klaipėda apartment rental markets has intensified – rental rates inched up, more lease contracts were registered.** According to the data from market participants (UAB Ober-Haus), over Q3 2017, average rental rates of old-construction, not renovated apartments increased in all major cities year on year. Average rental rates showed the fastest increase in Klaipėda: over the year downtown and residential areas saw their rental rates rise by 15.5 and 8.0 per cent respectively. In Vilnius and Kaunas rental rate dynamics were more moderate: over the year rent rates for apartments in the downtown area of these cities grew, on average, by 0.8 and 4.4 per cent respectively, while in other areas of the city – by 5.9 and 4.2 per cent respectively. According to the data of the Centre of Registers, in September 2016–September 2017, 1.4, 0.4 and 0.6 thousand lease contracts were concluded in Vilnius, Kaunas and Klaipėda respectively – a year-on-year increase of 46.4, 2.1 and 12.9 per cent. The current increase of rental rates could have been driven by the decreasing shadow market due to a more active role taken by the State Tax Inspectorate as regards rental activities.

**Econometric models indicate that housing prices have almost reached their fundamental values and housing has been sufficiently valued.** Taking into consideration not only the average income of the employed, but also other factors affecting the housing market (number of residents, construction costs, developments in the housing loan portfolio), the obtained estimates suggest that housing prices in Lithuania are no longer estimated insufficiently vis-à-vis the fundamental market values. The ratio of the gap between the real and theoretical (set in accordance with housing market fundamentals) housing prices was still slightly negative (–0.2%) in Q2 2017, however, if strong growth of lending for house purchase and construction costs were to persist and the number of residents continue to decrease, soon housing prices may become overvalued.

**Activity in the commercial RE market in Lithuania has been one of the strongest in the last decade, yet in Q3 2017 it was subdued.** According to the data of the Centre of Registers, the number of commercial property transactions in Lithuania decreased by 7.7 per cent over Q3 2017 year on year. Trends in the commercial RE market have been similar to those in the housing market – compared to the long-term average, the number of transactions in the commercial RE market has been markedly (by 23.2%) higher than the average recorded since 2004. In one of the most active commercial RE segments – the Vilnius office market – demand remains at its historical highs. According to UAB Newsec projections, over 2017 the newly leased office space in Vilnius will only come second to the numbers of 2016 – the year that was marked by particularly high activity.

**Most indicators used for assessing imbalances in the financial system do not show any warning signs; however, they indicate that conditions to increase cyclical reserves currently are the most favourable.** At the end of H2 2017, the gap between the credit-to-GDP ratio and its long-term trend remained negative and, subject to the method of assessment, amounted to –4.5<sup>3</sup> and –13.7<sup>4</sup> p.p. Over the year it remained almost unchanged. Even though credit has been growing for quite some time, the domestic economy has also increased noticeably over the last three quarters, sustaining a stable credit-to-GDP ratio. The housing price-to-household income ratio gap was also negative (–6.8 p.p.), however over the year it decreased by 1.8 p.p. Risks related to possible imbalances in the financial system were also reduced by the loan-to-deposit ratio that has been the lowest in the past two years. On the other hand, the country's economic growth is robust, labour market pressures are not subsiding<sup>5</sup>, loan portfolios are expanding, currently the bank profitability is good, and the activity in the RE market, albeit slightly slower, still remains strong. These trends indicate that now is a good time to increase the resilience of the financial system against potential cyclical shocks (for more information, see 'Setting a positive CCyB rate prior to the formation of imbalances').

## Setting a positive CCyB rate

Below are the main principles<sup>6</sup> providing the basis for the Bank of Lithuania when setting the CCyB:

- The main purpose of the CCyB is holding a sufficient capital buffer to cover potential bank losses in case of cyclical systemic risk or during an economic downturn.
- The CCyB is accumulated when increasingly intensive credit and RE market activity is observed, economic growth is close to (or above) its potential growth, and the banking sector operates profitably.
- If economic growth and credit growth are sustainable and no cyclical imbalances form in the economy, it is aimed at holding a CCyB of at least 1 per cent accumulated.

<sup>3</sup> Application of a forecast-augmented method.

<sup>4</sup> Application of the Basel method.

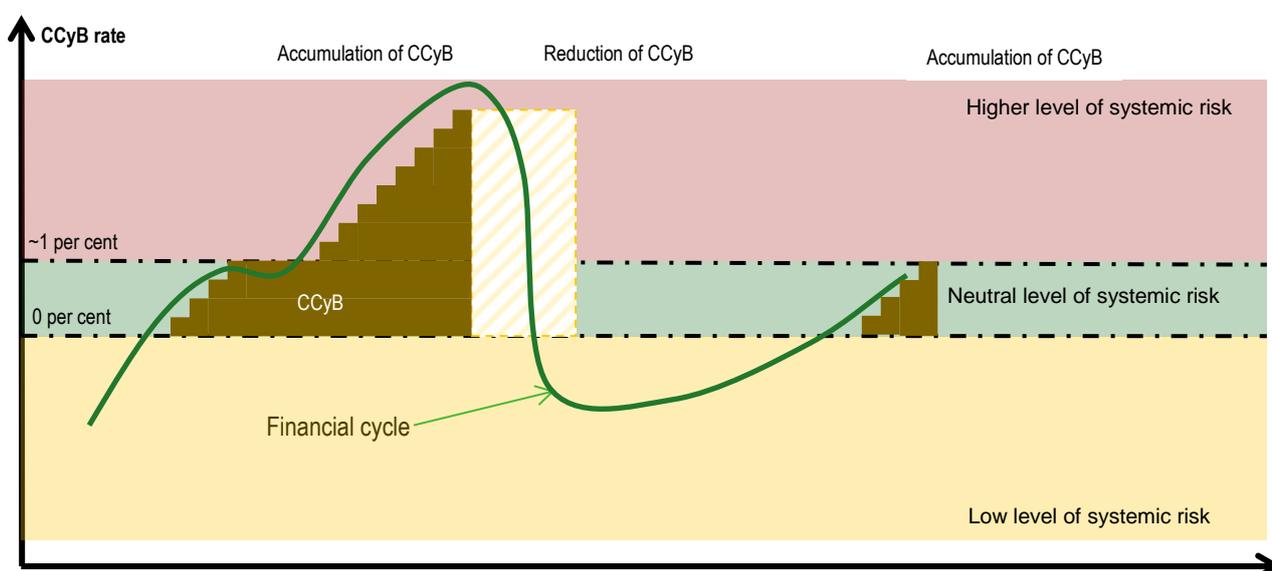
<sup>5</sup> For more details, see <http://www.lb.lt/en/publications/lithuanian-economic-review-june-2017>

<sup>6</sup> These principles supplement the framework of the countercyclical capital buffer of the Bank of Lithuania.

- When signs of overheating of the economy, unsustainable trends in the credit or RE market or signs of formation of other cyclical imbalances are observed, the CCyB rate would be further increased to above 1 per cent.
- Where a significant formation of cyclical imbalances is identified, it is aimed at holding a CCyB of at least 2.5 per cent accumulated prior to the downturn of the cycle.
- Should the economy face issues, cyclical risks arise and the financial cycle enter the downturn phase, the CCyB rate would be reduced, thereby seeking to mitigate the cyclical nature of crediting, widening the possibilities for credit institutions to maintain credit supply thus ensuring the financial sector's sustainable contribution to the growth of the economy.

Since the primary and main objective of the CCyB is not halting unsustainable credit growth or RE price growth, it is expedient setting a positive CCyB rate when there are still no obvious signs of cyclical imbalances building up, i.e. when cyclical risk in the country is not yet strong and economic growth is sustainable (see Chart A). Moreover, as long as the situation of the financial system is sustainable, i.e. during normal times<sup>7</sup>, a certain target CCyB rate should be reached, e.g. 1 per cent, that would be increased where cyclical risk levels would rise above normal ones. The CCyB is thus accumulated more slowly and more consistently, while the accumulated buffer would help mitigate unexpected lower-size fluctuations in the financial cycle that could arise from economic or other unexpected shocks. Such strategy has a number of advantages, e.g. where the CCyB rate is increased more slowly and consistently, this has a less effect on crediting and the real economy, and the probability of not managing to accumulate a required amount of CCyB until change in the trend of a financial cycle is reduced<sup>8</sup>.

**Chart A. The use of CCyB – an illustrative example**



**One of the major advantages of CCyB is the possibility of reducing it quickly.** As was mentioned above, one of the main objectives of the CCyB is to hold a sufficient capital buffer for covering losses during an economic recession, thus reducing credit cyclicity and increasing resilience of the financial system. It is important to emphasize that cyclicity of an economy is determined not only by financial crises but also external or internal economic shocks, which are often significantly milder than financial crises. On the other hand, the financial sector may contribute to the amplification of such shocks. For example, if Lithuania's important trade partners encountered an economic recession, part of enterprises in Lithuania would face financial difficulties. This would also lead to losses for banks from loans granted to entrepreneurs. In such cases, even when no imbalances have built up yet, it is important to have an additional cushion of capital requirements, which could be reduced not only during a financial crisis but also in case of significant external shocks. Reducing of capital requirements when the economy is facing challenges could contribute to the mitigation of an economic cycle.<sup>9</sup>

**Based on the results of the Bank of Lithuania's stress testing, the losses of the banking sector from economic downturns would amount to an average 1 per cent of its risk weighted assets.** Such results have been obtained on the basis of historical data, which shows that average economic downturns usually amount to up to 2 per cent of GDP. Hence, a CCyB rate of 1 per cent could be the rate to be aimed at during normal times, when there are still no clearly expressed cyclical imbalances in the financial system. An additional 1 per cent requirement, which could be reduced when the economy faces unexpected shocks, would help reduce the cyclicity of crediting, and of the economy at the same time. On the other hand, financial crises affect the economy stronger and a financial recession

<sup>7</sup> Situation when the systemic risk level is neither unusually low nor has increased markedly.

<sup>8</sup> A similar strategy for changing CCyB rates is applied, e.g. by the Bank of England. (see Bank of England (2016) The Financial Policy Committee's approach to setting the countercyclical capital buffer: A Policy Statement. Internet access: <http://www.bankofengland.co.uk/financialstability/Documents/fpc/policystatement050416.pdf> )

<sup>9</sup> Jiménez G., Ongena S., Peydró J., Saurina J. (forthcoming) Macroeprudential Policy, Countercyclical Bank Capital Buffers, and Credit Supply: Evidence from the Spanish Dynamic Provisioning Experiments. *Journal of Political Economy*

sion often amounts to over 5 per cent of GDP<sup>10</sup>. Such financial crises would result in losses for banks, which would amount to about 5 per cent of their risk weighted assets; therefore, if growth in crediting volumes is unsustainable, it is critical to accumulate an additional CCyB rate, which should not necessarily be limited to 2.5 per cent.

**Consistent increasing of the CCyB rate during an economic upswing is likely to have an insubstantial impact on credit market and economic activity; however, disengagement of accumulated capital during an economic downturn could mitigate its negative effects.** According to Bank of Lithuania calculations, increasing of capital requirements by 0.5 p.p. could raise the cost of borrowing by up to 0.07 p.p. and reduce annual credit growth by 0.5 p.p. Over the long term, the potential negative impact on the economy would practically wane.<sup>11</sup>

### Legal regulation of setting a CCyB rate

**The CCyB is a harmonised instrument of the EU, laid down in CRD IV, while in Lithuania this Directive is implemented by the Rules for the Formation of Capital Buffers<sup>12</sup>.** Based on the Rules for the Formation of Capital Buffers, a CCyB rate is set taking into account: a) the reference buffer, which is based on the credit-to-GDP gap and its long-term trend, considering, *inter alia*, the credit growth indicator, including the indicator showing developments in the ratio of credit granted in Lithuania to GDP; b) ESRB recommendations for the assessment and calculation of the credit-to-GDP gap and its long-term trends as well as for calculation of a reference buffer and the principles of the use of discretion; c) other variables which, in the opinion of the Bank of Lithuania, are important in dealing with issues related to cyclical systemic risk.

**The preamble of CRD IV provides that a positive CCyB rate can be set during a period of economic growth and taking into account the specific nature of national economy.** National authorities responsible for setting a CCyB rate, in taking decisions regarding buffer rates should follow the BCBS methodology, which is based on the credit-to-GDP ratio; however, this methodology cannot be used for setting a buffer automatically, and is not mandatory for the appointed authority. A CCyB rate should reflect the credit cycle and the risk arising from excessive credit growth in a Member State; when setting it, peculiarities of a national economy should be taken into appropriate consideration. In addition, the preamble of CRD IV sets forth that it is expedient to require that credit institutions hold an additional capital buffer in order to ensure that, during periods of economic growth, they accumulate a sufficient capital base to cover losses incurred during stressed periods. A CCyB could be accumulated at a time when it is considered that general growth within the credit and other asset classes, which has a great influence on the nature of the risk of such credit institutions, is related to the increase of systemic risk, and is used during the most stressed periods.

<sup>10</sup> JORDÀ, Ò, SCHULARICK, M. and TAYLOR, A. M. (2013), When Credit Bites Back. *JMCB, Journal of Money, Credit and Banking* EFSA Journal 2013;11(1):3032 [3 pp.] doi:10.1111/jmcb.12069.

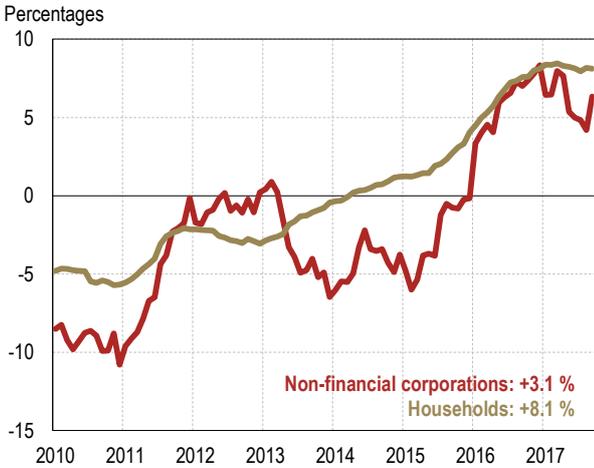
<sup>11</sup> The review of literature analysing the impact of increasing of capital requirements on the economy is available in Box 5 of the Financial Stability Review of the Bank of Lithuania 2017 "The Economic impact of bank capital: What do the post-crisis studies show?"

<sup>12</sup> Rules for the Formation of Capital Buffers, approved by Resolution No 03-51 of the Board of the Bank of Lithuania of 9 April 2015

# Annex 1. Housing market and credit trends

**Chart 1. Annual growth of the portfolio of loans to non-financial corporations and households**

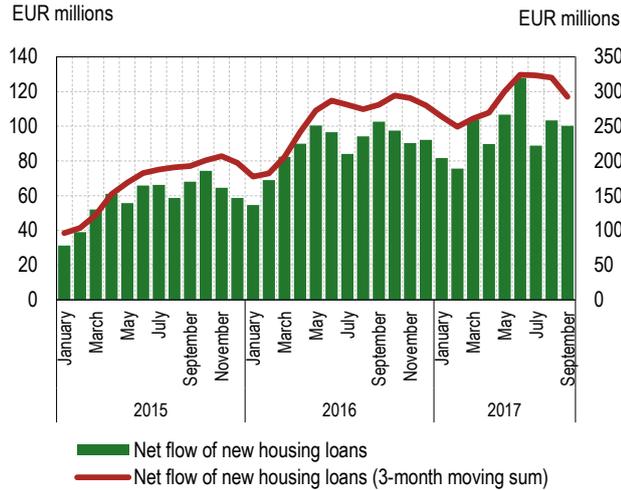
(January 2010–September 2017)



Source: Bank of Lithuania

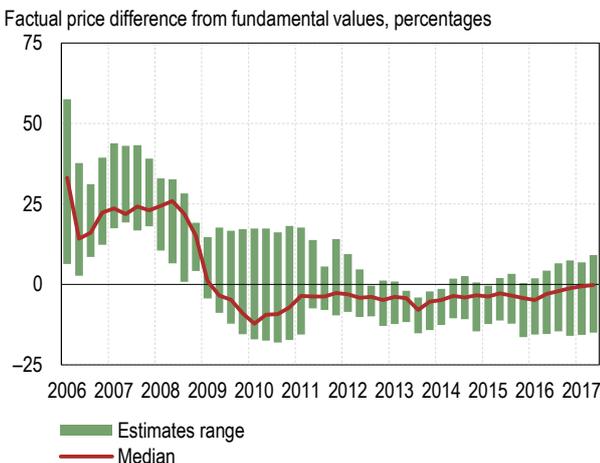
**Chart 3. Flow of new housing loans**

(January 2015–September 2017)



Sources: ECB and Bank of Lithuania calculations.

**Chart 5. Gap between housing prices and their fundamental values**  
(Q1 2006–Q2 2017)

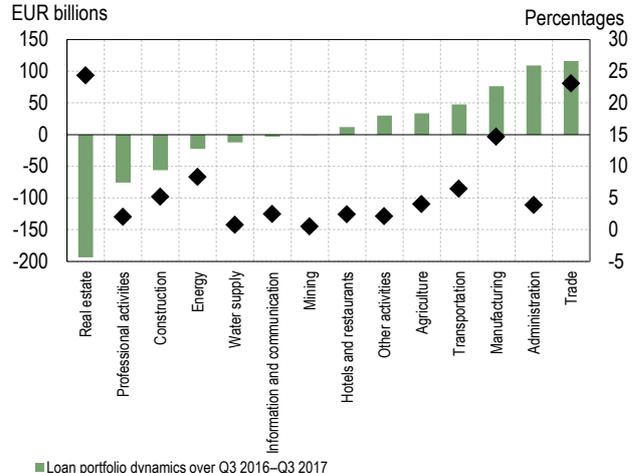


Source: Bank of Lithuania.

Note: Estimates are based on the price-to-rent ratio, price-to-income ratio, econometric model and HP filter.

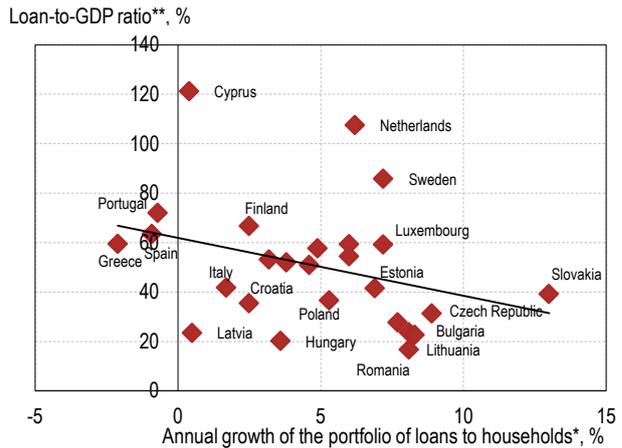
**Chart 2. Annual change of loans granted to non-financial corporations and households by branch of the economy**

Q3 2017



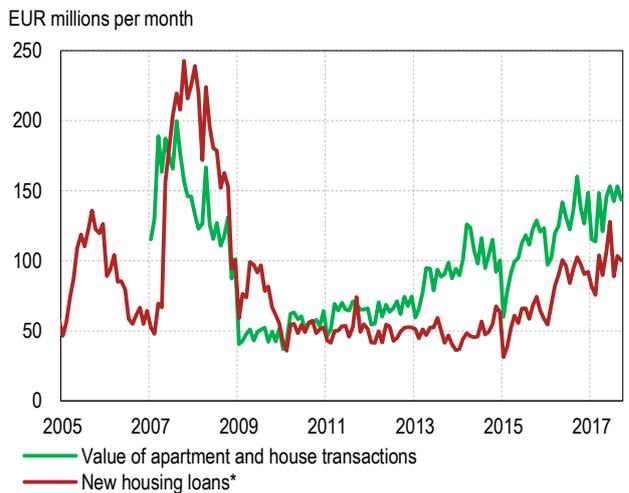
**Chart 4. Household indebtedness and its changes in European countries**

(March 2017–August 2017)

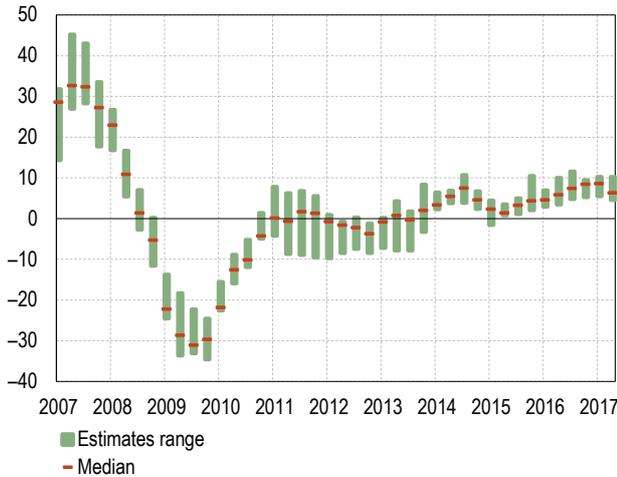


**Chart 6. Value of apartment and house transactions and real new housing loans**

(January 2005–September 2017)



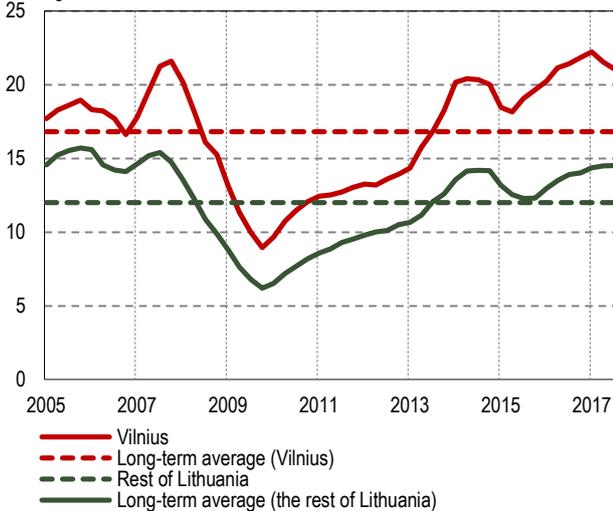
**Chart 7. Annual growth in housing prices according to different sources**  
(Q1 2007–Q2 2017)



Sources: State Enterprise Centre of Registers, Statistics Lithuania, UAB OberHaus, Aruodas.lt and Bank of Lithuania calculations.

**Chart 9. Relative activity in the housing market in Vilnius and the rest of Lithuania**  
(Q1 2005–Q3 2017)

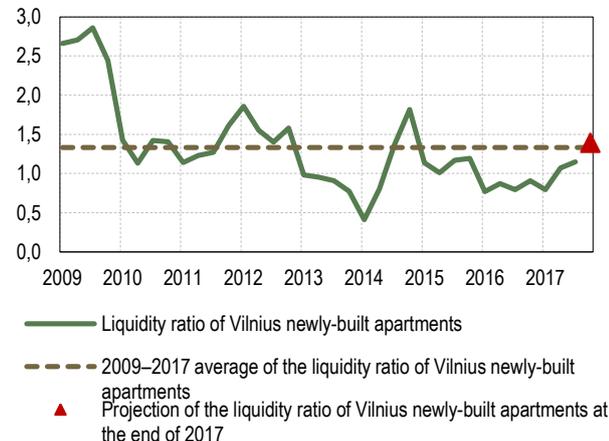
Housing transactions/1,000 residents



Sources: Statistics Lithuania and Centre of Registers.

**Chart 11. Liquidity of the Vilnius newly-built apartment market**  
(Q1 2005–Q3 2017)

Years

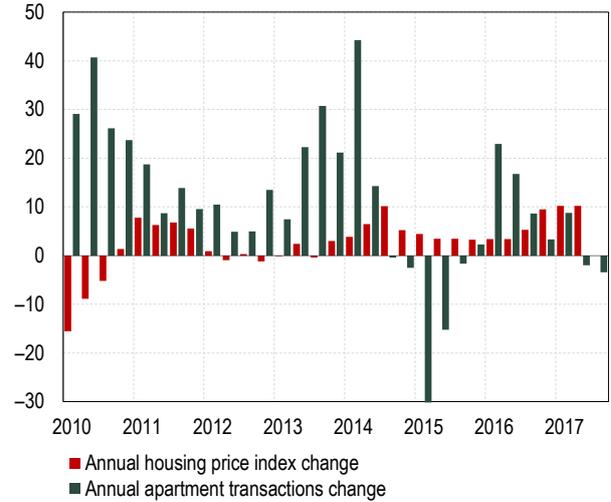


Sources: UAB Eika and Bank of Lithuania calculations.

Note: The liquidity ratio indicates how many years would it take for developers to sell the apartments offered if demand remained the same and no more apartments were built.

**Chart 8. Number of housing transactions and annual change in the housing price index**  
(Q1 2010–Q3 2017)

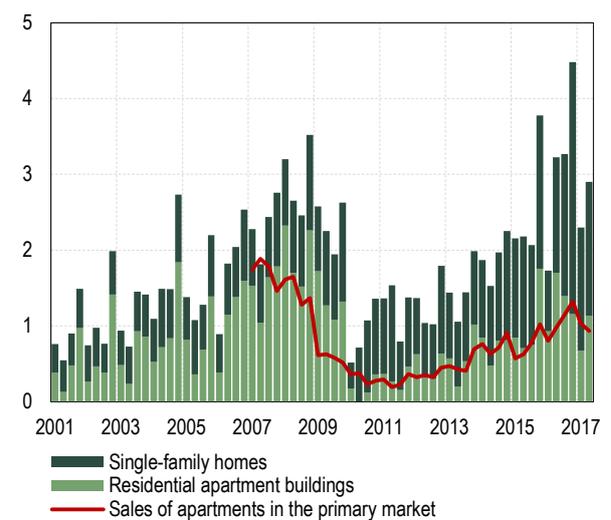
Percentages



Sources: Statistics Lithuania and Centre of Registers.

**Chart 10. Finished housing by construction type and apartment sales in the primary market**  
(Q1 2001–Q2 2017)

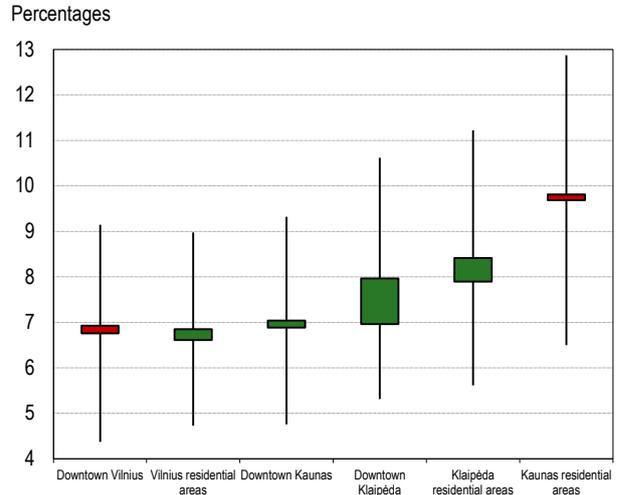
Thousand units



Sources: Statistics Lithuania and Centre of Registers.

**Chart 12. Indicators of possible returns on old-construction apartment rent and average changes in return over a year**  
(Q1 2001–Q1 2017)

Percentages

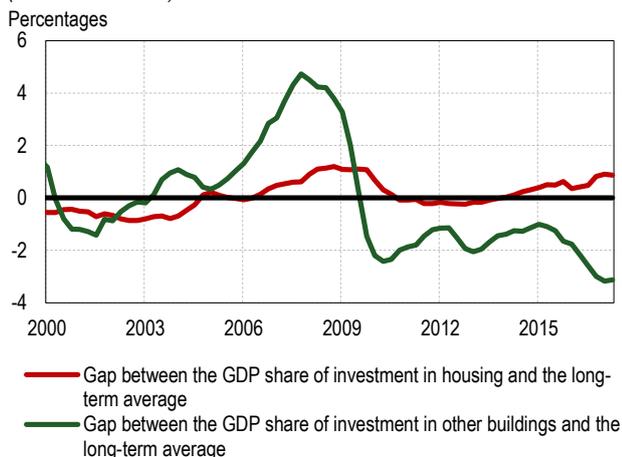


Sources: UAB OberHaus and Bank of Lithuania calculations.

Note: Green columns indicate that average annual return on rent increased, red indicate that it decreased. The straight line indicates the limits on rent return.

**Chart 13. Gap between the GDP share of investment in housing and other buildings and the long-term average**

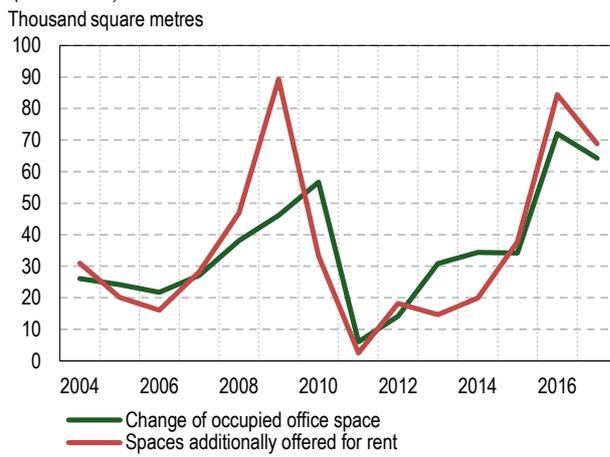
(Q1 2000–Q2 2017)



Sources: Statistics Lithuania and Bank of Lithuania calculations.

**Chart 14. Area of office spaces rented in Vilnius over the year and spaces additionally offered for rent**

(2004–2017)

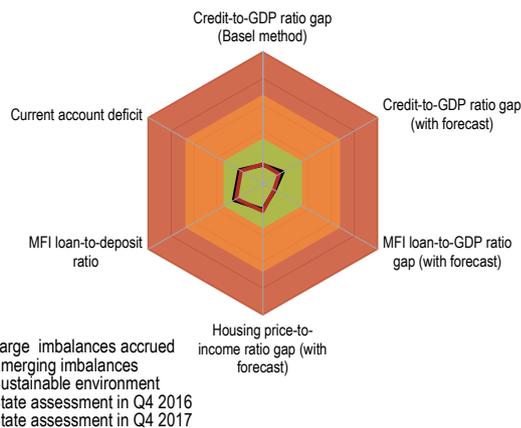


Source: UAB Newsec  
Note: Projected rates (not factual) are used for 2017.

## Annex 2: CCyB reference rates and indicators warning of the need to raise the CCyB rate

**Chart A. Evaluation of credit market imbalances based on leading and additional indicators**

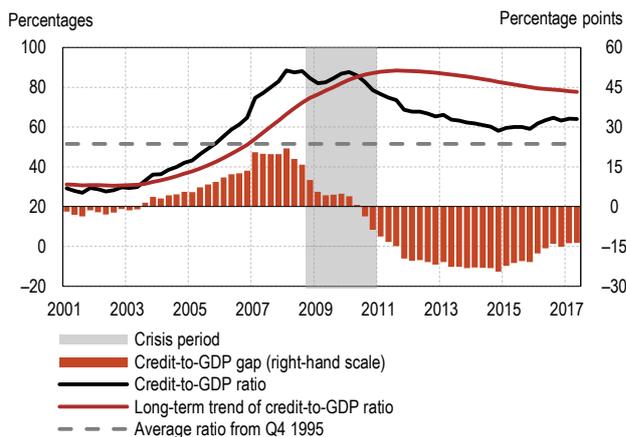
(evaluation is being conducted in Q4 2017)



Sources: Statistics Lithuania and Bank of Lithuania calculations.  
Note: axes are scaled according to the range of a particular indicator: from its minimal value up to the maximal value.

**Chart B. Core indicator I: Credit to the private non-financial sector-to-GDP gap (calculated in accordance with the standardised Basel method)**

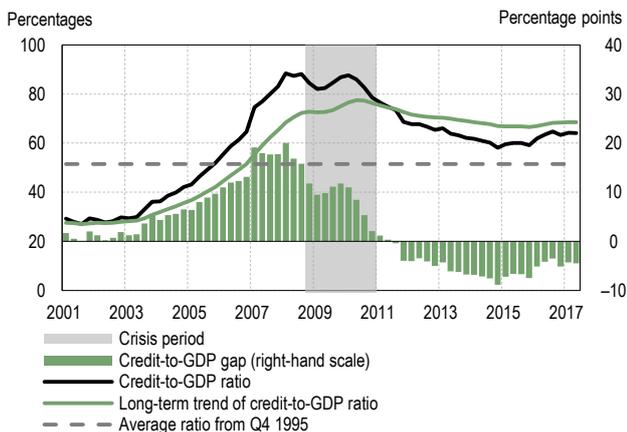
(Q1 2001–Q2 2017)



Sources: Statistics Lithuania and Bank of Lithuania calculations.  
Note: long-term trend is computed using a one-sided HP filter with a smoothing parameter of 400,000.

**Chart C. Core indicator II: Credit to the private non-financial sector-to-GDP gap (based on the forecast-augmented method)**

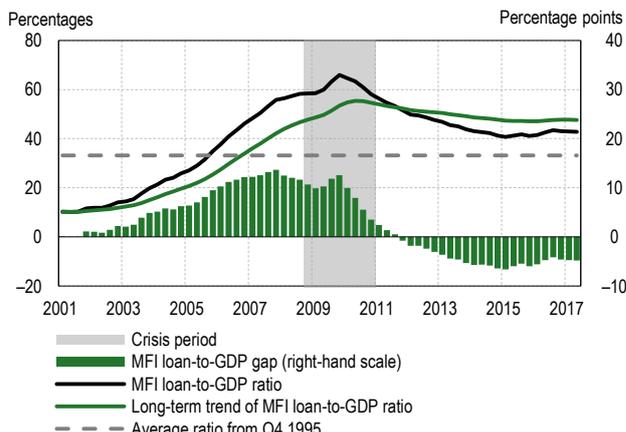
(Q1 2001–Q2 2017)



Sources: Statistics Lithuania and Bank of Lithuania calculations.  
Note: the long-term trend is computed by applying a one-sided HP filter with the smoothing parameter of 400,000; before applying the filter, the ratio is modelled for the next five-year window using a four-quarter weighted average.

**Chart D. Additional indicator I: MFI lending to the private non-financial sector-to-GDP gap (calculated using the forecast-augmented method)**

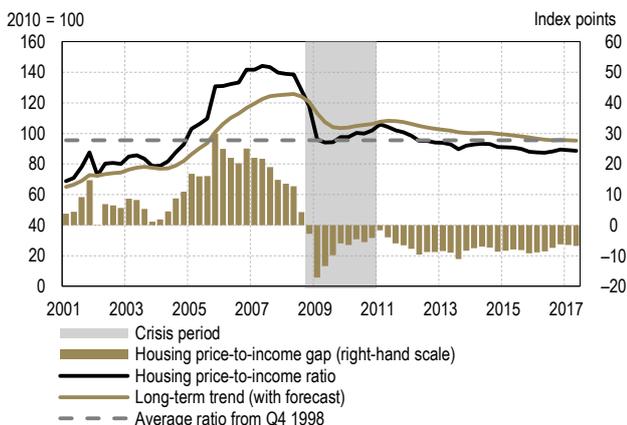
(Q1 2001–Q3 2017)



Sources: Statistics Lithuania and Bank of Lithuania calculations.  
Note: the long-term trend is estimated by applying a one-sided HP filter with the smoothing parameter 400,000; before applying the filter, the ratio is modelled for the next five-year window using a four-quarter weighted average.

**Chart E. Complementary indicator II: Credit to the private non-financial sector-to-GDP gap (based on forecast-augmented method)**

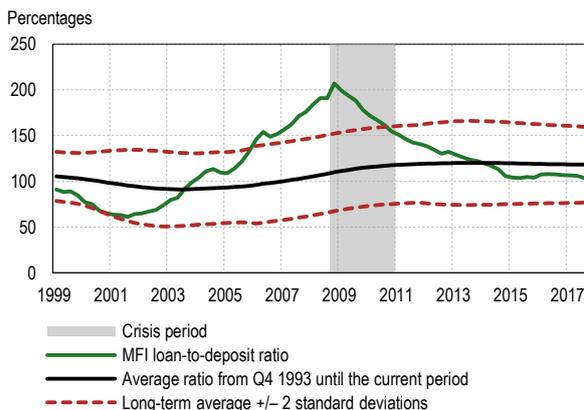
(Q1 2001–Q2 2017)



Sources: Statistics Lithuania and Bank of Lithuania calculations.  
 Notes: 1) income – household wages and salaries; 2) the long-term trend is estimated by applying a one-sided HP filter with the smoothing parameter 400,000; before applying the filter, the ratio is modelled for the next five-year window using a four-quarter weighted average.

**Chart F. Additional indicator III: MFI lending to the private sector-to-private sector deposits ratio (seasonally adjusted)**

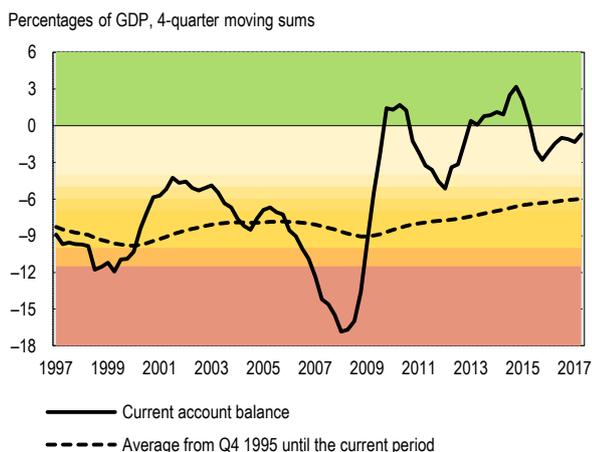
(Q1 1999–Q3 2017)



Source: Bank of Lithuania calculations.  
 Note: the ratio develops in a balanced way if it does not deviate from its long-term average by more than two standard deviations. Standard deviation is computed on the basis of data covering the period of moderate changes in the ratio, excluding Q2 2016–Q4 2011 data.

**Chart G. Additional indicator IV: Current account balance (4-quarter moving sums)-to-GDP ratio**

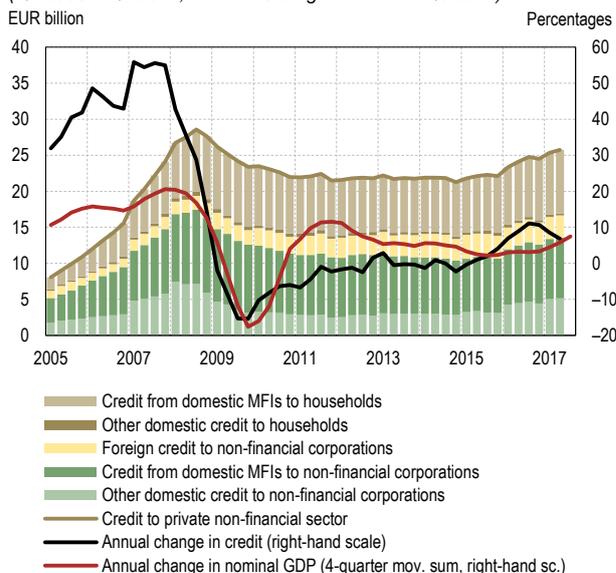
(Q1 1997–Q2 2017)



Sources: Statistics Lithuania and Bank of Lithuania calculations.  
 Note: colours indicate different levels of risk which have been set based on Reinhart S. M. and V. R. Reinhart (2008): "Capital flow bonanzas: An encompassing of the past and present", NBER working paper, 14321.

**Chart H. Credit and nominal GDP dynamics**

(Q1 2005 – Q2 2017; nominal GDP growth – until Q3 2017)



Sources: Statistics Lithuania and Bank of Lithuania calculations.