

## 4 THE FINANCIAL SECTOR

### 4.1 FINANCIAL SECTOR DEVELOPMENTS

The developments recorded in the Czech financial sector in 2013 were mostly positive. The banking sector strengthened its capital adequacy. Despite a year-on-year decrease in profits, the sector remains sufficiently profitable and is generally well prepared for the new European regulatory rules. Similarly, insurance companies have solid capitalisation, but also saw a decline in profits. Collective investment funds recorded an increase in clients' interest in mixed funds. By contrast, credit unions showed adverse developments in 2013. Among other things, the licence of the then largest institution was revoked. The credit union segment as a whole is still significantly risky and the regulations applying to it need changing. The sector of pension management companies is stable, but there was insufficient interest in participation in the second pillar, which is thus likely to require some adjustment.

The main risks to the financial sector stem from a potential insufficient economic recovery or renewed recession. A continued contraction in economic activity would mean renewed growth in credit risk and a sizeable fall in the banking sector's profitability. Although the credit risk level stabilised during 2013 and even improved in some respects, it remains elevated. It is therefore vital for banks to remain prudent in their lending activities and subsequent loan classification and provisioning. There are substantial differences across institutions in their resilience to risks and in their approach to the provision of riskier types of loans.

#### The financial sector's assets rose in 2013 despite the continuing contraction of the real economy

Despite the continuing contraction in economic activity in 2013, the financial sector's total assets increased year on year across almost all segments. The only segment to record a decrease in absolute terms was credit unions, as a result of the revocation of the licence of the then largest credit union in December. Adjusted for this effect, however, the segment's total assets increased by more than 7%. A larger rise in assets was recorded by collective investment funds. The strongest year-on-year growth – more than CZK 500 billion – was recorded by the banking sector. However, more than 50% of this can be attributed to the CNB's interventions in November and another roughly 20% to the merger of UniCredit Bank in the Czech Republic and Slovakia. Banks are still the largest segment of the financial sector, accounting for almost 80% of its total assets. Loans to households and corporations make up the bulk of the asset side of its balance sheet (see line FS.2 in the *Table of Indicators*).

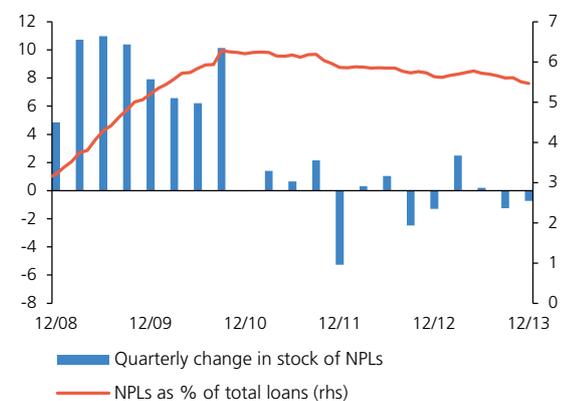
#### Credit risk in domestic banks' portfolios as expressed by the ratio of NPLs to residents decreased slightly...

Credit risk in banks' balance sheets, as expressed by the ratio of non-performing loans (NPLs) to total loans to residents, decreased slightly in 2013 and stood at 5.5% at the year-end (see Chart IV.1). The NPL ratio

CHART IV.1

#### NPLs in the Czech banking sector

(CZK billions; right-hand scale in %; client loans to residents)



Source: CNB

TABLE IV.1

## Structure of NPLs (%)

	NPLs by collateralisation			NPLs, total
	Collateralised loans to households and corporations	Non-collateralised loans to households and corporations	Other loans	
2010	35.1	31.5	33.4	100.0
2011	36.8	30.6	32.6	100.0
2012	35.5	29.4	35.1	100.0
2013	32.1	30.8	37.1	100.0

	NPLs by categorisation			NPLs, total
	Non-standard	Doubtful	Loss	
2010	39.2	13.4	47.4	100.0
2011	32.6	14.0	53.5	100.0
2012	27.0	14.3	58.7	100.0
2013	26.4	14.3	59.3	100.0

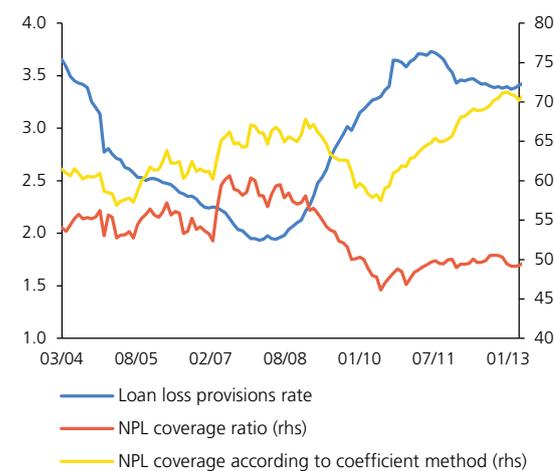
	NPLs past due			NPLs, total
	Not past due	Up to 3M past due	More than 3M past due	
2010	51.6	9.9	38.5	100.0
2011	46.1	9.4	44.5	100.0
2012	43.6	9.5	46.9	100.0
2013	41.8	6.7	51.5	100.0

Source: CNB, CNB calculation

Note: Collateralised loans = loans for house purchase + loans to corporations backed by property and at least two other types of collateral (pledged receivables, movables, securities, sureties, guarantees, etc.). Other loans are loans not included in the other two categories.

CHART IV.2

## Provisions and coverage of NPLs by provisions (%)



Source: CNB

declined in both the non-financial corporations sector and the household sector, falling by 0.2 pp year on year in both cases to 7.2% and 5% respectively at the end of 2013. Whereas in the first half of 2013 the decrease in the NPL ratio in both sectors was caused by higher growth in loans provided, in the second half of the year a significant role was also played by an absolute decline in NPLs. Although this decline was partly due to write-offs of such loans from banks' balance sheets, the write-off rate in 2013 was the lowest in four years.<sup>1</sup> However, both the volume and the ratio of NPLs to non-residents continued rising during the year, particularly the volume, as the ratio was reduced by rapid growth in loans to this sector.<sup>2</sup>

## ...but the quality of the NPL portfolio continues to deteriorate

In line with the loan migration analysis contained in FSR 2012/2013, migration of NPLs to the worst, i.e. loss, category continues. At the end of 2013, loans classified as loss loans accounted for about 60% of total NPLs (see Table IV.1), although the increase in this share was smaller than in previous years. Falling NPL quality is also apparent from the decreasing share of NPLs that are not actually past due (42% at the end of 2013). Moreover, the proportion of NPLs more than three months past due increased by more than one-third overall in 2011–2013 and exceeded 50% in 2013.

## NPL coverage by provisions may not be sufficiently prudent from the aggregate perspective...

The falling quality of the NPL portfolio is increasing the probability of these loans not being duly repaid in the future and banks incurring losses on them. It is therefore desirable for banks to adjust their provisioning to account for migration of loans to riskier NPL subcategories. Although the overall coverage of NPLs by provisions has long been around 50% and recorded a modest year-on-year increase, there is still a large difference between the actual level of provisioning and the level calculated using the coefficient method (see Chart IV.2).<sup>3</sup> This calculation does not take into account the collateralisation of NPLs, which reduces the necessary level of provisioning, but this indicator should not be ignored given the falling share of collateralised NPLs and the rising share of non-collateralised NPLs (see the upper part of Table IV.1).

1 The average write-off rate in 2013 was 7.7% of the NPL volume, compared to almost 9% in 2012 and 10.5% in 2011 and 2010.

2 The ratio of loans provided by domestic banks to non-residents increased by 2.4 pp in 2013, exceeding 11.4% at the end of 2013. The ratio of NPLs to non-residents was similar at the end of both 2012 and 2013, at around 9.1%.

3 Under Article 201 of Decree No. 123/2007 (and Article 78 of the new Decree No. 23/2014), banks may determine impairment losses by means of i) discounting of expected future cash flows, ii) the coefficient method, or iii) statistical models. The coefficient method sets the impairment loss at 1% for watch claims, 20% for substandard claims, 50% for doubtful claims and 100% for loss claims. However, the coefficients are applied to the unsecured part of the claim only. This could not be done in the analysis in question because of insufficient information on the collateral value related to NPLs.

### ...and some banks remain well below the sector's average levels in the coverage area

Looking more closely at the year-on-year change in the coverage ratios in banks with market shares exceeding 1%, it is evident that banks maintained – or even increased – the rate of coverage of NPLs by provisions. Only one bank exhibited an undesirable combination of a significant fall in the coverage ratio and a rise in the NPL ratio. Despite the overall year-on-year improvement in the coverage ratio and NPL ratio across the sector, however, there are still banks whose coverage ratios lie well below the sector average (see Chart IV.3).

### Credit risk may be partly underestimated in banks' balance sheets...

Despite the fall in NPLs, there are loans in banks' balance sheets that are not currently classified as non-performing even though they are at risk of non-payment. These are loans to clients who have credit from several banks and some of those banks already classify their claims on such clients as NPLs while others still record their loans to such clients as performing loans. As the categorisation of loans as non-performing and performing is based on examination of the client's situation, it is likely that a client whose loans with one bank are non-performing will soon or later also have problems with repaying loans to other banks.<sup>4</sup> Loans to such clients classified as performing loans represent a possible source of underestimation of NPLs and thus of the credit risk in banks' balance sheets.

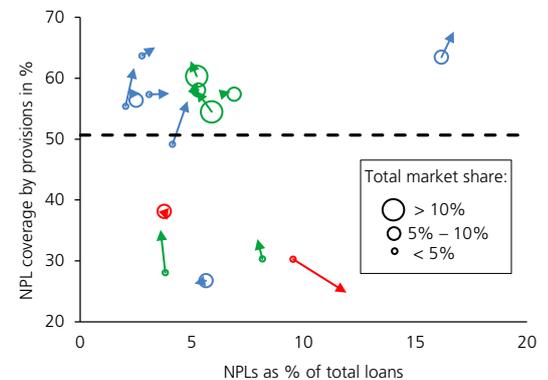
Underestimation of NPLs to non-financial corporations of CZK 7.3 billion was identified at the end of 2013 using Central Credit Register (CCR) data (see Chart IV.4).<sup>5</sup> Although this amount declined by about CZK 1 billion year on year, probably due to the overall year-on-year decline in credit risk in banks' balance sheets, it still represents almost 12% of NPLs to non-financial corporations. If this underestimation was included in the total NPL volume, the share of NPLs to non-financial corporations at the end of 2013 would be 0.8 pp higher, at 8%.

### ...and there is also a risk of NPLs increasing via certain off-balance-sheet items

Credit risk also arises from off-balance-sheet items, especially from guarantees and irrevocable loan commitments given. If such guarantees and irrevocable loan commitments are honoured, the resulting claims will constitute new balance-sheet claims of the bank on clients. To quantify the credit risk stemming from off-balance-sheet items, risky guarantees and risky loan commitments were calculated using CCR data. These are defined as guarantees and irrevocable loan commitments given to non-financial corporations whose bank loans are classified as NPLs. This concept expresses risky off-balance-sheet items that may give rise to

CHART IV.3

Year-on-year change in NPL coverage ratios across banks  
(arrows indicate change from 2012 to 2013)

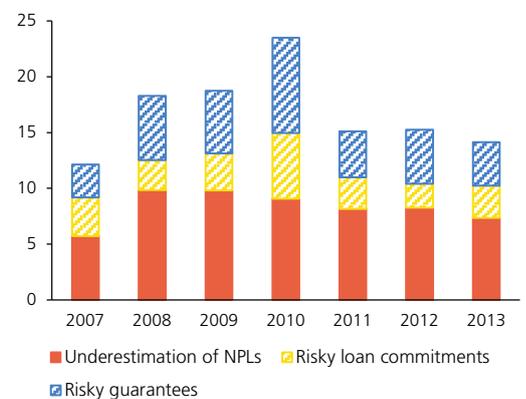


Source: CNB

Note: Green colour indicates an improvement, red colour a deterioration and blue colour an ambiguous path of the combined risk position. Only banks with market share > 1% are included. The dashed line marks the mean NPL coverage ratio of the analysed banks equal to 50.6% at the end of 2013.

CHART IV.4

Underestimation of NPLs, risky loan commitments and guarantees  
(CZK billions; non-financial corporations, residents)



Source: CNB

Note: Underestimation of NPLs = volume of loans provided to clients that are not classified as NPLs even though some bank has already classified its loans to the given clients as NPLs. Risky guarantees / loan commitments = volume of guarantees / irrevocable loan commitments given to clients who have an NPL with the given bank or another bank.

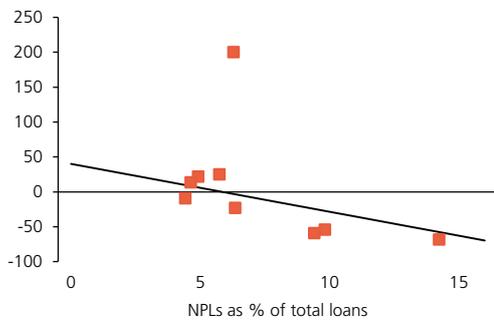
<sup>4</sup> In this respect the risks are somewhat overestimated, as some loans categorised as NPLs are not overdue (see Table IV.1).

<sup>5</sup> Owing to data unavailability, it is not possible to perform an analogous analysis for the household segment.

CHART IV.5

### Bank credit portfolio quality and lending to risky segments

(year-on-year change in loans to risky segments in %; as of 31 December 2013)



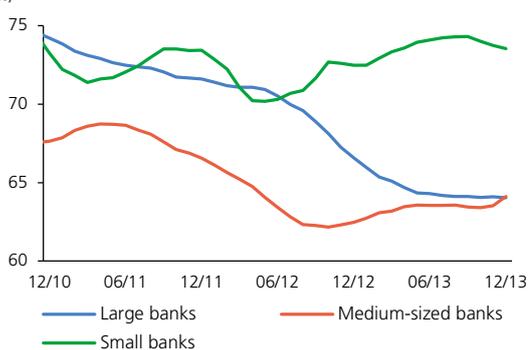
Source: CNB

Note: Risky credit segments are defined according to credit provided to non-financial corporations with the highest default rate in 2010–2012. The segmentation is by industry, turnover and number of employees of the firm. Only banks (excluding branches of foreign banks) with market share > 1 % are included.

CHART IV.6

### Risk weights by bank size

(%)



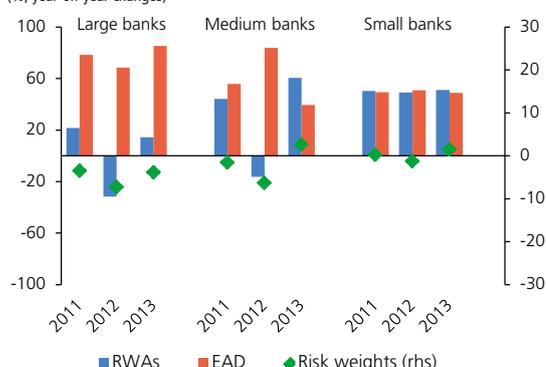
Source: CNB

Note: The calculation of risk weights covers assets in the investment portfolio excluding sovereign exposures. The values are six-month moving averages.

CHART IV.7

### Risk weights and the contributions of RWAs and EAD

(%; year-on-year changes)



Source: CNB

Note: Risk weights are defined as the ratio of risk-weighted assets (RWAs) to exposures at default (EAD) approximated by exposures in the investment portfolio less sovereign exposures. The sum of the contributions of RWAs and EAD equals 100%.

balance-sheet items with worse credit quality.<sup>6</sup> The evolution of risky loan commitments and guarantees given to non-financial corporations since the end of 2010 suggests declining credit risk arising from off-balance-sheet items. However, if this risk were to materialise in full, NPLs would rise by a further CZK 6.8 billion. Including the above underestimation of credit risk in banks' balance sheets, the share of NPLs to non-financial corporations would have been 8.7% at the end of 2013.

### Provision of new loans increased primarily in banks with lower NPL ratios

An analysis of the provision of new loans to non-financial corporations reveals that year-on-year growth in new loans in 2013 was recorded mainly in banks with lower NPL ratios and higher NPL coverage by provisions. Lending to risky credit segments decreased as well, particularly among banks with higher NPL ratios (see Chart IV.5). However, there are some exceptions with relatively aggressive business models, and they may accumulate relatively risky loans in their portfolios.

### Aggregate risk weights decreased...

Implicit risk weights can also be used to assess the riskiness of bank portfolios. These are calculated as the ratio of risk-weighted assets (RWAs) to exposure at default (EAD).<sup>7</sup> Risk weights – adjusted for sovereign exposures – decreased by 7.9 pp in 2011–2013, to 64%. This suggests that banks are moving away from risky exposures. The downward trend seen in recent years pertains mainly to medium-sized and large banks (see Chart IV.6).

### ...but the reduction in the riskiness of bank portfolios may be illusory

The question is to what extent the said decrease in risk weights adjusted for government exposures reflects an actual reduction in the riskiness of the banking sector's portfolios. The decomposition of the change in risk weights reveals that their decline in large and partly also medium-sized banks was accompanied by a rise in exposures without a marked increase in RWAs or even with a decline in RWAs (see Chart IV.7).<sup>8</sup> This suggests that the reduction in risk weights may not have been due solely to a move away from risky exposures. It may also have been linked with efforts by banks to make maximum use of the possibilities offered by the existing regulations (optimisation), including the extension of the IRB approach to new segments, the use of previously little used parameters in the calculation of capital requirements, and the recalibration of existing models. A comparison of the risk weights with the values calculated

6 See also FSR 2011/2012 (pp. 63–64) and FSR 2012/2013 (pp. 53–54).

7 For simplicity, we approximate EAD by exposures in the investment portfolio.

8 In addition, an analysis of risk weights in nine banks with a total market share of around 90% of the credit market reveals that even in relatively homogeneous credit segments there are considerable differences in risk weights across banks. For example, in the segment of loans for house purchase the risk weights range between 21% and 33%. The risk weights for loans to corporate clients range from 37% to 81% and those for consumer credit from 49% to 91%.

using the Basel I<sup>9</sup> rules reveals widening differences in the implied riskiness of bank portfolios in 2011–2013 (see Chart IV.8). The results thus point to relative flexibility in the existing Basel II/III rules, which may substantially reduce the comparability of risks in bank portfolios.<sup>10</sup>

### The capital adequacy of the banking sector is increasing...

The Czech banking sector is well capitalised. In 2013, the sector's Tier 1 capital adequacy ratio (Tier 1 CAR) rose to 16.9%. All banks are compliant with the minimum Tier 1 CAR requirement of 8%, which for the Czech banking sector is almost identical to the new Common Equity Tier 1 requirement (see Chart IV.9). The banking sector is compliant with the new CRD IV/CRR capital regulations by a sufficient margin. This is also evidenced by the fact that banks representing more than 83% of the sector's assets had a Tier 1 CAR exceeding 15% at the end of 2013.

### ...not only because of rising capital, but also because of falling risk weights

The above-mentioned trend of falling risk weights also has an effect on the calculation of capital adequacy, which it can increase even in the absence of corresponding growth in capital. For example in 2012 H2, the sector's capital adequacy increased even though the absolute amount of capital decreased. If we estimated the sector's capital adequacy using the risk weights as of the end of 2010, before they started to show a downward trend, the Tier 1 CAR would have been 1.5 pp below its current value at the end of 2013.

### Capital adequacy can alternatively be examined using the leverage ratio...

To adjust capital adequacy for the effect of risk weights it should alternatively be examined using the leverage ratio, i.e. the ratio of capital to non-risk-weighted assets. The advantage of this indicator is its relative simplicity and its robustness to efforts by banks to optimise the calculation of risk weights (or capital requirements) and also the fact that it is more cyclical than the capital adequacy ratio (see Chart IV.10). At times of economic growth, when bank lending activity is higher, the leverage ratio decreases faster than the capital adequacy ratio. The introduction of a minimum limit on the leverage ratio envisaged in Basel III may therefore offer an instrument capable of creating an upper limit for the expansion of balance sheets in the optimistic phase of the financial cycle and thereby preventing the accumulation of excessive systemic risks of a cyclical nature.<sup>11</sup>

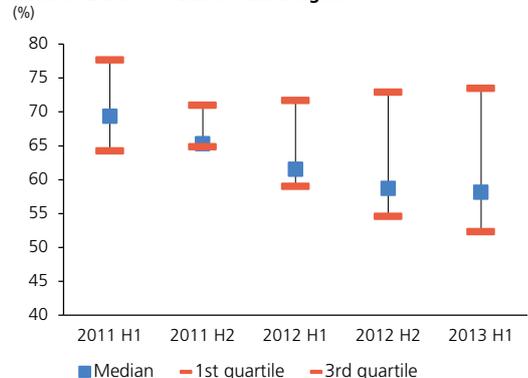
9 The Basel I prudential rules divided balance-sheet and off-balance-sheet items into four main categories with risk weights of 0%, 20%, 50% and 100%. For example, a 0% risk weight was assigned to the instruments of governments of OECD countries, a 20% weight to interbank loans, a 50% weight to loans for house purchase and a 100% weight to other loans to the private sector.

10 See, for example, the EBA (2013): *Interim Report on the Consistency of Risk-Weighted Assets in the Banking Book*, February 2013.

11 The disadvantage of introducing a limit on the leverage ratio is that institutions may be encouraged to replace low-risk assets in their balance sheets with higher-risk assets. For this reason, the limit on the leverage ratio should be used as a complement to the existing

CHART IV.8

#### Ratio of Basel II to Basel I risk weights (%)

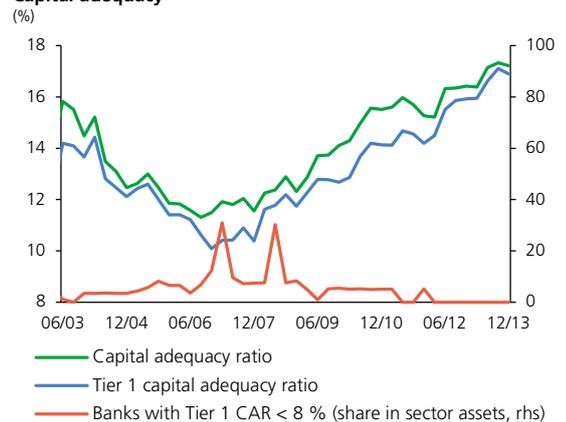


Source: CNB

Note: The analysis was performed on a sample of nine banks using the IRB approach with a total market share of around 90% of the credit market.

CHART IV.9

#### Capital adequacy (%)



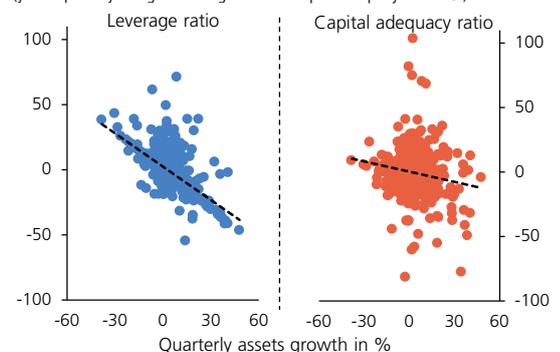
Source: CNB

Note: Assets of sector = assets of banks excluding branches of foreign banks. Banks active at the end of 2013.

CHART IV.10

#### Cyclicality of the leverage ratio and the capital adequacy ratio

(y-axis: quarterly change in leverage ratio and capital adequacy ratio in %)

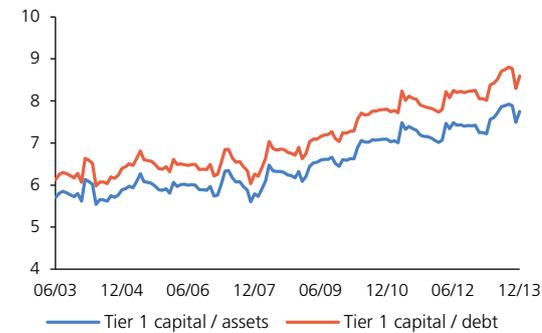


Source: CNB

Note: The data are for individual banks excluding branches of foreign banks, 2003 Q1–2013 Q4.

CHART IV.11

## Leverage ratio (%)



Source: CNB

Note: The assets and debt of the sector are computed excluding branches of foreign banks.

## ...which is also favourable in the domestic banking sector

The aggregate leverage ratio of the domestic banking sector, defined as the ratio of Tier 1 capital to non-risk-weighted assets,<sup>12</sup> is 7.7%, well above the 3% minimum regulatory limit. Regulatory implementation of this ratio is not expected until 2018.<sup>13</sup> The calculation method and the limit itself may thus change in the future. The leverage ratio can alternatively be defined as the ratio of Tier 1 capital to bank debt. For the Czech banking sector this indicator shows similar dynamics (see Chart IV.11).

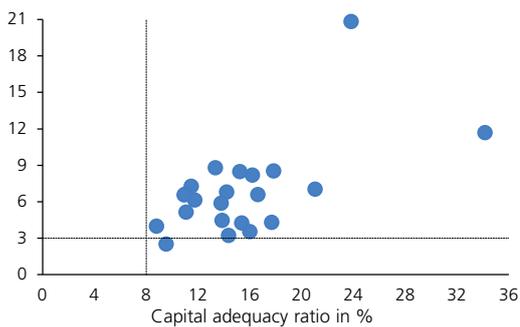
## The low leverage ratios of some banks remain a potential risk

Although the leverage ratio is favourable at the aggregate level and is well above the preliminary 3% limit in most banks, there is significant heterogeneity across banks. Some are close to the limit, and one is even below it (see Chart IV.12). Such banks should therefore gradually increase their capital or adjust their balance sheets so that they safely comply with the limit when it is introduced.

CHART IV.12

## Capital adequacy ratios and leverage ratios across banks

(y-axis: leverage ratio in %)



Source: CNB

## The banking sector is prepared for the tightening of capital rules

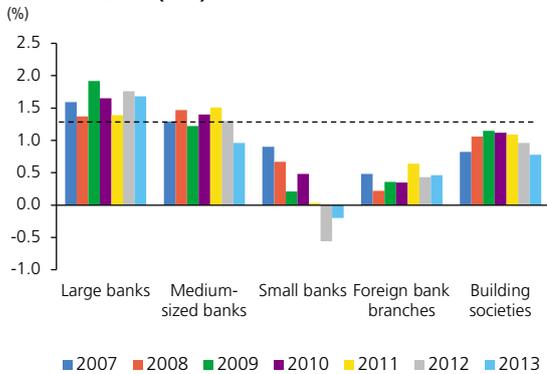
The above information implies that the Czech banking sector is well capitalised in terms of both its capital adequacy ratio and its leverage ratio and is thus prepared for the tighter capital regulation linked with new European legislation. In 2013, the CNB informed four selected banks that it would require an additional capital reserve of 1% to 3% from them to cover systemic risk (for more details see section 5.3).

## Domestic banks maintained good profitability...

The Czech banking sector has long been profitable and significantly exceeds the euro area average.<sup>14</sup> The banking sector's profitability is determined above all by the performance of large banks, which account for almost 60% of the banking sector's assets and whose return on assets (RoA) was 1.7% in 2013 (see Chart IV.13). The segments of medium-sized banks and building societies experienced a pronounced year-on-year decline in RoA, while small banks again recorded a loss.

CHART IV.13

## Return on assets (RoA) (%)



Source: CNB

Note: The classification of banks by asset size relates to the year for which the RoA value is reported. The horizontal line depicts the RoA value for the banking sector as a whole for 2013.

limits on risk-weighted assets (the capital adequacy limit). For more details, see, for example, Wagman, K. (2013): *The Leverage Ratio – What Is It and Do We Need It?* Sveriges Riksbank Economic Commentaries 5/2013.

12 This is merely an estimate of the leverage ratio as defined in Basel III, according to which the denominator of the leverage ratio should, in addition to balance-sheet assets, include off-balance-sheet items such as loan commitments and derivatives. The indicator used in this text therefore slightly overestimates the leverage ratio. The Basel III leverage ratios as of 2013 Q4 obtained from selected banks representing about 85% of the assets of the Czech banking sector indicate that this overestimation is roughly 1 pp.

13 Limits on the leverage ratio already exist in various forms in, for example, the USA (4%), Canada (5%), China (4%), Switzerland (3% on a consolidated basis and 4% on a solo basis for two large banks, excluding domestic loans) and the UK (3% for two selected banks). Some countries plan to introduce higher limits than the proposed 3% level, for example Turkey (5% as from 2015) and the Netherlands (4% for systemically important banks). The OECD recommends a minimum limit of 5%.

14 See the *Analyses of the Czech Republic's Current Economic Alignment with the Euro Area in 2013*, pp. 84–85.

RoA of the banking sector as a whole in 2013 was 1.3%, down by 0.1 pp year on year. The sector's net profit fell by 4.5% year on year.<sup>15</sup>

### ...but their interest profit decreased for the second consecutive year

The decline in the sector's profitability was due mainly to lower interest profit, which is a key component of domestic banks' profitability and fell for the second year in a row (see Chart IV.14). This trend is in line with the prediction given in FSR 2012/2013 and is linked with the period of low interest rates and the limited ability of some banks to further reduce their interest rates on the liability side. Similarly, profit from fees and commissions fell slightly for the second consecutive year. Despite positive economic growth in the *Baseline Scenario*, profitability is still expected to drop by about 5% year on year in the next two years.

### The volume of deposits in the banking sector increased despite falling interest rates

Despite a modest overall decline in the average deposit interest rate (of 0.2 pp), bank deposits of resident clients increased in 2013 to the same extent as in 2012, i.e. by about CZK 190 billion. As in 2012, household deposits rose the most in small banks, which on average offer the highest rates. Medium-sized banks showed greater heterogeneity in their deposit rates in 2013, especially for household deposits. Only foreign bank branches and building societies saw an outflow of deposits (see Chart IV.15).

### Banks keep a sizeable liquidity buffer...

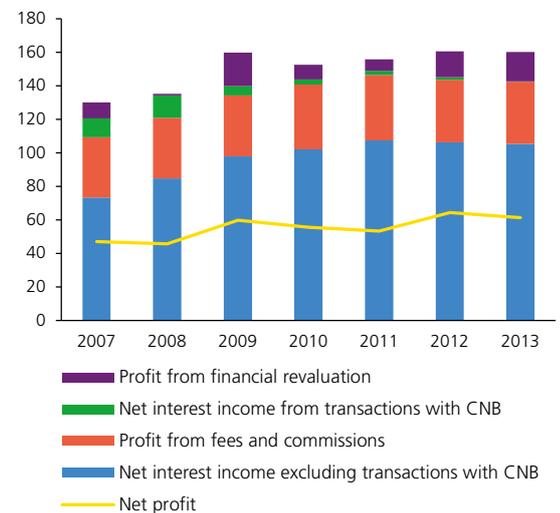
The liquidity situation of the banking sector is still very good, thanks mainly to an excess of client deposits over client loans, which reached 130% at the end of 2013 (see Chart IV.16). Client deposits and loans are denominated mostly in Czech koruna (89% of deposits and 82% of loans), while residents account for 96% of deposits and 89% of loans. The liquidity surpluses are having a positive effect on holdings of liquid assets, whose share in banks' balance sheets has been increasing over the last three years. Quick assets consist mainly of Czech government bonds (47%), cash and cash balances with the CNB (45%) and interbank loans payable on demand (4%). The good liquidity position will enable banks to comply with the liquidity rules under the newly applicable CRR banking regulation (see section 4.2) and also leaves room for supporting lending activity in an economic recovery.

### ...only building societies invest liquidity in their banking groups at longer maturities

The smallest liquidity buffer is held by building societies (see Chart IV.17), which usually deposit excess liquidity with their domestic parent banks in the form of deposits with longer maturities or invest in securities issued

CHART IV.14

#### Key components of profit from financial activities (CZK billions)

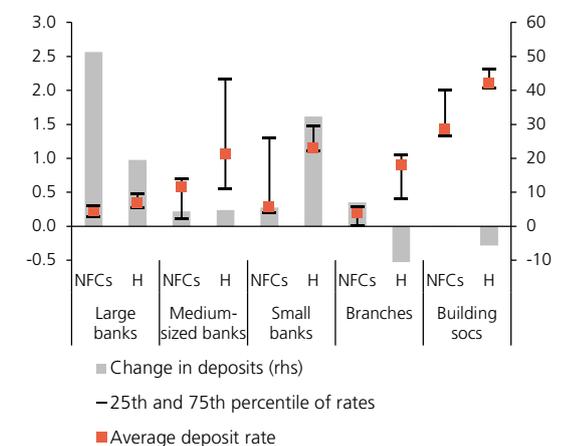


Source: CNB

CHART IV.15

#### Change in household deposits in 2013 and average interest rates

(rates in %; right-hand scale: deposits of residents in CZK billions)



Source: CNB

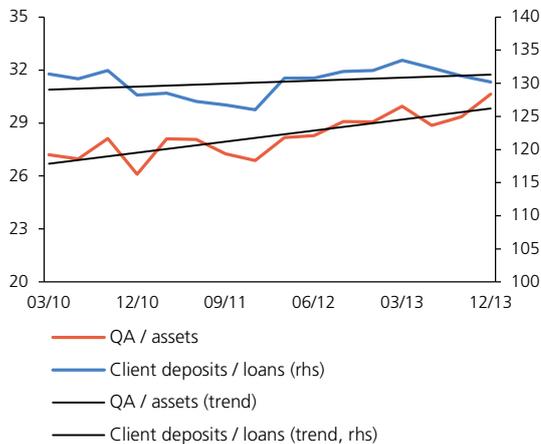
Note: Bank size classification by asset size as of 31 December 2012. NFCs = non-financial corporations; H = total households. NFCs' deposits at building societies are deposits of housing cooperatives and owners' associations. NFCs' deposits account for less than 0.5% of total building society deposits.

<sup>15</sup> Domestic banks' profit also includes dividends paid by their subsidiaries. They totalled more than CZK 6.5 billion in 2012 and rose further to CZK 8.8 billion in 2013. If this increase in dividends paid was deducted, the banking sector's profitability would drop by about 8% year on year.

CHART IV.16

**Liquidity ratios over time**

(%; QA = quick assets)



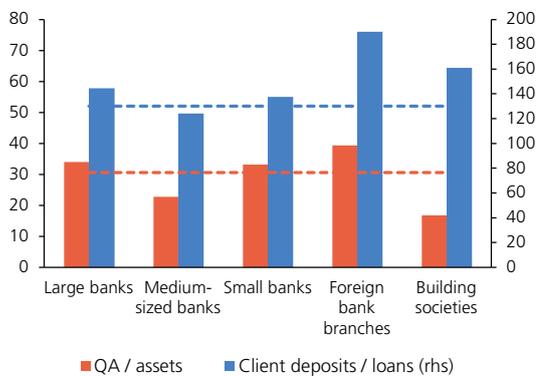
Source: CNB

Note: The ratio of deposits to loans covers both residents and non-residents.

CHART IV.17

**Liquidity situation in the banking sector**

(%; QA = quick assets, as of December 2013)



Source: CNB

Note: The value for medium-sized banks excludes Hypoteční banka and Česká exportní banka owing to their specific funding models. The dashed lines denote values for the banking sector. The ratio of deposits to loans covers both residents and non-residents.

by their parent banks, which are not a component of quick assets. As domestic building societies form regulated consolidated groups<sup>16</sup> with their parent banks, there are no caps on mutual exposures between these domestic entities.<sup>17</sup> At the end of 2013, the gross exposure of building societies to their domestic parent banks was 460% of their regulatory capital (or 22% of their assets), with 45% of the exposure being in the form of mortgage bond holdings and 55% in the form of other claims. This suggests, among other things, that the building savings system cannot be regarded as completely closed, as a significant proportion of building savings deposits placed in building societies are then provided to commercial banks within banking groups.

### Banking groups are also active in other forms of financial intermediation...

Domestic banking groups not only operate in the banking business and, via their subsidiaries, in the building society business, but also form quite large consolidated groups allowing them to carry on business in less regulated industries (e.g. non-bank companies providing consumer credit).

### ...while banks and the entities they control are linked not only through ownership interests, but also through credit exposures...

The entities within banking groups are linked not only through ownership interests, where the domestic parent bank owns shares in the group members it controls, but also through credit exposures. The credit links between the largest domestic banks and the entities they control have increased since 2010 on both the asset and liability sides (see Chart IV.18).<sup>18</sup> Domestic parent banks are in a debtor position mainly vis-à-vis building societies that are members of these bank groups. Building societies' claims on their parent banks represent 86% of parent banks' total liabilities to all the entities they control. By contrast, domestic parent banks are in a creditor position vis-à-vis non-bank financial corporations engaged in lending, whose liabilities to the parents banks account for about 88% of total parent banks' claims on all controlled entities. This primarily concerns the funding of leasing companies and consumer financing and factoring services. Liquidity within domestic banking groups thus effectively spills across entities with varying loan portfolio quality.<sup>19</sup>

16 Regulated consolidated groups pursuant to Decree No. 123/2007. Prudential consolidation is now regulated by the CRR.

17 The exception is Wüstenrot stavební spořitelna, which is not a subsidiary of a domestic bank. It forms a regulated consolidated group with Wüstenrot hypoteční banka.

18 The chart does not show the credit links between ČSOB and its subsidiary Hypoteční banka, which provides mortgage loans in the ČSOB group. As a result, close links exist between these entities, the majority source of funding of Hypoteční banka being loans from ČSOB and mortgage bonds issued by Hypoteční banka and held by ČSOB in its balance sheet.

19 At the end of 2013, the ratio of impaired loans to total client loans for the banking sector was 9.7% on a consolidated basis for regulated consolidated groups and 8.6% on a solo basis. This indicates higher credit risk for entities belonging to consolidated groups than for banks on a solo basis.

### ...increasing the complexity of financial intermediation and the possibility of reputational contagion

The information above implies that domestic banking groups contribute to the interconnectedness of the financial sector, thereby increasing the complexity of the sector and the structural component of systemic risk. Non-banks in consolidated banking groups are not completely unregulated, as they are subject to supervision on a consolidated basis, but greater complexity of consolidated groups may reduce the possibility of identifying risks inside groups effectively and in a timely fashion. The links between banking group entities may thus, among other things, constitute a channel of reputational contagion. Greater complexity should therefore be accompanied by greater transparency in the area of disclosure of information about banks' business, risks, structures and interconnectedness (see Box 3).

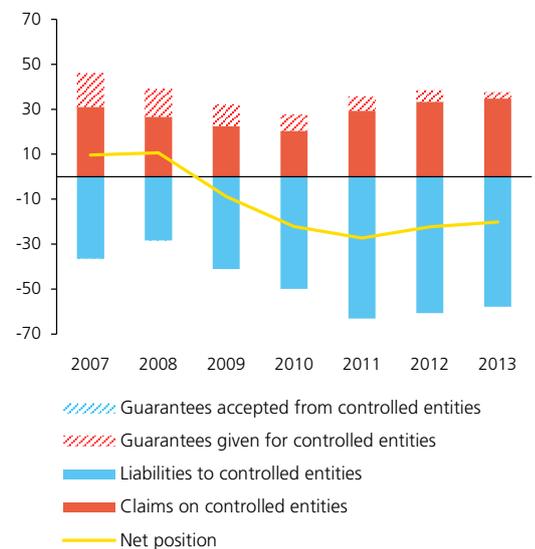
#### BOX 3: INITIATIVES TO ENHANCE BANK TRANSPARENCY

Banks' financial results are closely monitored by investors, financial analysts, economic experts and the media in addition to supervisory authorities themselves. These financial professionals implicitly supervise financial institutions and thereby enhance market discipline. However, their ability to adequately assess the risk profiles and resilience of banks is affected by the scope and quality of the available information and by how up-to-date that information is. Czech banks therefore publish – in addition to annual reports – obligatory information on a quarterly basis about their financial condition, main prudential indicators and organisation structures and their relations with shareholders, management, and parent companies and subsidiaries.<sup>20</sup>

The new CRR, in effect since the start of 2014, also focuses on enhancing transparency within Pillar 3 by stipulating information disclosure requirements. The CRR aims to standardise the information published by EU banks at least on an annual basis. According to the CRR, annual disclosures should be published in conjunction with the date of publication of the financial statements. The CRD gives national regulators discretion to increase the frequency of disclosure and set deadlines for publication. However, the CRR focuses on transparency at the level of European parent institutions on a consolidated basis and less at the level of subsidiaries in the Member States, which account for the bulk of the assets of the Czech banking sector. Subsidiary banks in the Czech Republic of material significance for the local market will therefore be subject to reduced disclosure

CHART IV.18

**Credit interconnectedness in domestic bank groups**  
(as % of regulatory capital of domestic parent banks)



Source: Obligatory information to be disclosed pursuant to Decree No. 123/2007  
Note: The chart depicts the aggregate interconnectedness between the largest domestic banks, i.e. Česká spořitelna, ČSOB, Komerční banka and Raiffeisenbank. UniCredit Bank is included only in the periods when it controlled entities.

<sup>20</sup> See the obligatory information to be disclosed pursuant to Decree No. 123/2007 Coll. and Decree No. 23/2014 Coll. Links to the obligatory information of individual institutions are available on the CNB website: [http://www.cnb.cz/en/supervision\\_financial\\_market/conduct\\_of\\_supervision/information\\_duties/info\\_disclosure\\_banks.html](http://www.cnb.cz/en/supervision_financial_market/conduct_of_supervision/information_duties/info_disclosure_banks.html)

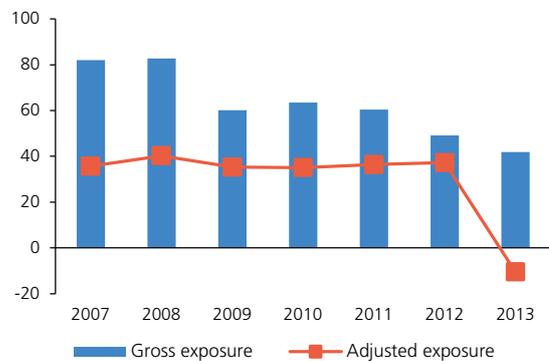
requirements under the CRR.

In the context of financial stability, the ESRB emphasises the potential benefits of regular collection of standardised Pillar 3 information to enable comparisons of information over time and across banks and countries.<sup>21</sup> For this reason it proposes the creation of a European public database of harmonised Pillar 3 information, similar to the one available in the USA.<sup>22</sup>

In line with this idea, the CNB advocates the disclosure of information by domestic banks in standardised formats that will allow comparisons over time and across banks. Standardised formats (available on the CNB website in Czech and, from summer 2014, also in English) should increase the clarity and facilitate the processing of data, particularly quantitative data, and give foreign investors and analysts access to such information.<sup>23</sup> This is in line with the EBA's advice that institutions should consider the needs of disclosure users when choosing the language for their disclosures.<sup>24</sup>

CHART IV.19

**Gross and adjusted exposure to parent groups**  
(%: exposure in relation to regulatory capital)



Source: CNB

Note: The chart shows the aggregate exposure of the five largest banks in the Czech Republic, which have foreign parents in the euro area. Gross exposure consists mainly of claims in the form of loans provided to the parent group and claims arising from derivatives transactions and other off-balance-sheet items in the investment and trading portfolios. Adjusted exposure = gross exposure minus liabilities in the form of deposits and loans accepted from foreign parent banks. The values in the chart do not reflect any collateralization.

**Domestic banks have become net debtors of foreign parent groups...**

The exposure of the five largest domestic banks<sup>25</sup> to foreign parent groups has been falling for several years. At the end of 2013, the gross exposure of their investment and trading portfolios represented 42% of their regulatory capital, down by 7 pp from the end of 2012 (see Chart IV.19). The domestic banking sector had long been a net creditor of foreign parent groups and there had been concerns about an outflow of liquidity from the domestic banking sector combined with credit risks, but at the end of last year the position of domestic banks changed into one of a net debtor, as foreign banks helped to satisfy demand for the euro during the CNB's interventions in November 2013.

**...but the banking sector's net external position remains positive**

Thanks to a high volume of residents' deposits, the domestic banking sector as a whole has long been independent of foreign funding and its net external position fluctuated around 8% of GDP in 2013. In 2013 Q4,

21 ESRB (2013): *Benefits of a Standardised Reporting of Pillar 3 Information*, ESRB Staff note, January 2013.

22 In the USA, the information disclosed by banks is stored in a public database in the same format and structure as the regular supervisory reports (see <https://cdr.ffiec.gov/public/Default.aspx>).

23 Official Information of the Czech National Bank of 4 April 2014, including Annexes 1 and 2.

24 EBA (2013): *Follow-Up Review of Banks' Transparency in Their 2012 Pillar 3 Reports*, EBA Report, December 2013.

25 Česká spořitelna, ČSOB, Komerční banka, UniCredit Bank, Raiffeisenbank (Hypoteční banka has higher assets than Raiffeisenbank but was not taken into account because it is a subsidiary of ČSOB and has no direct exposures to its foreign parent bank KBC).

the sector's net external position saw a one-off decrease of about CZK 140 billion to CZK 180 billion as a result of the CNB's foreign exchange interventions, but it was still positive at 5% of GDP at the end of 2013.

### Deposits in credit unions are continuing to rise despite adverse developments in this segment...

2013 was an unfavourable year from the perspective of credit unions. One credit union had its licence revoked. Another was prohibited from accepting deposits from the public and some of its other activities were limited. Despite this adverse trend, the other credit unions reported a continued increase in deposits received in 2013 (year-on-year growth of 7.3%). Credit unions represent only a marginal part of the financial sector, accounting for a mere 0.5% of its total assets at the end of the year. The 2013 experience confirms, however, that problems in small institutions can have adverse reputational impacts and reduce the high public confidence in other credit institutions.

### ...and a comparison with banks confirms that credit unions have a high level of risk

In aggregate terms, the credit union segment is still riskier than the banking segment (see Table IV.2). The ratio of NPLs to total loans rose significantly year on year (by almost 9 pp to 22.7%). Owing to provisioning for NPLs, the sector recorded a year-on-year fall in profit and thus also in its profitability indicators. The concentration of the largest loans showed a modest improvement – the ratio of the five largest loans to capital decreased from 102% to 93%. An analysis of concentration by industry also reveals that the biggest loans in the credit union segment were provided to corporations with a very similar classification of economic activities<sup>26</sup> – mostly property development projects and real estate activities. This represents a risk of concentration if conditions worsen in these areas of economic activity. The above loans account for 60% of the total volume of the 15 largest exposures of individual credit unions. The CNB will continue to pay increased attention to the situation in the credit union segment and initiate regulatory changes that will reduce its level of risk (see the Box *The current and expected regulatory framework for credit unions* in section 5).

### The evolution of the real economy in 2013 had an adverse effect on the insurance market

As expected in FSR 2012/2013, premiums written in life insurance stagnated, mainly as a result of a fall in premiums written for new contracts (see Chart IV.20). Moreover, this stagnation is being accompanied by a rise in claim settlement costs, due mainly to policies maturing. The non-life insurance segment saw a modest rise in premiums written, thanks among other things to more favourable developments in vehicle liability insurance and vehicle accident insurance. The increase in claim settlement costs arising from insurance against damage to or loss of property in 2013 had an adverse effect on the financial results of non-

TABLE IV.2

Selected indicators of credit unions as compared to banks  
(%; end-2012 and end-2013 data; credit unions active as of 31 December 2013)

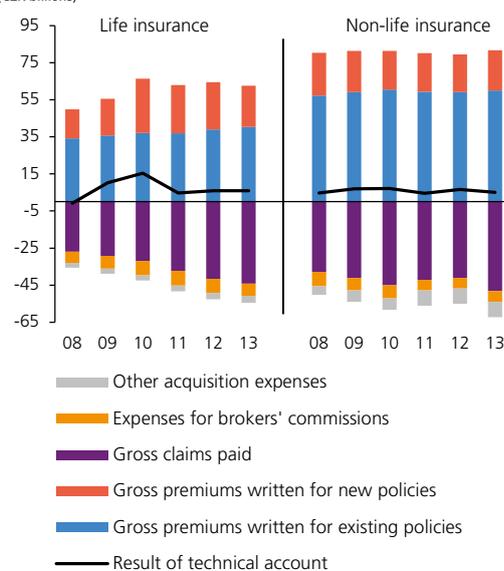
	2012		2013	
	Credit unions	Banks	Credit unions	Banks
Average interest rate on client loans (1)	8.0	4.8	7.8	4.2
Average interest rate on client deposits (2)	2.9	1.1	3.0	0.8
Interest margin (1)–(2)	5.1	3.8	4.8	3.3
Client deposits / loans (excluding general government)	125	119	115	118
Client NPL ratio	14.0	6.2	22.7	6.1
Quick assets / total assets	18.2	28.8	18.6	30.6
Coverage of NPLs by provisions	16.2	49.5	16.6	51.6
Tier 1 CAR	12.8	15.9	13.1	16.8
RoE	4.5	20.7	0.3	16.9
RoA	0.5	1.4	0.0	1.2
Share of sector in client loans	0.8	99.2	1.0	99.0
Share of sector in client deposits	0.9	99.1	0.9	99.1

Source: CNB

Note: The year-on-year comparison excludes *Metropolitní spořitelni družstvo*, whose licence was revoked in December 2013. The accounting period is not unified across the credit union segment, so the relevant data were annualised for some institutions.

CHART IV.20

Key financial indicators for the insurance sector  
(CZK billions)



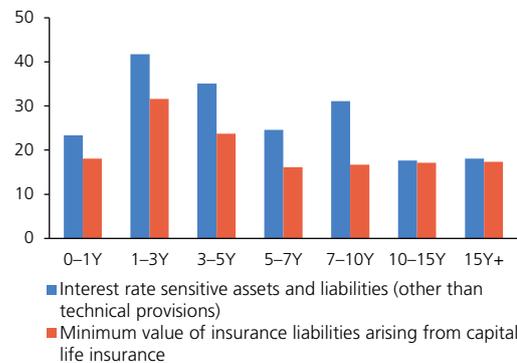
Source: CNB

26 By line of business or other activity as stated in the Business Register.

CHART IV.21

**Asset and liability maturity profile in life insurance**

(CZK billions; as of 31 December 2012)



Source: CNB

Note: Interest rate sensitive assets include financial assets held to maturity at amortised cost. Y stands for year.

life insurers and contributed to a slight decline in the technical account for non-life insurance. These factors, coupled with a sizeable fall in returns on financial placement (see below), fostered an overall decline in the profit and RoE of the insurance sector in 2013 (see line NI.6 in the *Table of Indicators*).

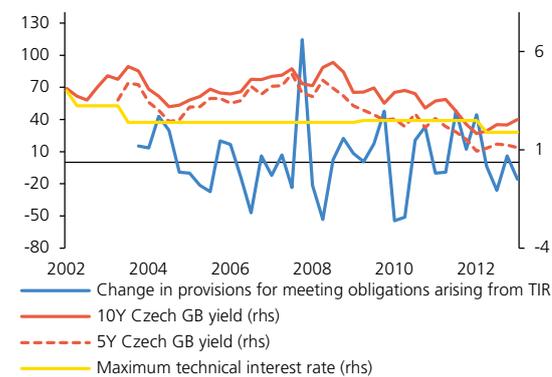
**Financial market developments led to a year-on-year decline in realised gains and gains from revaluation**

The investment strategies of domestic insurance companies are relatively conservative. Their portfolios are dominated by Czech government bonds and the current regulations contain no limits on investment in bonds issued by governments or central banks of OECD countries. As a large proportion of the debt securities held by insurance companies are marked to market (see Chart III.18 in section 3), the decline in Czech bond yields during 2012 meant a rise in insurers' gains from the revaluation of these instruments to fair value. By contrast, the financial market developments in 2013, linked with growth in yields, led to a decline in realised gains and gains from revaluation.

CHART IV.22

**Maximum technical interest rate and Czech government bond yields**

(%)



Source: CNB

Note: Interest sensitive assets include financial assets held to maturity at amortised cost. Data from a sample of 11 insurance companies taking part in joint stress tests.

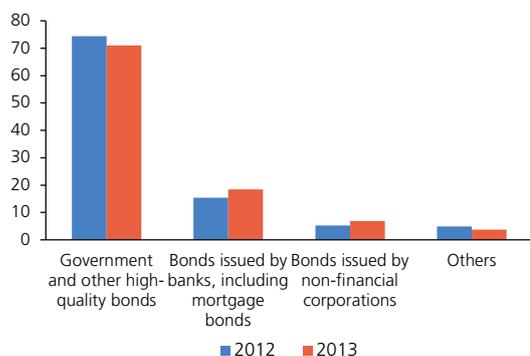
**The limited returns on some assets are leading insurance companies to seek alternative investments**

Although debt securities with long maturities dominate the financial asset placement of life insurers (see Chart IV.21), the segment of traditional life insurance is also characterised by long liability maturity, which usually exceeds asset maturity. The low or even negative differential between market and guaranteed nominal returns is reducing the scope for generating profit on these products (see Chart IV.22), and this, in turn, is encouraging insurers to seek more profitable investments. Some changes in the financial placement structure can now be seen on insurance companies' asset side. Although their assets are still dominated by government bonds and bonds issued by international organisations, disposable funds are being increasingly invested in more profitable types of assets such as bonds issued by banks and non-financial corporations (see Chart IV.23).

CHART IV.23

**Composition of insurance companies' bond portfolio**

(as % of total; based on face values)



Source: CNB

**The adverse effects of the financial cycle are being partly dampened by regulations**

The impacts of the financial cycle on insurers' finances are also being dampened on the asset side by the option of valuing high-quality government bonds (with the same or higher rating than the Czech Republic) held to maturity at amortised cost, and on the liability side by the regulations applying to the creation of statutory technical provisions, whose level is set using the technical interest rate (TIR). In the case of changes in interest rates, regular liability adequacy test is reflected in the creation or release of additional reserves. At the end of 2012, the average TIR was about 2.9%,<sup>27</sup> while the five-year bond yield was only 1.12% (the average maturity of the bonds held is about seven years). The

27 The average TIR is calculated as the average TIR for a sample of insurance companies participating in regular joint stress tests weighted by the capital life insurance liabilities of the respective insurers.

upper limit on the TIR for new contracts was 1.9% at the end of 2013 (see Chart IV.22). This limit partly reduces the competitive pressure to offer excessively high guaranteed returns on traditional life insurance products and hence also the risk associated with generating a guaranteed investment return.

### The pension management companies sector switched in 2013 to new regulations based on an approved reform...

The pension fund sector started to operate under new rules on 1 January 2013. One manifestation of this was the conversion of pension funds to pension management companies (PMCs), with separate administration of managed funds and company assets. PMCs manage funds under both Pillar II (retirement funds) and Pillar III of the pension system. Pillar III allows voluntary pension schemes (transformed funds and participation funds). At the end of 2013, the PMC sector had total assets of CZK 297 billion, with transformed funds – which manage the original funds of Pillar III participants – having the dominant position. The assets of participation funds amounted to CZK 0.4 billion and those of retirement funds to CZK 1.3 billion as of the same date. Neither the funds deposited in the new PMCs' funds nor the number of Pillar II participants met expectations regarding the take-up of this form of investment during the first year, and further amendments of Pillar II can probably be expected in the years ahead.<sup>28</sup>

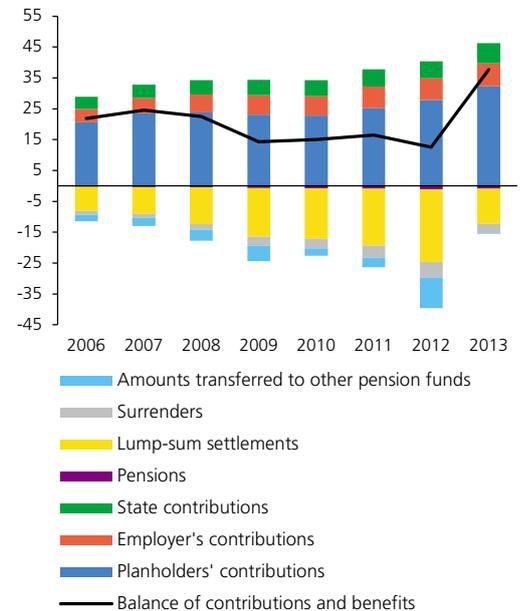
### ...and started to offer new investment opportunities to planholders

During 2013, transformed funds recorded an increase in planholders' contributions, reflecting a change in the legal conditions for obtaining state contributions and applying tax deductions (see Chart IV.24).<sup>29</sup> The much higher balance of contributions and benefits was due to both its deposit and expenditure components. The amount of benefits paid in 2013 dropped to the pre-crisis level, driven mainly by a decline in lump-sum settlements. At the same time, migrations between PMCs halted. This reflects system changes made as part of the legislative amendments of Pillar III, and a similar trend can be expected in the years to come. Migration of Pillar III participants from transformed funds to new participation funds offering the option of choosing investment strategies was minimal in 2013 (1,300 clients according to the Czech Ministry of Finance). The clients of new participation funds chose evenly between conservative and riskier funds (see Chart IV.25).

CHART IV.24

#### Contributions and benefits in transformed PMC funds

(CZK billions)

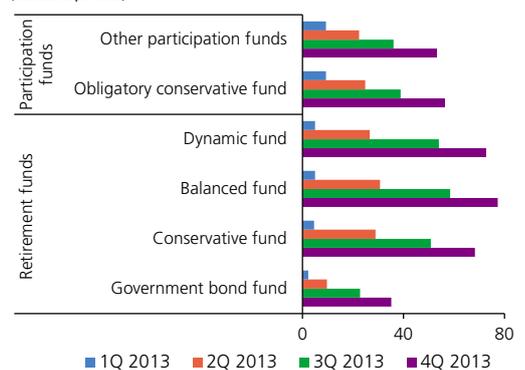


Source: CNB

CHART IV.25

#### Number of planholders in new Pillar II and III funds by type of fund

(thousand persons)



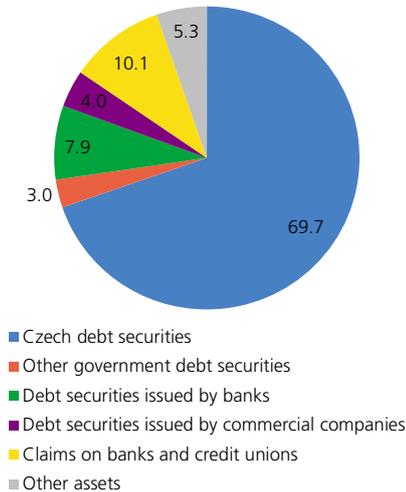
Source: CNB

Note: The chart does not show the total number of planholders in each fund, as a single client may be a planholder in multiple funds. Retirement funds consist of retirement savings, i.e. Pillar II of the pension system. Participation funds consist of planholders' funds in voluntary pension schemes, i.e. Pillar III.

<sup>28</sup> The legal conditions for carrying on PMC activities stipulate that, 24 months after being granted a licence to establish an obligatory conservative fund, the PMC must have at least 10,000 participants and the participation fund managed by the PMC must have assets worth at least CZK 50 million; this does not apply to the obligatory conservative fund.

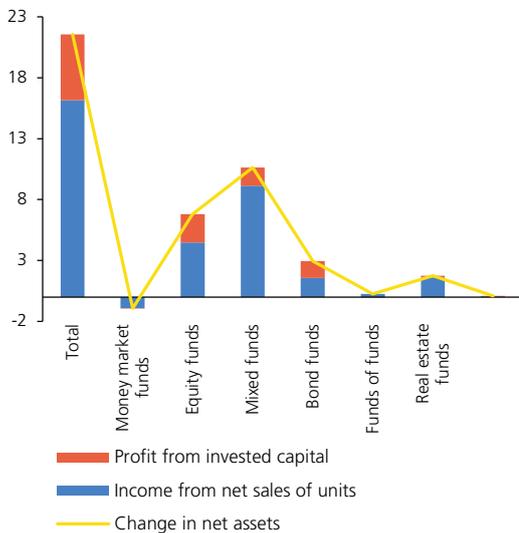
<sup>29</sup> The minimum monthly planholder contribution for which a state contribution is paid was increased from CZK 100 to CZK 300 on 1 January 2013. Tax deductions now apply only to monthly planholder contributions of between CZK 1,001 and CZK 2,000, as against the original range of CZK 501 to CZK 1,000. The maximum monthly state contribution is now CZK 230 and the maximum amount deductible from the income tax base in a one-year tax period is CZK 12,000.

CHART IV.26

**Placement of assets of transformed PMC funds**  
(%)


Source: CNB

GRAF IV.27

**Decomposition of changes in the net assets of open-ended mutual funds intended for the public**  
(CZK billions; for 2013)


Source: CNB

**Conservative investment still predominates, but the portfolio structure is broadening**

Most contributions to transformed funds continue to be placed in Czech government bonds (see Chart IV.26). In 2013, however, there was an increase in investment in bonds issued by Czech banks and commercial companies. As with insurance companies, this is associated with efforts to invest in assets yielding higher returns than those currently offered by government bonds (see section 3.1). The new funds, both participation and retirement, currently hold a large proportion of contributions as cash.

**Collective investment funds recorded increased public interest for the second consecutive year...**

There is persisting public interest in investing via collective investment funds (CIFs). The assets managed by open-ended mutual funds totalled CZK 140 billion at the end of 2013. This represents a year-on-year increase of CZK 22 billion. All types of funds except money market funds recorded inflows (see Chart IV.27). This is consistent with the current financial market conditions, as the low interest rates are making it impossible to achieve high returns on monetary funds. By contrast, rising stock markets and favourable expectations are boosting investment in equity and mixed funds. Mixed funds, which invest in both government bonds and riskier securities, recorded the strongest interest from the public in 2013.

**Non-bank financial corporations engaged in lending recorded a slight fall in loans to households**

Total loans provided by non-bank financial corporations engaged in lending (NFCEs) declined slightly in 2013 and stood at CZK 243.3 billion at the end of the year (see Chart IV.28). This decline was due to a fall in consumer credit provided to households. By contrast, loans to non-financial corporations, which account for about two-thirds of total loans provided by NFCEs, rose slightly.<sup>30</sup> The shift from financial leasing to operational leasing was not as significant as in previous years. According to figures from the Czech Leasing and Finance Association, new loans financed by operational leasing increased only slightly and accounted for 42% of the total amount financed at the end of 2013.<sup>31</sup>

**The market share of NFCEs is not rising and a large proportion of them have links with banks**

The stricter regulatory rules for the banking sector in the EU imply a risk of a shift in lending towards the unregulated NFCEL sector. However, the market share of NFCEs in loans to non-financial corporations and households in the Czech Republic is relatively stable and tending to fall

<sup>30</sup> The calculation of growth in lending only covers entities active at the end of 2012 and 2013. If all entities are included, a decline is also apparent for loans to non-financial corporations (see the *Table of Indicators*).

<sup>31</sup> Operational leasing allows a movable or immovable item to be used, but unlike in the case of financial leasing there is no transfer of the substantial risks and benefits associated with ownership of the asset. Operational leasing is therefore de facto renting and is not included in the CNB's financial intermediation statistics. In 2011 operational leasing had accounted for less than 32% of the amount financed by new lending, whereas in 2012 the figure was 41%.

slightly (see Chart IV.28). At the same time, it turns out that roughly 70% of all loans provided by NFCEs were provided by companies in groups headed by a domestic or foreign bank ("bank NFCEs"), so they are not completely unregulated units under the consolidated approach to banking supervision.

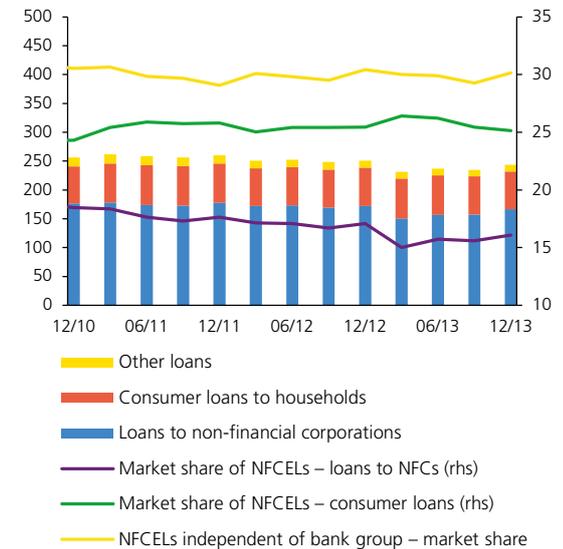
### The riskiness of loans provided by NFCEs was little changed in 2013

Data from the Non-bank Register of Client Information (NRCI) and from the credit register of natural persons maintained by the SOLUS association indicate that credit risk in NFCE balance sheets was little changed in 2013. In general, however, the risk of default on loans provided by NFCEs is higher compared to banks (see Chart IV.29).<sup>32</sup> Should defaulters be allowed to delete their records from non-bank registers, the default rate could increase further in the future, not only in the NFCE subsector, but also in the banking sector.

CHART IV.28

#### Loans provided by non-bank financial corporations engaged in lending

(CZK billions; right-hand scale in %)

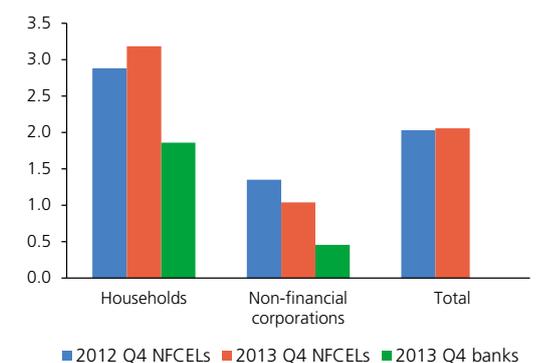


Source: CNB

Note: Market share of NFCEs in total loans provided to residents by banks and NFCEs combined. The market share of independent NFCEs relates solely to loans to residents provided by all NFCEs.

CHART IV.29

#### 3M default rate on loans provided by credit institutions (%)



Source: BRCI, NRCI, SOLUS, CNB

Note: The default rate on loans provided to households by NFCEs is calculated as the average of the data from the NRCI and SOLUS. Only the NRCI is used for loans to non-financial corporations and total loans.

<sup>32</sup> A survey conducted by the CLFA among its members suggests that at the end of 2013 the share of NPLs provided by CLFA members to non-financial corporations was at a similar level as that of NPLs provided by banks. By contrast, the share of consumer credit was much higher compared to banks.

## 4.2 STRESS TESTS OF BANKS, INSURANCE COMPANIES AND PENSION MANAGEMENT COMPANIES

The stress tests demonstrate that the banking sector is highly resilient to the selected adverse scenarios. Banks have a large capital buffer enabling them to absorb adverse shocks and maintain their overall capital adequacy ratio sufficiently above the regulatory threshold of 8% even in a very adverse scenario. Banks also passed a liquidity stress test. The insurance company sector also showed sufficient resilience to the adverse scenario thanks to its large capital buffer. The pension management companies sector remains sensitive to the price volatility of securities holdings and would be hit by significant losses in the adverse scenario.

### The stress tests are based on an adverse scenario called *Europe in Deflation*, extended to include other sensitivity analyses

The resilience of banks, insurance companies and pension management companies was tested in macro stress tests using a *Baseline Scenario* for the most probable future developments and a *Europe in Deflation* stress scenario, representing a hypothetical sizeable decline in economic activity in the Czech Republic, the return of a V-shaped recession and a fall of the economy into deflation (see section 2.1). The developments represented by the adverse scenario are extended to include other sensitivity analyses that amplify the shocks' impacts and illustrate the sectors' resilience to relevant risks.

### The bank stress test methodology is regularly updated

This year's stress tests saw no major methodological changes. As usual, the tests were refined as regards the satellite models used, which were re-estimated using the most recent time series. Like last year, the banking sector tests were performed on end-Q1 data. As banks' capital adequacy reporting was postponed in 2014 H1 due to a switch to common reporting frameworks, the tests use the end-2013 capital value.<sup>33</sup> The stress tests of insurance companies and pension management companies were performed on end-2013 data.

### In the *Baseline Scenario* credit risks fall slightly and the sector's profitability continues to decline

Stress tests of the banking sector are traditionally one of the most important tools for assessing potential risks to the stability of the Czech financial sector. Particular attention is paid to credit risk, which is the largest risk in the Czech banking sector. The evolution of credit risk is closely linked with developments in the household and corporate sectors. The economic outlook, which assumes quite a noticeable recovery in economic activity, is thus reflected in a greater ability of households and corporations to repay their debts, i.e. a lower level of credit risk (see sections 2.2 and 2.3). The default rate, a key indicator of credit risk, is gradually decreasing at the three-year horizon in the *Baseline Scenario* in both the non-financial corporations and household sectors (see Table

<sup>33</sup> Capital adequacy data will be available as from 2014 H2 in a new statement compiled under the COREP framework (COSIFE10, COS 10-04).

TABLE IV.3

#### Key variables in the individual scenarios (averages for given years)

	Actual value	Baseline Scenario			Europe in Deflation		
		2013	2014	2015	2016	2014	2015
<b>Macroeconomic variables</b>							
GDP (y-o-y %)	-0.9	2.6	3.3	1.7	-1.0	-3.4	-1.0
Inflation (%)	1.4	0.8	2.2	1.9	0.1	-2.3	-2.0
Unemployment (%)	7.0	6.7	6.6	6.3	7.4	9.5	10.3
Nominal wage growth (%)	0.1	2.3	4.3	4.9	-0.7	-5.1	-0.3
Effective GDP growth in euro area (%)	0.5	1.6	2.1	1.8	0.5	-0.9	-0.3
<b>Credit growth (%)</b>							
Total	4.7	6.0	8.6	10.5	-0.4	-7.2	-5.9
Corporations	1.8	2.9	5.1	5.8	-1.2	-4.5	-4.0
Households	3.9	4.7	5.3	6.6	0.6	-4.5	-3.8
<b>Default rate (PD. %)</b>							
Corporations	1.7	1.6	1.3	1.2	4.8	5.9	4.3
Loans for house purchase	2.5	2.2	2.0	1.9	5.7	6.6	5.4
Consumer credit	7.1	6.3	5.9	6.2	9.8	10.4	8.6
<b>Loss given default (LGD. %)</b>							
Corporations	45.0	45.0	45.0	45.0	50.7	53.9	53.7
Loans for house purchase	22.0	22.0	22.0	22.0	27.0	38.4	49.9
Consumer credit	55.0	55.0	55.0	55.0	57.6	67.2	68.7
<b>Asset markets (%)</b>							
3M PRIBOR	0.5	0.4	0.9	1.6	0.4	0.4	0.4
5Y yield	1.2	1.2	1.7	2.2	2.7	4.0	4.1
3M EURIBOR	0.2	0.3	0.3	0.6	0.2	0.2	0.6
5Y EUR yield	0.7	0.8	0.9	1.1	1.4	2.3	2.2
Change in res. property prices	0.0	1.0	2.3	3.7	-0.8	-9.7	-10.1
Change in share prices	-4.8		-5.0			-30.0	
<b>Banks' earnings</b>							
Adjusted operating profit (y-o-y %)	-1.6	-5.1	-5.1	-3.3	-19.7	-16.9	-3.6

Source: CNB, CNB calculation, BRCI

Note: A methodological change was made to the calculation of the default rate for bank loans provided to households for house purchase and for consumer credit in 2013. This change caused a decrease in the default rate for loans for house purchase and an increase in the default rate for consumer credit compared to the historical figures.

IV.3). The long-standing environment of low interest rates reduces banks' traditional interest income and results in an overall decline in the sector's profits. Given the expected interest rate developments, the *Baseline Scenario* expects banks' adjusted operating profit to continue to trend downwards by around 5% a year.<sup>34</sup>

### The banking sector remains very well capitalised in the *Baseline Scenario*

Despite the worse profitability outlook, the banking sector remains resilient over the entire three-year test horizon and has sufficient capital reserves. The sector's aggregate capital adequacy ratio (CAR) is around 16%, i.e. well above the regulatory minimum of 8%. The Tier 1 CAR is only about 0.3 percentage point below the total CAR, again illustrating that the sector is well capitalised.<sup>35</sup> Nevertheless, two banks (representing less than 1% of the sector's assets) get into a situation of insufficient capital adequacy in the *Baseline Scenario*. This is due to their business models, which the stress test methodology assesses as unsustainable from a longer-term perspective. This will require an adjustment of the banks' business models or an increase in their capital (see Table IV.4, column 1).

### The *Europe in Deflation* stress scenario would imply significant accounting losses for the banking sector

The *Europe in Deflation* stress scenario assumes that seriously negative developments in the EU would result in a sizeable decline in economic activity in the Czech Republic, a surge in unemployment and financial market turbulence, leading to a significant jump in EU government bond yields. Since this negative shock would come on the back of several years of adverse developments in the domestic economy, the financial reserves of some households and corporations would be exhausted and debt repayment by the real sector would deteriorate sharply. This would be reflected in a sizeable rise in the default rate in both the non-financial corporations and household sector and in an overall increase in the banking sector's credit losses. These would be more than three times larger than in the *Baseline Scenario* at the three-year horizon. Given the expected rise in government bond yields in the Czech Republic and other EU countries, banks would also record market losses due to a decline in the value of these debt instruments (see Table IV.4, column 2). These credit and market losses, combined with a decline in the sector's operating profit, result in an accounting loss of the sector and a sizeable fall in its CAR.

### ...but the sector's overall capital adequacy ratio would remain sufficiently above the regulatory threshold

Despite these adverse developments, the CAR of the banking sector does not drop below 12% in the *Europe in Deflation* stress scenario (see Chart

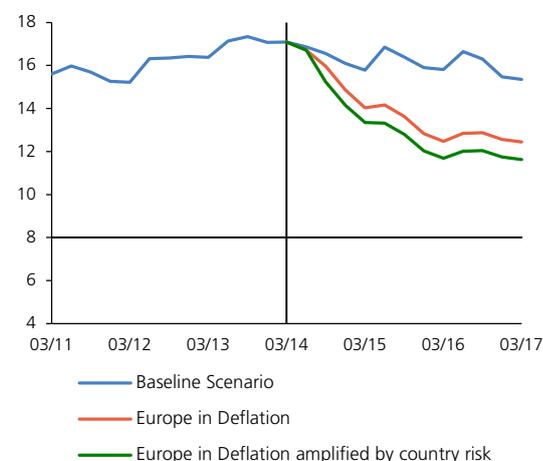
TABLE IV.4

	Baseline Scenario			Europe in Deflation		
	2014	2015	2016	2014	2015	2016
<b>Expected credit losses (minus sign for losses)</b>						
CZK billions	-21.0	-21.3	-21.4	-41.8	-79.2	-65.2
% of assets	-0.4	-0.4	-0.4	-0.8	-1.6	-1.4
<b>Profit/loss from market risks</b>						
CZK billions	-0.4	-3.8	-5.2	-17.8	-2.9	0,1
% of assets	0.0	-0.1	-0.1	-0.4	-0.1	0,0
<b>Earnings for covering losses (adjusted operating profit)</b>						
CZK billions	72.5	68.7	66.5	61.3	50.9	49,1
% of assets	1.4	1.2	1.1	1.2	1.0	1,0
<b>Pre-tax profit/loss</b>						
CZK billions	51.1	43.6	39.9	1.6	-31.4	-16,5
% of assets	1.0	0.8	0.7	0.0	-0.6	-0,4
<b>Capital adequacy ratio (CAR) at end of period in %</b>						
<b>CAR</b>	<b>16.1</b>	<b>16.2</b>	<b>15.5</b>	<b>14.9</b>	<b>12.8</b>	<b>12,6</b>
<b>CAR Tier 1</b>	<b>15.8</b>	<b>15.9</b>	<b>15.3</b>	<b>14.6</b>	<b>12.6</b>	<b>12,3</b>
<b>Capital injections</b>						
CZK billions		0.3			12.1	
% of GDP		0.01			0.3	
<b>No. of banks below 8% CAR</b>		2			11	

Source: CNB, CNB calculation

CHART IV.30

### Capital adequacy ratios depending on scenarios (%)



Source: CNB, CNB calculations

34 Adjusted operating profit is largely the same as pre-provision profit but does not include the impacts of interest rate and exchange rate gains/losses.

35 As discussed in section 4.1, the Tier 1 CAR requirement is essentially the same for the Czech banking sector as the new Common Equity Tier 1 requirement.

TABLE IV.5

Haircuts on EU countries' exposures  
(%)

Country	Haircut in %
Austria	1
Belgium	7
Croatia	31
Cyprus	49
France	4
Germany	0
Greece	48
Hungary	30
Ireland	23
Italy	23
Malta	18
Netherlands	1
Portugal	33
Slovenia	24
Spain	25
United Kingdom	2

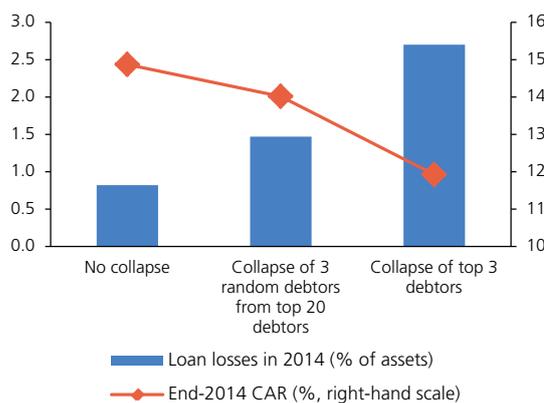
Source: CNB, CNB calculation

IV.30). Although the CAR stays sufficiently above the regulatory minimum, 11 banks – representing about 17% of the sector's assets – record a fall in capital adequacy below the regulatory minimum and have to strengthen their capital. The necessary capital injections total around CZK 12 billion, i.e. around 0.3% of GDP (see Table IV. 4, column 2). Relative to the size of the banking sector, this figure is not significant enough to jeopardise its stability. The banking sector's stability is based on its high CAR, which went up by a further 0.7 pp compared to the previous year, and on its ability to generate income to cover losses even in the event of adverse developments.

#### An additional sensitivity analysis in the Europe in Deflation scenario assesses the impacts of partial impairment of exposures to indebted countries

Within the Europe in Deflation scenario, a sensitivity analysis is performed assuming partial impairment of all domestic banks' exposures to EU countries with debt exceeding 60% of GDP. Some haircut on exposures is already assumed in the Europe in Deflation scenario through a decline in the value of government bonds of EU countries, including the Czech Republic, due to growth in yields demanded by the market. To this baseline haircut the additional sensitivity analysis adds haircuts on all domestic banks' exposures to indebted countries based on figures derived from those countries' average ratings (see Table IV.5). This assumption generates additional losses of CZK 26 billion for the banking sector. The sector's CAR remains above 11.5% over the test horizon (see Chart IV.30, Europe in Deflation amplified by sovereign risk), while the capital injections increase to almost CZK 18 billion (almost 0.5% of GDP).

CHART IV.31

Impact of the collapse of top 3 debtors of each bank  
(%; in Europe in Deflation scenario; LGD = 50%)

Source: CNB, CNB calculation

#### The portfolio concentration test represents a strong shock...

The final sensitivity analysis in the *Europe in Deflation* scenario focuses on testing concentration risk assuming default by the largest debtors of each bank. Although the concentration of client loan exposures (as measured by the share of the three largest exposures in the portfolio of loans to legal entities) has long been relatively constant at around 13%, the largest loans may not be sufficiently collateralised in some cases. This is evidenced by the fact that the share of uncollateralised loans in loans to the top three debtors was 53% at the end of 2013.<sup>36</sup> If these debtors default, banks' credit losses could reach high levels.

#### ...but the banking sector is resilient to this major shock, too

The concentration test is performed in two variants. The first assumes the collapse of three random debtors from the top 20 debtors of each bank. The other, stricter, one assumes the collapse of the top three debtors of each bank. Given the above share of uncollateralised loans in loans to the largest clients, a 50% haircut on these exposures is considered in both cases. This shock has a big effect on the banking sector's credit losses and CAR. The CAR falls to 12% at the end of 2014 for the collapse of

<sup>36</sup> The share of uncollateralised claims to non-financial corporations in loans to the five largest borrowers was 49% at the end of 2013.

the top three debtors. The collapse of three random debtors of each bank would cause a less sharp fall in the CAR, to below 14% (see Chart IV.31). The concentration test represents a very strong stress scenario, and the resulting banking sector CAR based on such a large shock can therefore be assessed as positive.

### Tests of domestic banks' balance-sheet liquidity confirm their resilience to liquidity shocks

The assessment of the banking sector's resilience also involved a macro stress test of balance-sheet liquidity, whose two-round methodology was presented in FSR 2010/2011. The test focuses on the resilience of the liquidity buffer to potential bank liquidity shocks. The first round of the impact involves the emergence of a potential gap in banks' balance sheets associated with increased demand for asset financing amid lower funds (see the first two items of Table IV.6) and a concurrent decline in the value of some assets (the other items) with no difference in their accounting (the revaluation also affects assets held to maturity). The second round of shocks emerges as a result of a rise in reputational and systemic risk brought about by banks' efforts to close the liquidity gap and is expressed through additional losses arising from the revaluation of securities. Overall, these are very strong stress scenarios.

The scenario was applied individually to 23 banks having their registered offices in the Czech Republic at the one-month and three-month horizons. To assess resilience, the liquidity buffer<sup>37</sup> (LB) was selected. It was calculated at its initial value and after the application of the two rounds of liquidity shocks (see Chart IV.32). The initial liquidity buffers (the full columns) suggest a relatively high level of quick assets in the banking sector as a whole (over 20%). The lowest level of quick assets is held by building societies.

The impacts of the negative shocks on the balance sheets of the groups of banks monitored were quite mixed (see Chart IV.32). On average, small banks and building societies would be hit hardest at both horizons. For these banks in the liquidity buffer would fall by around three-quarters at the one-month horizon and by more than 90% at the three-month horizon. This is due to the configuration of the building savings system, where a significant share of time deposits consists of deposits redeemable at notice of three months. The liquidity buffer would be fully exhausted by three banks in the case of the one-month test and by six banks in the case of the three-month test.

This is due to the types of business model chosen by individual banks and the total volume and composition of quick assets held (see Table IV.7). The quick asset composition changed slightly from the previous year,

TABLE IV.6

Scenario type and shock size in the bank liquidity stress test	Values
Scenario type	
One-month / three-month bank run (average for banks, %)	11/19*
Drawdown of credit facilities (credit lines, % of volume)	10
Share of short-term claims on banks that will become unavailable (%)	50
Share of short-term claims on other clients that will become unavailable (%)	30
Reduction in value of government bonds eligible as collateral in CNB liquidity-providing operations (%)	25
Reduction in value of other securities (%)	30
Reduction in value of assets sold before maturity (average for banks, %)	49**

Source: CNB, CNB calculation

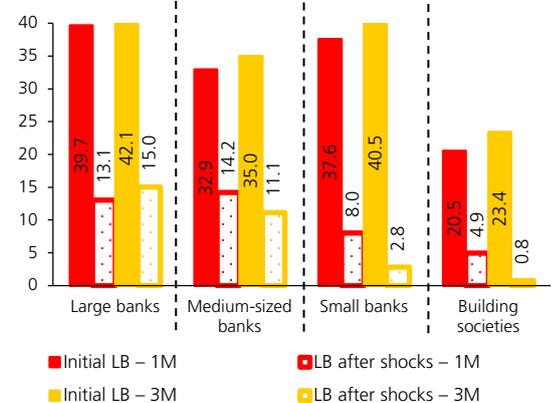
Note: \*The first figure applies to the one-month test and the second figure to the three-month test.

\*\*The bank run and the reduction in the value of assets sold before maturity are derived from the results for individual banks in the solvency stress tests. Banks with higher accounting losses face a larger run. For sales of liquid assets, the quality of the bank's assets, as measured by the risk costs of the loan portfolio, is taken into account.

CHART IV.32

### Results of the liquidity test

(%; share in total assets)



Source: CNB, CNB calculation

Note: LB = liquidity buffer; 1M = one-month; 3M = three-month.

37 The liquidity buffer for the one-month horizon is defined as the sum of cash, claims on the central bank, government bonds and claims maturing within one month, while claims maturing within three months are taken into account for the three-month horizon. The liquidity buffer for the three-month horizon is equal to or greater than the liquidity buffer for the one-month horizon.

TABLE IV.7

**Year-on-year comparison of the composition of the liquidity buffer for claims with maturities of up to one month**  
(as % of total liquidity buffer)

Composition of buffer	Large banks		Medium-sized banks		Small banks		Building societies	
	2012	2013	2012	2013	2012	2013	2012	2013
Cash	2.5	2.1	0.3	0.3	0.9	1.7	0.0	0.0
Claims on central banks	21.7	33.3	24.2	21.9	21.5	32.0	11.0	5.1
Claims on credit institutions	7.0	5.0	13.3	9.5	3.7	12.7	7.1	19.5
Claims on general government	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Claims on other clients	15.3	11.6	13.8	10.8	9.7	4.6	0.2	0.2
Government bonds	62.6	44.2	31.9	30.5	50.1	47.1	61.6	58.2
Securities issued by central bank	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liquidity buffer / total assets	33.7	36.2	30.5	30.7	43.1	36.1	19.1	22.9

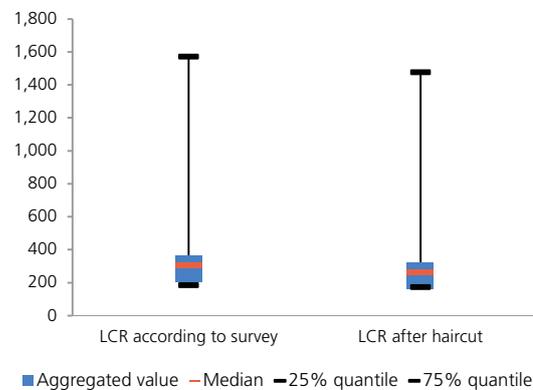
Source: CNB

Note: The figures in the table express the median for the relevant banks.

CHART IV.33

**Aggregated results of the LCR survey**

(%; selected banks)



Source: CNB

especially for large banks. Claims on central banks, which are not subject to stress, had a more significant average weight in their buffers. This increase is linked with the foreign exchange interventions to weaken the Czech koruna. They led to a rise in total monetary liquidity in the Czech financial system, which was subsequently sterilised using the CNB's standard monetary policy instruments. By contrast, the share of government bonds fell slightly. However, they are still the largest liquidity buffer item. The portfolio is concentrated in Czech government bonds. If a scenario similar to the Greek crisis was applied, with Czech government debt being subject to large write-downs due to materialisation of sovereign risk, the results of the balance-sheet liquidity tests would be much worse.

Although the conditions of the balance-sheet liquidity testing scenario were relatively tough, the banks tested withstood the simulated shock and would be able to close the potential liquidity gap within one month or three months even under worse market conditions.

**The good liquidity position of Czech banks is confirmed by a liquidity coverage survey**

The good liquidity position of Czech banks is also evidenced by a survey of compliance with the Basel liquidity coverage ratio (LCR) requirement performed by the CNB on a sample of 16 banks (see Chart IV.33). According to Basel guidelines, banks should hold an adequate stock of liquid assets to withstand any potential mismatches between liquidity inflows and outflows in a significant stress scenario lasting one month.

The LCR offers another way of stress testing the banking sector's balance-sheet liquidity. The test assumes a deposit outflow and a restricted cash inflow. The resulting gap (the net liquidity outflow) is covered by the stock of liquid assets, which is marked to market. In the logic of the testing, the highest rate of outflow is applied to short-term and uninsured deposits (e.g. liabilities to other credit institutions), while short-term claims are subject to the lowest inflow restrictions. Putting it simply, the longer-term and more stable are the funding sources on the liability side, and the shorter-term are the claims on the asset side, the lower is the stress. Moreover, liquidity inflows are capped at 75% of liquidity outflows. The LCR is also included as a liquidity coverage requirement in CRD IV/CRR. It is to be phased in gradually – the liquidity reserve should cover at least 60% of the net outflow as from 2015 and the full 100% as from 1 January 2018.

The survey results reveal that the LCRs of most of the Czech banks tested are compliant by a sufficient margin. The aggregate LCR is over 280% and stays high (at 243%) even when the haircuts are tightened by 20 pp for all assets in the reserve. This is mainly because the banks tested hold most of the reserve in assets of the highest quality and liquidity, to which the highest weight (or lowest haircut) is applied.

#### BOX 4: RESULTS OF JOINT STRESS TESTING BY THE CNB AND SELECTED BANKS

In addition to top-down macro stress tests of the banking sector, the CNB has been performing bottom-up micro stress tests in partnership with selected Czech banks. Such testing is currently being performed for the largest EU banks in a comprehensive check by the ECB and the EBA (see section 5.6). The micro stress tests differ from the macro stress tests mainly in that the impacts of shocks on banks' capital adequacy are calculated by the banks themselves based on their own portfolios. The micro stress tests thus use much more detailed portfolio information than that available to the CNB for its macro stress tests. However, it is the CNB that defines the most probable and adverse scenarios in both types of test.

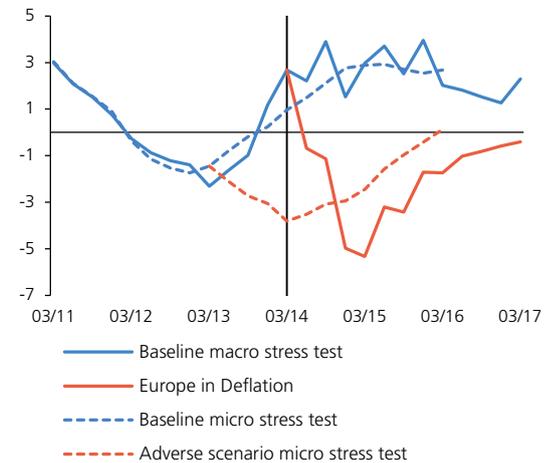
The nine largest domestic banks, representing almost 90% of the assets of the Czech banking sector, took part in the tenth round of micro stress tests using end-2013 data.<sup>38</sup> While previous rounds of micro stress tests had focused on credit risk testing, which is the largest risk for the Czech banking sector, the range of risks tested in the tenth round was extended to include the interest rate risk of the bank's entire portfolio and the specific interest rate risk of domestic government bonds.

Since the micro stress test scenarios are prepared one quarter before the macro stress tests presented in this Report, the scenarios for the two tests are not fully comparable. The baseline scenario for the micro stress tests (*Baseline*) is based on the CNB's macroeconomic forecast published in Inflation Report I/2014 and assumes a less robust economic recovery in the coming years than this Report's *Baseline Scenario*. The stress scenario for the micro stress tests (*Adverse*) assumes a less sharp fall in domestic economic activity than the adverse *Europe in Deflation* scenario in this Report, and is thus to some extent less severe (see Chart IV.1 Box).

The macroeconomic developments assumed in the *Baseline* and *Adverse* scenarios determine the evolution of the credit risk parameters. As the micro stress tests are calculated for a one-year horizon, faster transmission of credit risks to banks' balance sheets is assumed than in the macro stress tests. A slight fall in credit risk for corporate exposures and, conversely, a slight rise for retail portfolios can be observed for the *Baseline* scenario one year ahead. Much higher credit risk is visible in the *Adverse* scenario, in

CHART IV.1 Box

Differences in the evolution of real GDP (%)



Source: CNB

<sup>38</sup> Banks were selected according to whether they have received approval to use the special IRB approach for calculating the capital requirement for credit risk.

TABLE IV.1 Box

**Risk parameters for the credit segments and scenarios tested**

(%; weighted by EAD)

	31 Dec. 2013		Baseline 31 Dec. 2014		Adverse 31 Dec. 2014	
	PD	LGD	PD	LGD	PD	LGD
Corporate exposures	1.8	36.1	1.7	36.1	3.7	42.2
- large enterprises	1.1	35.9	1.0	35.8	2.3	42.0
- small and medium-sized enterprises	2.6	34.9	2.4	34.8	5.2	40.7
- specialised credit exposures	2.0	39.3	1.9	39.2	4.0	45.8
Retail exposures	2.6	30.4	2.7	30.6	3.8	39.4
- retail-assessed SMEs	6.0	42.8	5.4	42.7	11.2	48.2
- loans for house purchase	2.0	22.6	2.0	22.7	2.7	32.2
- other loans to individuals	3.5	48.9	3.7	50.1	4.8	57.9
Institutions	0.1	32.8	0.2	32.8	0.3	37.7
Central governments	0.0	16.5	0.0	16.5	0.0	24.6

Source: CNB

TAB. IV.2 Box

**Banks' capital requirements and capital adequacy ratios**

	31 Dec. 2013	Baseline 31 Dec. 2014	Adverse 31 Dec. 2014
	Capital requirements (year-on-year change)	-	2.4
Regulatory capital (year-on-year change)	-	9.1	5.6
Tier 1 CAR	17.3	18.3	12.9
CAR	17.5	18.6	12.9

Source: CNB

line with the adverse evolution of economic activity. This is expressed by a broad rise in both the probability of default (PD) and the loss given default (LGD) in all the credit segments tested (see Table IV.1 Box).

The results of the micro stress tests for the *Baseline* scenario point to a slight rise in the capital requirements of banks and a fall in annual profit by almost 3%. The aggregate Tier 1 CAR of the banks tested would go up by 1 pp to 18.3%. In the *Adverse* scenario the capital requirements rise by a significant 42.6% and profit declines by more than 35% overall. Despite these adverse developments, the aggregate Tier 1 CAR of the institutions tested remains well above the 8% threshold at the one-year horizon, dropping to 12.9% (see Table IV.2 Box).

The micro stress test results confirm that the banks tested are highly resistant to adverse scenarios, in line with the results of the macro stress tests of the banking sector. The results and individual parameters, however, are not fully comparable, not only because of the slightly different macroeconomic scenarios, but also because of the different samples of institutions tested and different test horizons, which lead to different assumptions about the speed of transmission of risks to banks' portfolios.

In addition to the *Baseline* and *Adverse* scenarios, a sensitivity analysis of general interest rate risk and the specific interest rate risk of CZK government bonds was performed in this round of micro stress testing. The economic logic of the test was applied in the interest rate risk testing, so the effect of accounting categories on the revaluation of bank assets and liabilities was suppressed. The sensitivity analysis covers the entire portfolio (the banking and trading books) and uses four scenarios. *Scenario 1* assumes a 3 pp parallel shift of the yield curve, *Scenario 2* assumes a 3 pp widening of the CZK government bond spread vis-à-vis the IRS yield curve, *Scenario 3* assumes a larger increase in the slope of the yield curve<sup>39</sup> and *Scenario 4* contains a combination of a more moderate increase in the slope of the yield curve and a 2 pp widening of the CZK government bond spread vis-à-vis the IRS yield curve.<sup>40</sup>

39 A 5 pp shift was assumed for maturities of over 5 years, the curve was left unchanged for maturities of up to 3 months, and linear interpolation was used for the shift for maturities of over 3 months and up to 5 years.

40 Increase in the yield curve slope: a 3 pp shift was assumed for maturities of over 5 years, the curve was left unchanged for maturities of up to 3 months, and linear interpolation was used for the shift for maturities of over 3 months and up to 5 years. Widening of the CZK government bond spread: a 2 pp widening was assumed for maturities of over 5 years, no widening was assumed for maturities of up to 3 months, and linear interpolation was used for the shift for maturities of over 3 months and up to 5 years.

The results of the sensitivity analysis show that a rise in interest rates would have mixed impacts across the banks tested (see Chart IV.2 Box). In *Scenario 1*, the impact of a parallel shift of the yield curve would be between -13% and 3.5% of capital.<sup>41</sup> In *Scenario 3*, banks' sensitivity to rotation of the yield curve increases further, with the impact on the capital of the banks most exposed to interest rate risk ranging from -20% to 7%. *Scenario 2* assumes a widening of the CZK government bond spread because of a rise in the yield demanded by investors. The strongly negative impact of this scenario is due to the significant exposure of domestic banks to domestic government bonds. However, if the accounting principles are taken into consideration, moving away from a purely economic perspective, the impact of the test is significantly smaller, since domestic banks hold almost half of domestic government bonds in the "held to maturity" accounting category (see Chart III.18 in section 3.1) and hence do not mark these debt securities to market.

### The stress tests of insurance companies and transformed funds of pension management companies assess the sectors' resilience at the one-year horizon

The stress tests of insurance companies and transformed funds of pension management companies (PMCs) focus on assessing the risks to the two sectors at the one-year horizon. Together with the *Baseline Scenario*, their resilience to the *Europe in Deflation* stress scenario was also tested; this variant captures adverse economic developments coupled with increased tensions in financial markets. This adverse scenario will manifest itself as sharp falls in the property and equity markets, depreciation of the exchange rate and a jump in yields on long-term Czech and foreign government bonds. Growth in bond yields, which, however, is not very likely, may pose a particularly significant risk to insurance companies and transformed funds of PMCs, which hold a large proportion of their portfolios in debt securities.

### The PMC sector is resilient in the *Baseline Scenario*, but sensitive to interest rate risk in the stress scenario...

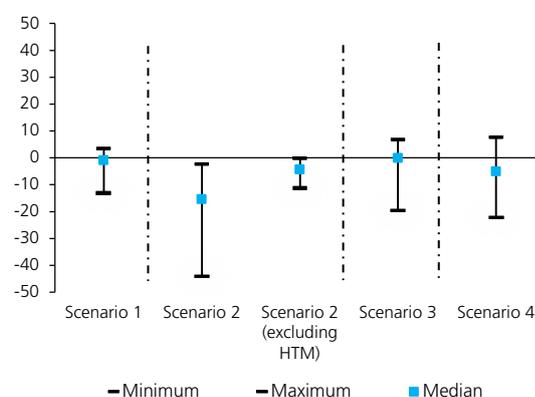
This year's stress tests of the PMC sector cover the transformed funds of PMCs. This represents a comparable sample of tested institutions as in last year's stress tests.<sup>42</sup> For the first time, the cumulative impact of all the risks considered is assessed in relation to the statutory capital ratio

41 Under Decrees 123/2007 and 23/2014, a bank is obliged to take remedial action if the total impact of the interest rate shock might cause a decline in the economic value of the bank of more than 20% of the sum of original (Tier 1) and additional (Tier 2) capital. In this case, the impact of a 200 bp parallel shift in the yield curve on the bank's investment portfolio is tested.

42 The stress tests do not include new retirement and participation funds, as their total assets are relatively insignificant as yet. At the same time, these new funds hold most of their funds as cash, which reduces the significance of the risks tested.

CHART IV.2 BOX

#### Interest rate risk sensitivity analyses (as % of Tier 1 and Tier 2 regulatory capital)



Source: CNB

Note: Banks included in micro stress tests, excluding building societies. In Scenario 2 (excluding HTM), accounting principles are taken into consideration and so CZK government bonds held to maturity are not marked to market. HTM = held to maturity.

TABLE IV.8

#### Results of the stress tests of transformed funds of PMCs

		Baseline Scenario	Europe in Deflation
Equity (as of beginning of period)	CZK billions	10.1	10.1
	% of assets	3.4	3.4
Capital ratio (equity / capital requirements) (as of beginning of period)	%	175.5	175.5
Losses arising from interest rate risk	CZK billions	-0.2	-2.7
	% of equity	-1.7	-26.7
Gains / losses from changes in share and unit value	CZK billions	-0.2	-1.2
	% of equity	-2.3	-11.5
Exchange rate gains/losses	CZK billions	-0.7	-2.2
	% of equity	-7.0	-21.8
Gains / losses from changes in property value	CZK billions	0.01	-0.1
	% of equity	0.1	-0.5
Impact of risks on equity	CZK billions	-1.10	-6.12
	% of assets	-0.37	-2.1
Equity (as of end of period)	CZK billions	9.02	3.91
	% of assets	3.1	1.32
Capital ratio (equity / capital requirements) (as of end of period)	%	160.0	69.0
Capital injection	CZK billions	-	2.2

Source: CNB, CNB calculation

TABLE IV.9

Results of the insurance company stress tests		Baseline Scenario	Europe in Deflation
Equity risk	CZK billions	-0.77	-7.10
	% of assets	-0.20	-1.80
Real estate risk	CZK billions	0.22	-0.66
	% of assets	0.06	-0.17
Exchange rate risk	CZK billions	-0.05	-0.04
	% of assets	-0.01	-0.01
Interest rate risk	CZK billions	1.04	-6.64
	% of assets	0.26	-1.68
Credit spread risk	CZK billions	0.05	-1.23
	% of assets	0.01	-0.31
Risk of fall in GB prices	CZK billions	-0.38	-1.57
	% of assets	-0.10	-0.40
Premium risk	CZK billions	0.00	-1.13
	% of assets	0.00	-0.29
Impact of risks on ASM	CZK billions	0.12	-18.38
	% of assets	0.03	-4.65
Initial profit/loss before application of shocks	CZK billions	14.43	14.43
	% of assets	3.65	3.65
Planned dividends for payment in 2014	CZK billions	-10.67	-10.67
	% of assets	-2.70	-2.70
Other impacts (tax)	CZK billions	3.34	3.85
	% of assets	0.85	0.97
ASM as of end of 2013	CZK billions	59.93	59.93
	% of assets	15.16	15.16
ASM as of end of 2014	CZK billions	63.39	45.40
	% of assets	16.04	11.49
Solvency ratio	2013	311%	311%
	2014	329%	236%

Source: CNB, CNB calculation

(defined as the ratio of equity to capital requirements), and unchanged capital requirements are assumed in the tests for simplicity. While the capital ratio of PMCs in the *Baseline Scenario* is around 160%, i.e. well above the regulatory limit of 100%, the *Europe in Deflation* stress scenario indicates that this sector is highly sensitive to adverse developments (see Table IV.8). A rise in interest rates is naturally the most significant risk to the transformed funds of PMCs. This is due to the composition of their portfolios, which are dominated by debt securities sensitive to interest rate changes. In the adverse scenario, the rise in rates would cause transformed funds losses of almost CZK 3 billion. By contrast, the risk of a fall in equity prices implies no major losses, reflecting the fact that the transformed funds of PMCs further reduced their investment in shares and units in 2013. Real estate risk is still almost negligible in Czech PMC funds.

#### ...and its capital ratio drops below the regulatory minimum

The total impact of the shocks in the *Europe in Deflation* scenario would cause PMCs' equity to fall from CZK 10 billion to CZK 4 billion and their aggregate capital ratio to drop to 69%. This would require an increase in capital by PMC shareholders. The necessary capital injections would amount to around CZK 2 billion. A stable portfolio structure is assumed when estimating the impacts of risks. However, it is reasonable to assume that if yields rose, the transformed funds of PMCs would again increase the proportion of OECD government bonds classified as held to maturity. This would reduce the magnitude of the shock, and the necessary capital injections would drop to around CZK 1.5 billion.

#### The stress tests of insurance companies confirmed the sector's strong capital position...<sup>43</sup>

In the *Baseline Scenario*, insurance companies recorded slight losses due to revaluation of equities and government bonds (see Table IV.9). However, these losses would be offset by revaluation gains on other interest rate sensitive assets and liabilities, property and profits from insurance activities. The aggregate solvency ratio in the *Baseline Scenario* should thus be slightly higher at the end of 2014 than at the end of 2013. However, this scenario does not assume any major natural disasters.

In the adverse scenario, insurance companies would be hit hardest by losses from interest rate risk totalling 1.7% of assets. Other major losses would arise from a decline in the value of shares and units of 1.8% of assets and, last but not least, a decline in the value of bond holdings. The cumulative impact of all the risks considered on the available solvency margin (ASM) in this scenario would be 4.7% of assets. Given the expected profit of CZK 14.4 billion and planned dividends of around CZK 10.7 billion, the ASM would drop from CZK 60 billion (15% of assets) to

<sup>43</sup> The tests are conducted for the 11 institutions taking part in the joint stress testing project of the CNB and selected insurance companies, which account for 89% of the assets of the domestic insurance sector. The tests use the CNB's internal data as of the end of 2013 supplemented with information from the results of joint stress tests.

CZK 45.4 billion (11.5% of assets). As a result, the aggregate solvency ratio would decline from 311% to 236%, which is still well above the regulatory minimum of 100%. As a result of these adverse developments, one insurance company would fall below the minimum solvency ratio. The necessary capital injections would amount to CZK 98 million. Despite these risks, the insurance company sector can be assessed as stable and resilient to adverse developments over the horizon considered.

### BOX 5: RESULTS OF JOINT STRESS TESTING BY THE CNB AND SELECTED INSURANCE COMPANIES

The fifth round of joint CNB stress testing of selected insurance companies took place in April 2014. The aim of the test is to assess the ability of insurance companies to absorb the impact of adverse economic developments. The test is repeated on an annual basis. The insurance companies participating this year again accounted for more than 90% of the domestic market in 2013 based on gross premiums written.

The stress test assesses the impact of significant changes in risk parameters on the value of the insurance company's assets and liabilities, and hence on the available and required solvency margins (in accordance with the principles of Solvency I), at the one year horizon.<sup>44</sup> The start date of the test is 31 December 2013. The basic methodology of the test was unchanged from last year. The investment risks examined were equity risk, asset and liability interest rate risk, real estate risk, exchange rate risk, credit risk and the risk of a fall in government bond prices, and the non-life insurance risks were motor vehicle insurance premium risk and the risk of claims due to natural disasters. The scenario was derived from the adverse scenario used in the tenth round of micro stress tests of the banking sector supplemented with risk factors relevant to insurance companies.<sup>45</sup> Like last year, this scenario was extended to include a 10% decline in premiums written for motor vehicle insurance at the same level of costs as in 2013. The extended scenario also tested how insurance companies' capital would be affected in the event of simultaneous floods.

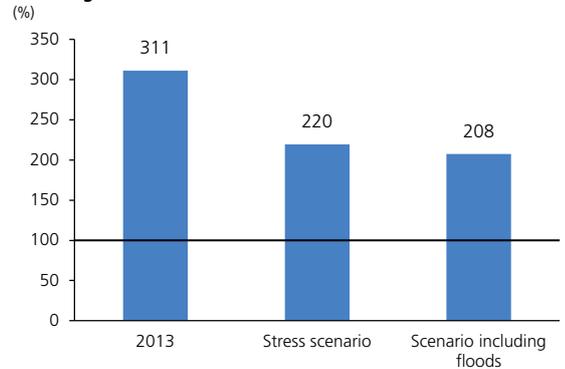
The aggregated results confirm that thanks to sufficient available capital, the sector as a whole, as represented by the participating

44 As the new Solvency II regulatory framework for the insurance sector will take effect on 1 January 2016, the 2015 stress test of insurance companies will be fully in accordance with Solvency II principles.

45 We assumed a 35% drop in the value of shares, an 18% fall in property prices, a rise of about 1.5 pp in the IRS curve, an increase of about 2.5 pp in the government bond yield curve, a 7% depreciation of the koruna and a rating-dependent increase in the corporate bond spread.

CHART IV.3 BOX

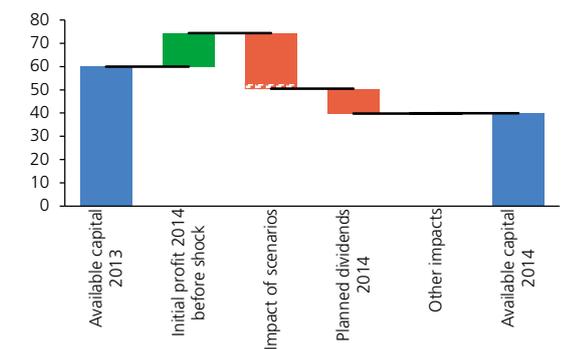
#### Solvency ratio for the stress scenario and the scenario including floods



Source: CNB

CHART IV.4 BOX

#### Change in the available solvency margin (CZK billions)

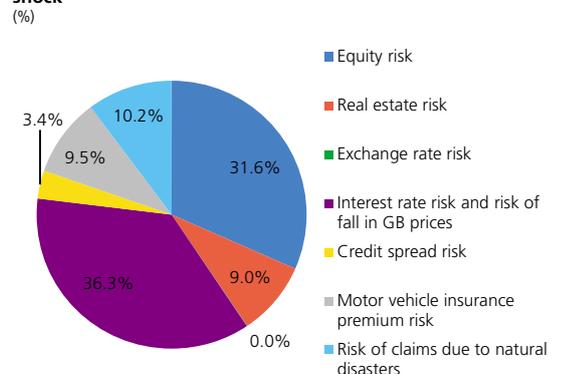


Source: CNB

Note: In the Impact of scenarios column the impact of floods is indicated by hatching.

CHART IV.5 BOX

#### Contribution of risks to the fall in the ASM caused by the shock

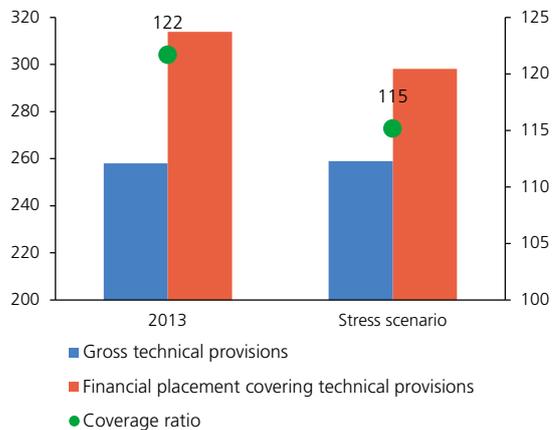


Source: CNB

CHART IV.6 BOX

**Coverage of technical provisions by financial placement for the stress test**

(CZK billions)

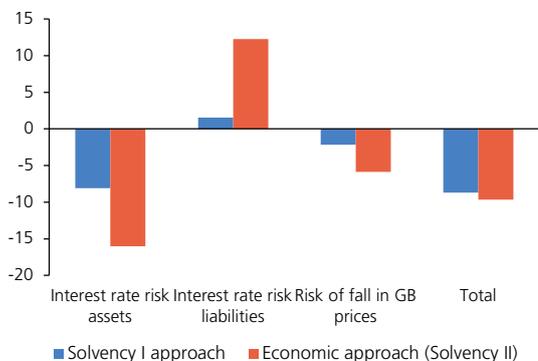


Source: CNB

CHART IV.7 BOX

**Comparison of the impacts of the scenarios for interest rate risk and the risk of a fall in GB prices on the change in capital depending on the valuation approach**

(CZK billions)



Source: CNB

insurance companies, would absorb the impacts of even a large increase in risk factors, including simultaneous floods (see Chart IV.3 Box), as the sector stays relatively high above the 100% solvency threshold even after these shocks. The resulting available solvency margin (ASM) one year ahead was affected not only by impact of the shocks and the insurance companies' ensuing losses, but also by the amount of dividends planned to be paid in 2014 and the initial profit from insurance activities in 2014 (see Chart IV.4 Box). The aggregate impact of the shocks for interest rate risk and the risk of a fall in government bond prices had the biggest downward effect on the ASM in the scenario applied (see Chart IV.5 Box). The impact of these shocks was larger than in last year's test, mainly as a result of a bigger shift of the IRS curve in the stress scenario. For individual insurance companies, however, the impact of these shocks is significantly affected by the proportion of government bonds classified as held to maturity at amortised cost (see section 4.1). Although the share of equity instruments in financial placement increased slightly compared to the previous year, the impact of the shock for equity risk fell year on year due to a decrease in the size of the equity shock. Given the low interest rate environment, insurance companies are seeking new investment opportunities. As a result, growth in the share of investment in property has been recorded. Owing to an increase in the size of the property shock, the impact of the stress scenario for property risk is also becoming significant in the insurance sector. The favourable result for the shocks for the risk of floods relative to the other risks shows that insurance companies have well-structured reinsurance programmes for catastrophic damage caused by floods in respect of the tested scenario. The stress test results also reveal that insurance companies have sufficient financial placement to cover technical provisions even after the application of shocks (see Chart IV.6 Box).

As in the previous year, the stress test also incorporated an economic view of the sensitivity of insurance companies' assets and liabilities to movements in interest rates and government bond yields, i.e. an approach consistent with the Solvency II valuation principles. On the asset side, all bonds, including bonds classified as held to maturity at amortised cost, were marked to market and exposed to a shock in the economic approach. The interest rate sensitivity of the minimum value of insurance liabilities was estimated on the liability side. The effect of the shocks for interest rate risk and the risk of a fall in government bond prices rose significantly for assets and liabilities separately in the economic approach, but the resulting impact on the change in capital is only slightly higher for the participating insurance companies than under Solvency I (see Chart IV.7 Box). However, the results vary across insurance companies due to differences in

the maturity mismatch of assets and insurance liabilities and different accounting classification of assets.

The test also included an analysis of the sensitivity of assets and liabilities to a further decline in interest rates and a qualitative assessment of the consequences of a longer period of low interest rates. With interest rates falling, the negative impact on traditional capital life insurance is offset by a positive impact on investment life insurance and risk insurance and additional insurance. In order to mitigate the risk of insufficient returns on financial placement (see section 4.1), insurance companies are mostly opting for strategy of changing product composition. This chiefly involves focusing more on unit-linked investment life insurance and also on reducing guaranteed rates on new insurance policies. In general, insurance companies do not foresee a need for any major change in investment strategy in the event of a longer period of low interest rates.