

CHART III.1

## Volatility and liquidity in financial markets

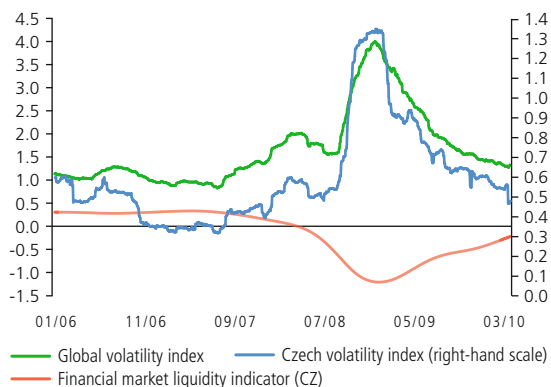


CHART III.2

## Credit premiums on the interbank market

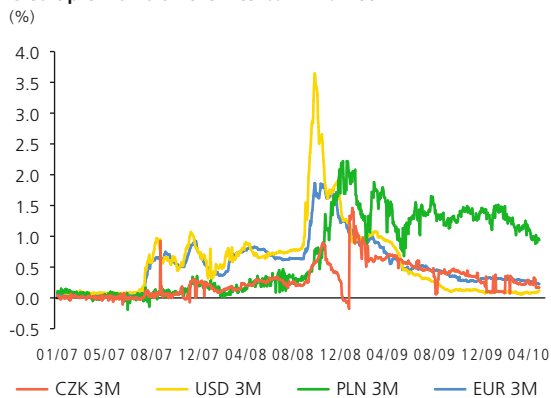
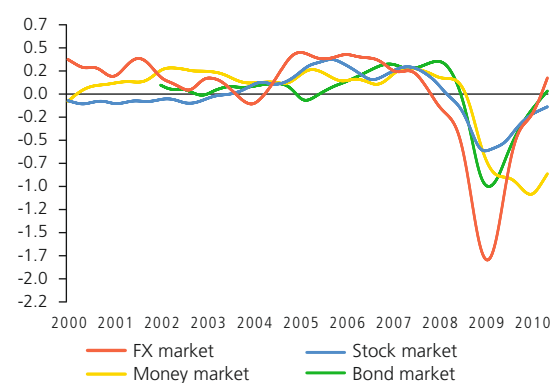


CHART III.3

## Market liquidity indicators for individual Czech markets



## 3 ASSET MARKETS AND THE FINANCIAL INFRASTRUCTURE

## 3.1 THE FINANCIAL MARKETS

The global financial market situation has calmed thanks to the monetary and fiscal measures adopted, but uncertainty about future credit and liquidity premiums is still evident in the markets. The situation in the Czech financial market has generally stabilised, although low liquidity, weak activity and higher volatility persist in the money market. The Czech stock market has been maintaining an upward trend since March last year, but is still under the influence of increased optimism driven by the expansionary stimuli of international economic policies. The Czech government debt market has recorded no significant worsening so far. Nevertheless, the credit premium for Czech government debt is still elevated and the combination of high growth in the Czech national debt and rising global risk aversion to countries with adverse fiscal outlooks might increase it further. The Czech economy has an advantage that the government and central bank were not forced to adopt unconventional measures during the global financial crisis, so there is no uncertainty associated with any exit from such measures. However, problems could spread from fiscally unstable countries such as Greece to much more stable economies such as the Czech Republic and cause an adverse fiscal outlook.

## Nervousness persists in the markets

The situation in most financial markets has gradually calmed since the end of 2009 Q1. Market volatility has declined, liquidity has increased (see Chart III.1)<sup>40</sup> and yields have been rising, particularly in stock markets (see Chart III.15). Although these financial market indicators are showing an improvement compared to their markedly adverse trends in late 2008 and early 2009, some nervousness persists in the markets. Most financial market indicators still remain in a worse position than before the crisis.

## The foreign interbank market is under the influence of measures adopted...

Increased uncertainty about economic developments going forward is ever present in foreign interbank markets. Despite falling risk aversion, credit lines – particularly at longer maturities – are being opened very gradually and mostly selectively amid persisting concerns regarding counterparty credit risk revaluation. Counterparty selection is associated mainly with credit and liquidity risks, which have been reduced only partially, temporarily or even “artificially” by the measures adopted by governments and central banks (see section 2.1). Expectations associated with the exit strategies of central banks and governments may exert

<sup>40</sup> For the market liquidity indicator in the euro area, see Financial Stability Review, ECB, December 2009, p. 63.

some upward pressure on future yields and stop credit premiums falling to their pre-crisis level (see Chart III.2), especially at longer maturities.

### ...and the domestic market situation is unchanged – low liquidity, weak activity and higher volatility

There is persisting uncertainty regarding future developments in the domestic money market. Moreover, domestic banks lack motivation to finance themselves in this market. The situation is little changed from last year, which was characterised by higher volatility and lower liquidity (see Chart III.3). The bid-offer spread is around 30 b.p. at all maturities. The spread between the monetary policy rate and interbank rates remains higher than before the crisis (see Chart III.4). Trading at overnight maturities is falling (see Chart III.5) and that at longer maturities remains low.<sup>41</sup> A persisting high credit premium (driven, as in other countries, by counterparty credit risk; see Chart III.2) and uncertainty regarding liquidity risk linked with potential changes in the monetary policies of domestic and foreign central banks<sup>42</sup> are limiting the decline in market interbank rates towards the low monetary policy rate (see Chart III.4).<sup>43</sup> The wide bid-offer spread is also linked with falling money market liquidity and activity (see Charts III.3 and III.5). Despite this, Czech banks' balance-sheet liquidity position has not been greatly affected (see section 4.1), as confirmed by low interest in the temporarily introduced liquidity-providing repo operations (see Chart III.5).

### Yield curves are rising steeply...

Expectations regarding short-term rates and economic policy changes are also apparent from the shape of the money market yield curve (see Chart III.6). The inverted shape of the yield curve at the end of 2008, when investors were expecting central banks to ease monetary policies further, was replaced by a steeply rising shape caused both by falling short-term rates and by flat or rising long-term rates (see Chart III.7). The slope of the curve increased most of all between the two-year and five-year yield. This may indicate that the calming and stabilisation of the financial system is fragile and that there is still uncertainty in the markets regarding future developments. A potential increase in the already present sovereign credit risk is strengthening this uncertainty.

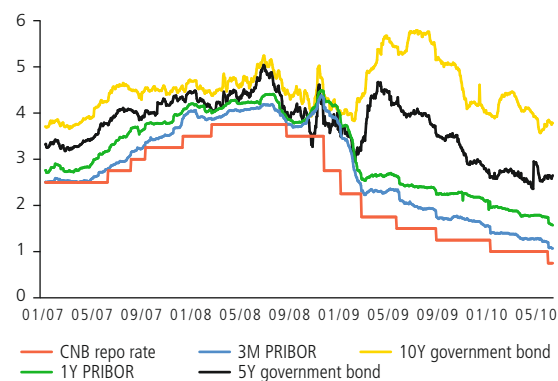
41 The volume of koruna deposit transactions at maturities of over three months was very low in 2009, increasing modestly only at the start of this year (to CZK 286 billion in January 2010). In April 2008 it had been almost CZK 623 billion, whereas a year later it was only CZK 90 billion.

42 Owing to the advanced integration of Czech financial markets with the EMU (see the thematic article in Part II: *Financial Integration at Times of Financial (In)stability*) and the ownership links of the domestic banking sector with the EMU banking sector, the timing of the ECB's exit strategy also needs to be taken into consideration.

43 While the monetary-policy rate has declined cumulatively by 3 p.p. since August 2009, the market 3M PRIBOR fell by 2.08 p.p., but the long-term rate, e.g. client rate to households for house purchase was down only by 0.18 p.p.

CHART III.4

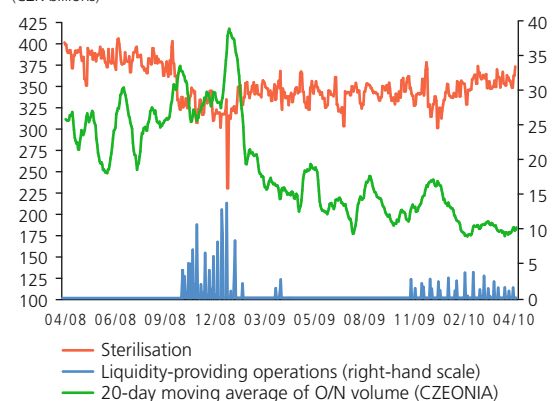
Monetary policy rate and market rates  
(CZ: % p.a.)



Source: Thomson Reuters

CHART III.5

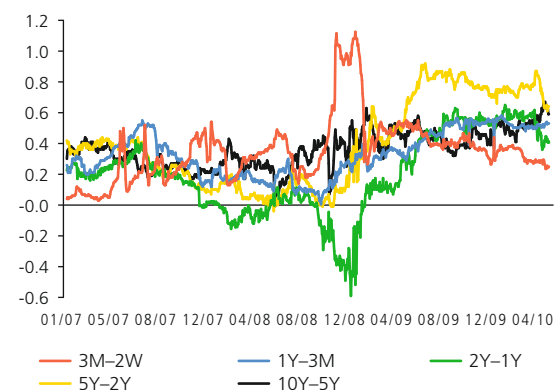
Open market operations and volume of overnight deposits  
(CZK billions)



Source: Bloomberg LP, CNB, CNB calculation

CHART III.6

Yield curve slopes  
(CZ: % p.a.)

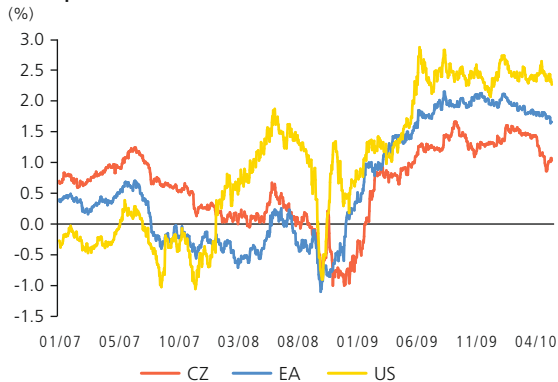


Source: Bloomberg LP, CNB calculation

Note: Differences in yields of 2W, 3M and 1Y PRIBOR and 1Y, 2Y, 5Y and 10Y IR SWAP.

CHART III.7

## Term spreads for selected economies

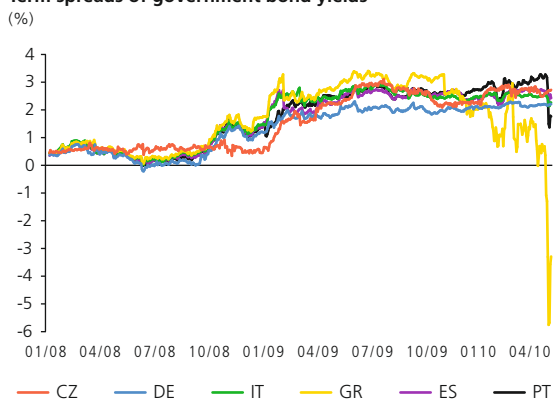


Source: Bloomberg LP, CNB calculation

Note: The term spread is the difference between the 5Y interest rate swap and the 3M interbank interest rate.

CHART III.8

## Term spreads of government bond yields



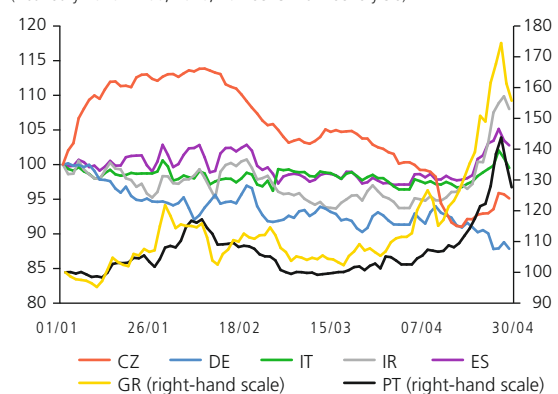
Source: Thomson Reuters, CNB calculation

Note: The term spread is the difference between the 10Y and 2Y benchmark government bond yields of the relevant country.

CHART III.9

## Long-term rates in selected economies

(1 January 2010 = 100; 2010; 10Y benchmark bond yield)



Source: Thomson Reuters, CNB calculation

## ...mostly because of rising long-term rates

The aforementioned uncertainty regarding the economy going forward is also apparent in the government bond markets. The current government debt yield curve is "normal",<sup>44</sup> i.e. rising, but its slope has increased considerably, just like in the interbank market (see Chart III.8). The steepness of the yield curve is due mainly to growth in long-term rates since March this year (see Chart III.9). The ever-increasing credit premium being demanded by investors in return for holding the soaring volume of government bonds (see Charts III.10 and III.11) is a pessimistic explanation for the rise in long-term rates. Expectations of pronounced economic growth, rising inflation and a subsequent increase in short-term interest rates are an alternative explanation.

## Long-term rates are being pushed up by rising government debts...

If the liabilities of indebted countries continue to grow markedly, a further rise in long-term interest rates can be expected over the medium term (see also section 2.1). This rise will be strongest in countries with high budget deficits and total government debts and a large difference between the yield on government debt and economic growth (e.g. Greece, Ireland and Portugal). A steeply sloping yield curve can create favourable conditions for the banking sector, which usually obtains funds at short-term interest rates and lends to corporations and households at long-term interest rates. However, excessively high long-term interest rates can also have an undesirable effect on banks' balance sheets. They can be reflected in lower demand for new loans from the banks' clients<sup>45</sup> and in a higher number of NPLs.

## ...which is making sources of financing more expensive

In all EU countries, due to the linkages between the government bond market and other financial markets a rise in sovereign funding costs can be transmitted relatively rapidly to other financial markets (interbank or credit). This means an increase in funding costs for other sectors (banks, corporations and households). Additional upward pressure on long-term rates may also stem from concerns regarding the sufficiency of sources of funding given the expected higher demand for these funds from both the public and the banking sector (see section 2.1). Moreover, the linkages between the fiscal sector and the financial sector (the main fiscal debt creditor) mean that sovereign credit risks can transform into liquidity and credit risks of the financial sector. Falling government security prices can generate losses from government debt holdings and create pressure in banks' balance sheets.

Rising debt service costs usually motivate issuers to shorten debt maturities. This can also happen if investors lose their appetite due to high sovereign risk to invest in government bonds as a long-term

44 An inverse yield curve, with short-term rates above long-term rates, usually appears just before the onset of recession. Longer-term interest rates fall because investors expect short-term rates to go down.

45 Demand for new loans usually falls if the cash flow generated from the assets purchased for a new loan is not sufficient to repay that loan.

investment. The adverse effects of investor nervousness are gaining momentum and, given shortening maturities, the upward pressure on rates may also impact on the shorter end of the debt yield curve. Fiscal policies focused on boosting demand may not stabilise the economic situation of the recession-hit countries. On the contrary, they may worsen it because of rising funding costs.

### The Czech Republic is viewed as fiscally stable...

The Czech Republic is still viewed as being a macroeconomically stable and well-run economy. The financial markets' increased sensitivity to the government finance trend has so far affected Czech government bond yields only slightly. Government bond market liquidity is rising (see Chart III.3), the CNB's liquidity-providing repo operations are almost unused (see Chart III.5), government debt trading on the secondary market has not deviated significantly from previous periods<sup>46</sup> and government bond issues with long maturities still dominate the primary market (see section 2.1). The Czech financial system is sound and has required no fiscal support (see section 4.1), the Czech Republic's sovereign rating has been stable since 2005 (see Chart III.12) and the country's rating outlook has been increased twice since the start of the crisis (see Table III.1).

### ...but the Czech sovereign credit premium is not falling and could even rise

Unlike, for example, in Italy, Portugal, Greece and Spain, the Czech sovereign credit risk premium remains below the EU-27 level. However, it has not fallen to the pre-crisis level (see Chart III.10). In contrast to Greece or Portugal, whose CDS spreads on one-year government debt are the same as, or higher than, those on ten-year debt (hence flattening the curve slopes or even turning them negative), short-term CDS contracts for Czech government debt are stagnant and long-term ones are rising (see Chart III.13). The growth in CDS spreads on long-term Czech government debt may be connected with rollover risk, which is potentially relevant for the Czech Republic.<sup>47</sup> In the Czech case, higher yield spreads or CDS spreads on government bonds (see Chart III.10 and III.11) may be created by not only local, but also global risk factors. For example, concerns about a persisting worsening situation in the global financial system with pressure for a return to recession may create adverse expectations regarding the future Czech fiscal situation.

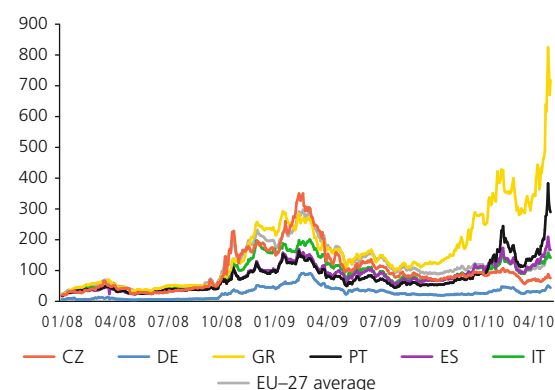
The Czech sovereign credit premium is likely to continue increasing if the rate of growth of debt remains at the current high level (see Chart II.2 Box). Increasing global risk aversion to countries with unfavourable fiscal outlooks may cause problems to spread from fiscally unstable countries such as Greece to much more stable economies such as the Czech Republic (see Box 4).

<sup>46</sup> Bond trading on the PSE totalled almost CZK 600 billion last year and slightly exceeded the same figure in 2008.

<sup>47</sup> However, greater tension can be expected in the Czech public bond market in autumn 2010, when four bond issues totalling CZK 52 billion and ten T-bill issues totalling CZK 75 billion are expected.

CHART III.10

CDS spreads of selected European governments (b.p.)

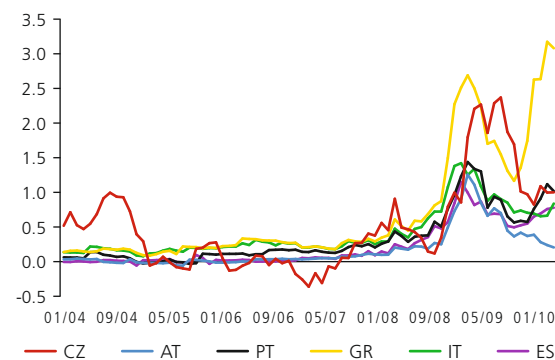


Source: Thomson Reuters

Note: 5Y CDS spreads; for data reasons, Malta, Cyprus, Bulgaria, Estonia, Latvia and Luxembourg were not included in the average.

CHART III.11

Yield spreads on ten-year government bonds (%; monthly data)

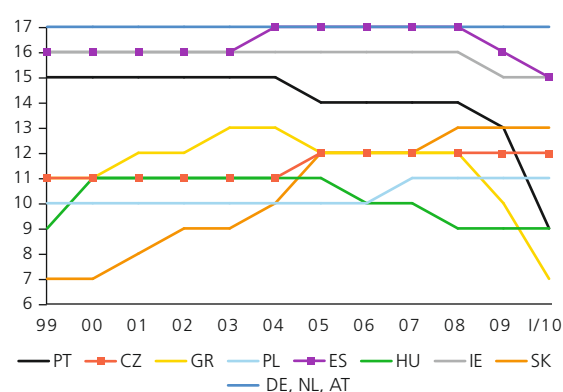


Source: Thomson Reuters, CNB calculation

Note: Yield spreads on the 10Y benchmark government bonds of the selected countries relative to the German equivalent.

CHART III.12

Sovereign ratings of selected countries (long-term foreign currency rating; Standard&Poor's)



Source: Standard & Poor's

Note: Long-term S&P rating conversion scale: 17 = AAA, 13 = A+, 10 = BBB+, 7 = BB+.

TABLE III.1

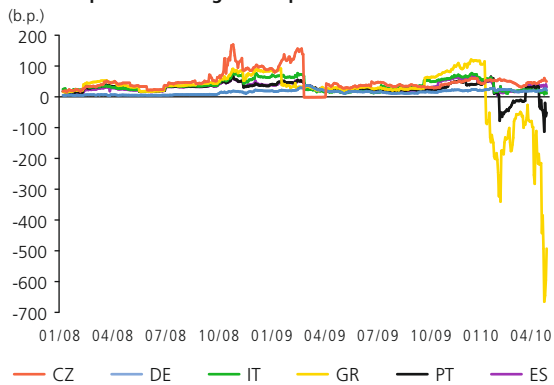
## SOVEREIGN RATING VOLATILITY INDICATORS FOR SELECTED COUNTRIES

	Notches above speculative grade	Outlook	Rating changes since 30 June 2007
Czech Rep.	5	stable	2 up/0 down
France	10	stable	none
Germany	10	stable	none
Greece	0	negative	0 up/10 down
Iceland	0	negative	0 up/11 down
Ireland	8	negative	0 up/7 down
Portugal	4	negative	0 up/6 down
Slovakia	6	stable	2 up/0 down
Spain	8	negative	0 up/3 down
UK	10	negative	0 up/1 down

Source: April 2010 Global Financial Stability Report and rating agency databases  
 Note: Based on the average of the long-term sovereign foreign currency ratings of Moody's, Fitch and Standard & Poor's. Outlook changes are included in rating changes.

CHART III.13

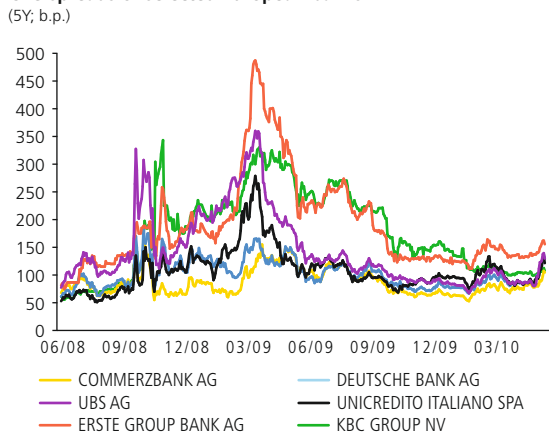
## Curve slopes of sovereign CDS spreads



Source: Thomson Reuters, CNB calculation  
 Note: Difference between the 10Y and 1Y CDS spreads of the relevant country.

CHART III.1 BOX

## CDS spreads of selected European banks



Source: Thomson Reuters

## Box 4:

CREDIT DEFAULT SWAPS AS A CREDIT RISK INDICATOR<sup>48</sup>

Credit default swaps (CDS) are used quite often as aggregate credit risk indicators. The CDS spread is the price that the CDS buyer is willing to pay for protection against a reference entity's credit event to the seller of such protection. The CDS seller undertakes to cover the loss that the protection buyer would incur as a result of the credit event. On entering into the contract, both parties take on counterparty default risk. According to the basic approach, the value of the CDS spread is a function of the probability of default (PD) of the reference entity and the loss given default (LGD). However, the current crisis has shown that CDS spreads can also be made up of other premiums, such as a liquidity risk premium, a systemic risk premium or a jump-to-default risk premium. In quiet times, jump-to-default risk and systemic risk usually account for a negligible part of the CDS spread. But at times of heightened uncertainty, as in the case of the banking system after the collapse of Lehman Brothers, these two risks gain in importance (see Chart III.1 Box).<sup>49</sup> Additional premiums can also be a part of CDS spreads. These arise from the definition of credit event, which does not necessarily have to be of a credit nature.<sup>50</sup>

CDS derivatives were originally created for the purpose of hedging against credit risk. Over time, though, they started to be used for speculative transactions. Hedging against credit risk using CDS contracts is illustrated below on the example of government debt. Theoretically, the difference between the yield on a government bond of a certain country and that on a risk-free benchmark and the difference between their CDS should be the same, since both express the premium on sovereign credit risk. Although the correlation between the two markets is usually high because of arbitrage (see Chart III.2 Box, AT, BE, CZ, GR, IE, IT, NL, PT and ES), it can diverge in the short run – CDS spreads can overshoot the differences between government bond yields in the short run, and vice versa. Whereas an excess of underlying asset spreads over their CDS spreads is usually justified by the lower market liquidity of the underlying asset and therefore by a higher spread owing to liquidity risk (see Chart III.2 Box, FI and FR), an opposite excess can be caused by various factors, or CDS market anomalies, on both the demand and the supply sides.

<sup>48</sup> Compared to the total derivatives market, the market for this type of derivative is relatively small (approximately 7%). However, the exact data on how big a credit default risk was transferred by these instruments do not yet exist (www.isda.org: 2009 Q1 estimate is USD 31 trillion).

<sup>49</sup> The collapse of Lehman Brothers in September 2008 is an example of sudden default. Owing to growth in systemic risk due to the balance-sheet links of individual financial institutions, the risk of sudden default increased for most other banks after the collapse of this bank.

<sup>50</sup> In the case of the banking system, nationalisation, for example, could be a credit event.

Part of the demand for sovereign CDS contracts is in reality due to hedging against the risk of another reference entity for which the credit event probability is highly correlated with the credit event of the state.<sup>51</sup> In such case, the overall demand for sovereign CDS can be much more sensitive to changes in various factors than demand on the real government bond market. Another possible reason for short-term overshooting of the CDS price is an insufficiently flexible response of the supply of CDS contracts to increased demand, since demand on the CDS market is relatively restricted and strongly concentrated around a few active global dealers.<sup>52</sup>

It could be disturbing if CDS market anomalies were to propagate to underlying asset markets or if an increased sovereign CDS spread were to increase the yield (reduce the price) on that bond without any negative fiscal change having been made. This contagion effect tends to be associated with the psychological transmission channel rather than the technical transmission channel. CDS spreads are used quite often as an indicator of a country's solvency regardless of the limiting factors of the CDS market. To a certain extent, therefore, an excessive change in CDS spreads can affect investors' perceptions of a country's credit risk. The technical realisation of contagion, however, is more or less limited. Several substantiating arguments can be proffered.

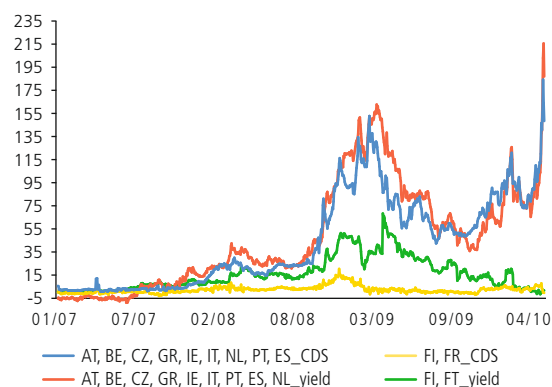
Owing to credit risk, the seller on the CDS market and the buyer on the underlying asset market are in the same situation. The supply of CDS contracts is usually low, which can exert upward pressure on CDS spreads (credit risk), whereas the demand for government debt is usually high, which, by contrast, can put downward pressure on the credit premium. Hence, contagion is more or less restricted.

Another possible argument is that anomalies from CDS markets might transmit to the underlying asset market if we assume the absence or very low participation of investors who assess the risks themselves on the basis of their own fundamental analyses.<sup>53</sup>

Another contagion effect is often associated with the speculative trading strategies of (a) CDS sellers hedging on the underlying asset market by means of speculative short selling, or (b)

CHART III.2 BOX

**Sovereign risk premiums of selected countries**  
(average for selected country; b.p.)



Source: Thomson Reuters

Note: In the case of CDS the risk premium was calculated as the difference between 5Y sovereign CDS spreads of the relevant country and the German equivalent; in the case of yields it was calculated as the difference between the 5Y government benchmark bond of the relevant country and the German equivalent.

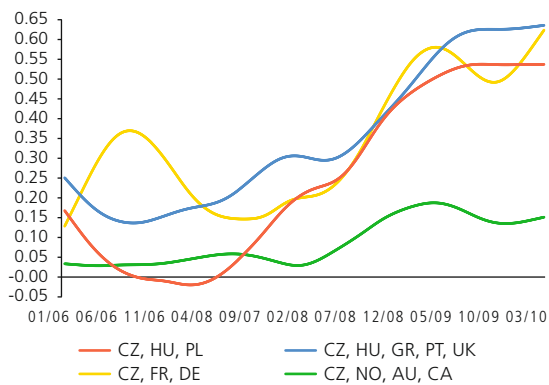
51 This may be due to the non-existence of relevant CDS or to their high price. Take, for example, the purchase of CDS for public debt where in reality the CDS buyer holds a bond issued by the bank of the relevant country or, say, by the state energy company.

52 Furthermore, the concentration can increase. If, for example, the link between the hedged risk (sovereign credit risk) and the counterparty risk (the credit risk of the bank as the seller) strengthens as a result of, for example, measures introduced to support the banking sector, demand can be concentrated into an even smaller group. This is because the protection buyer naturally rules out as a counterparty any institution to which such measures directly or indirectly relate.

53 In other words, if we admit the existence of the contagion effect, we simultaneously deny the existence of arbitrage.

CHART III.3 BOX

## Average correlation between CDS spreads of selected economies

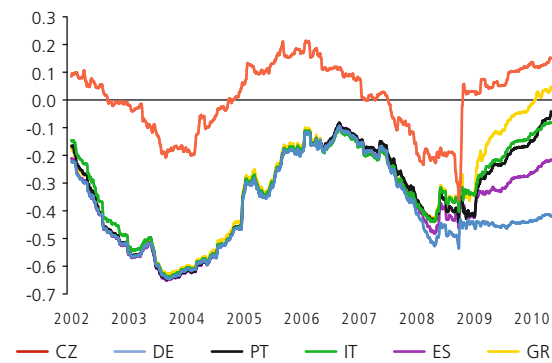


Source: Thomson Reuters

Note: The Dynamic Conditional Correlation GARCH was used to calculate the correlation of changes in 5Y CDS spreads. The average correlation expresses the unweighted mean of the correlations of the individual country pairs, which was subsequently smoothed using the HP filter.

CHART III.14

## Correlation between weekly yields on government bonds and equities



Source: Thomson Reuters, CNB calculation

Note: Rolling correlation with a window of 500 observations. Correlation between stock index returns (DJ EURO STOXX, PX) and 10Y benchmark bond yields of the relevant countries.

CDS buyers trying to increase CDS prices<sup>54</sup> in order to hedge their existing short positions on the underlying asset market (naked CDS buying).<sup>55</sup> In this case, however, contagion would only be possible under the assumption of insufficient demand for the underlying asset and the possibility of a few buyers applying market power over sellers. Given that the CDS market is considerably smaller than the government bond market, this contagion channel is very limited.<sup>56</sup>

However debatable the contagion effect between the CDS market and the underlying asset market may be, the same effect has been observed across various CDS markets of single countries and across the same CDS markets of different countries. One can follow how sovereign CDS spreads grew in countries affected by the financial crisis. In these countries, credit risk transferred from the banking sector to the government sector. This was associated with the widespread awareness of the low probability of collapse of systemically significant institutions (see Chart III.1 Box and Chart III.10). Contagion of a psychological nature led to the transfer of risks even in countries whose financial systems were not affected, for example the Czech Republic (see Chart III.3 Box). In a simplified way one can observe some independence between the market and economic fundamentals of the selected countries, which often differ structurally.

From the practical point of view it is evident that the possibility of trading in credit risk can, for a while, be profitable to both creditor and debtor. If a government debt creditor has the option of hedging against the government debt position, it will remain willing to buy debt even if the government debt position deteriorates significantly. This can foster higher liquidity, activity and price stability on the government bond market.<sup>57</sup>

## Country selection by investors persists

The growing sovereign credit risk increased the already strong selection by investors vis-à-vis individual EU states (see Charts III.10 and III.11). This selection is also evident from the negative correlation between government bond yields and euro area stock index returns

<sup>54</sup> i.e. trying to influence investor perceptions of the reference entity's credit risk.

<sup>55</sup> It is because of naked CDS that a debate is now going on about introducing regulation of the CDS market or completely prohibiting naked CDS. Naked CDS are often compared to taking out fire insurance on one's neighbour's house. The policyholder then profits from his neighbour's misfortune or even tries to get his neighbour's house to burn down. Naked short-selling transactions and naked CDS in government bonds of euro area were prohibited by the Federal Financial Supervisory Authority (BaFin), for example.

<sup>56</sup> The CDS market represents roughly 2% of government debt for Greece, approximately 1% for Spain and Italy and around 4% for Portugal (<http://www.cnmv.es>).

<sup>57</sup> The argument that debt hedging will lead to an increase in the debt itself does not hold much water, since increased interest in hedging increases the hedging price, i.e. CDS spreads or the reference entity's PD.

(see Chart III.14).<sup>58</sup> Differences in long-term government bond yields indicate persisting “flight-to-quality” and “flight-to-liquidity” effects in the sense of a preference particularly for German government bond holdings. In the case of the Czech Republic, the negative correlation coefficient has started to turn positive again.<sup>59</sup> The current rise in the coefficient can be interpreted as a return of liquidity and confidence to these markets (see Chart III.3), as confirmed by growth in foreign assets in the investment position (see Chart II.20).<sup>60</sup>

### The stock market optimism may be temporary

The increased stock market optimism may be temporary to some extent (see Chart III.15). On the one hand, the growth in shares may be linked to the previous pronounced decline, or to a correction of undervalued assets and a return to their fundamental values, together with expectations of economic growth. On the other hand, the growth in shares may be being driven to a large extent by highly expansionary economic policy stimuli. If economic growth turns out to be slower than expected by the markets, share prices may prove to be too high (see Box 5). Conversely, if the stock market optimism turns out to be justified and the economic recovery proves to be sustained, authorities around the world will probably soon commence their exit strategies. The Czech stock market, which is significantly influenced by foreign investors (as evidenced by a close correlation relationship – see Chart III.15), is likely to experience the aforementioned scenarios.

#### Box 5:

#### PRACTICAL APPROACHES TO THE IDENTIFICATION OF ASSET MARKET BUBBLES

Asset market bubbles are a popular term for the situation where the price of an asset (shares, real estate, exchange rates, commodities, etc.) moves far from its fundamental-based value.<sup>61</sup> Although the decomposition of an asset price into components arising from fundamental factors and components affected by “non-fundamental” factors (e.g. euphoria or over-optimistic investment sentiment) seems straightforward, empirical application associated with explicit expression of the values of individual

<sup>58</sup> The correlation expresses the relationship between share prices and bond prices, which usually move in opposite directions. A rise in share prices is often interpreted as positive expectations regarding the economy. Growth in bond prices expresses investment in safer instruments as a result of expected adverse developments.

<sup>59</sup> In the case of Central European economies the correlations are often positive, since investors still consider their shares and bonds to be similarly risky assets, which they sell or buy together (FSR 2005, p. 22).

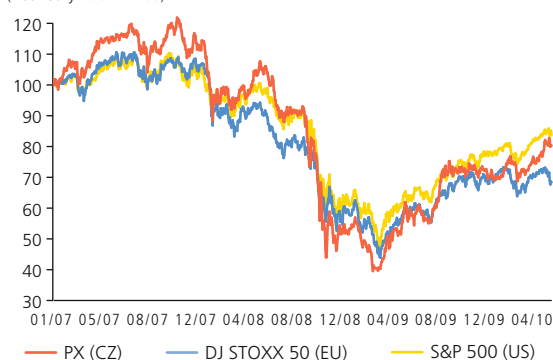
<sup>60</sup> The stock of securities issued by domestic entities and held by foreign portfolio investors was up by 28.6% year on year as of 31 December 2009 (equity securities by 16% and koruna bonds by 35%).

<sup>61</sup> An asset price bubble is defined as an explosive and asymmetric deviation of the market price of an asset from its fundamental value, with the possibility of a sudden and significant correction.

CHART III.15

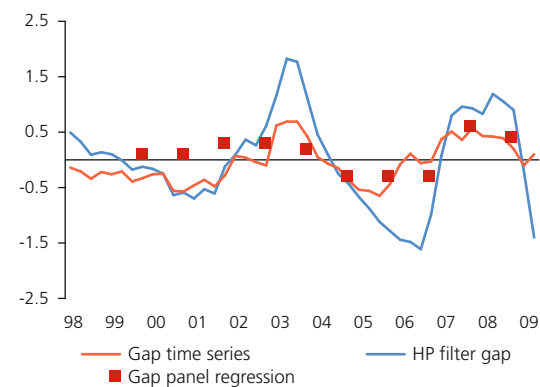
#### Stock indices

(1 January 2007 = 100)



Source: Thomson Reuters, CNB calculation

CHART III.4 BOX

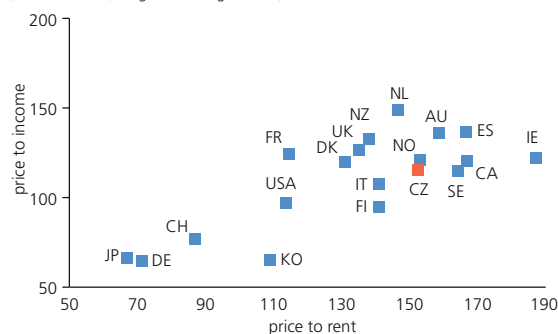
**Apartment price gaps in the Czech Republic  
– deviations of actual prices from estimates**


Source: CZSO, CNB calculation (WP 12/2009)

CHART III.5 BOX

**Relationship between price-to-income and price-to-rent  
– international comparison**

(data for 2009; long-run average = 100)



Source: Thomson Reuters, CZSO, IRI, CNB calculation

components is very limited. Where non-fundamental factors account for a major part of asset price growth, identifying a bubble is more complicated, since non-fundamental factors are not directly measurable. The emergence of bubbles can also be fostered by inappropriate policy of central banks (e.g. a policy of “cheap money”) or governments (e.g. unsound deficit financing).

*Why are asset price bubbles so “popular” and why are we interested in them?* The first, whole-economy, perspective stems from the interest of the central bank and the government in the effects of bubbles on the real economy. The second, investor, perspective is based on the potential ability to use knowledge of the formation of bubbles to achieve higher-than-average returns. Although the two perspectives have different motivations, they share an intense effort to identify bubbles in advance. However, the practical results often show that standard methods are unable to identify bubbles not only ex ante, but also ex post (see, for example, Gurkaynak, 2005).<sup>62</sup>

Empirical research confirms the economic intuition that more serious impacts on the real economy stem from the bursting of property market bubbles than that of stock market bubbles (see, for example, Helbling and Terrones, 2003,<sup>63</sup> or Bordo and Jeanne, 2007).<sup>64</sup> The effects stemming from the sudden bursting of property market bubbles generate higher output losses and last longer on average (about 4 years) than in the case of stock market bubbles (around 1.5 years). The bursting of property market bubbles also poses a greater threat to the financial stability of a country/region if the banking sector is more exposed through loans secured by property (which is the situation in most European countries).

The basic practical techniques for identifying bubbles include: (a) trend curves and statistical filters, (b) ratios, (c) empirical models and specification tests, and (d) structurally rich theoretical models. These are illustrated below with priority application to the Czech property market.

*Trend curves and statistical filters:* the trend can be calculated using standard linear or non-linear fitting methods or using univariate filters – usually the HP filter with a suitable (depending on the time series periodicity) or arbitrarily selected smoothing coefficient. The main drawback with the HP filter is that it generates unreliable results for the beginning and end of the dataset. The estimation of a bubble for the Czech

62 Gurkaynak, R. S. (2005): *Econometric Tests of Asset Price Bubbles: Taking Stock*, Finance and Economics Discussion Series, Federal Reserve Board, Washington, D.C.

63 Helbling, T., Terrones, M. (2003): *Real and Financial Effects of Bursting Asset Price Bubbles*, International Monetary Fund.

64 Bordo, M., Jeanne, O. (2002): *Boom-busts in Asset Prices, Economic Instability, and Monetary Policy*, NBER Working Paper 8966.

property market using the HP filter is shown in Chart III.4 Box. An application of the HP filter is given in Adalid and Detken (2009),<sup>65</sup> who define a property market boom as a persistent deviation of real property prices from HP trend with a relatively high smoothing parameter ( $\lambda = 100,000$ ). A positive deviation of at least 5% for at least 12 quarters is regarded as a boom.

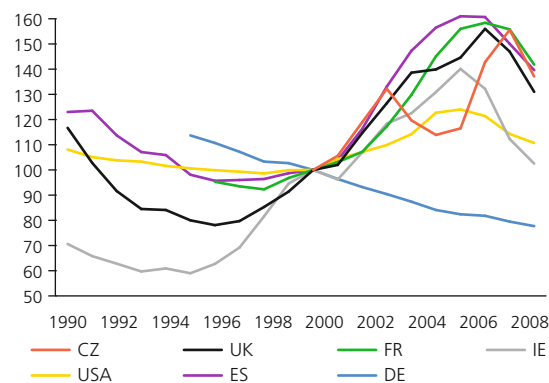
*Ratios:* these include the *price-to-income* and *price-to-rent* ratios (see Charts III.5 Box–III.7 Box, or section 3.2), which can also be used to get an initial idea of the possible emergence of bubbles (sometimes also by fitting to, for example, the HP trend). These ratios, like the aforementioned univariate filters, suffer from several drawbacks, for instance: (i) they produce high variability in the indication of non-equilibrium states; (ii) they do not directly take movements in interest rates and other fundamentals into consideration and (iii) their time series still have short histories, particularly in the case of transition economy property markets.<sup>66</sup> They are particularly popular with financial market practitioners. Himmelberg, Mayer and Sinai (2005)<sup>67</sup> provide an application to the US property market.

*Empirical models and specification tests:* specification tests rank among the so-called indirect tests (Salge, 1997),<sup>68</sup> i.e. the aim is to confirm or refute the existence of a bubble. However, these approaches do not directly specify the bubble formation process (see, for example, Levin and Wright<sup>69</sup> for an application to the UK property market). The information content of these models is affected by misspecification of the model and the problem of small data samples. Direct tests for the existence of bubbles identify the process of emergence of the bubble.<sup>70</sup> An advanced bubble identification technique is one that uses an econometric model to reveal the determinants of the asset price (preferably using both supply and demand factors) – see, for example, Hlaváček and Komárek (2009)<sup>71</sup> or Chart III.4 Box for the situation on the Czech property market.<sup>72</sup>

CHART III.6 BOX

## Price-to-income ratios – international comparison

(absolute index; 2000 = 100)

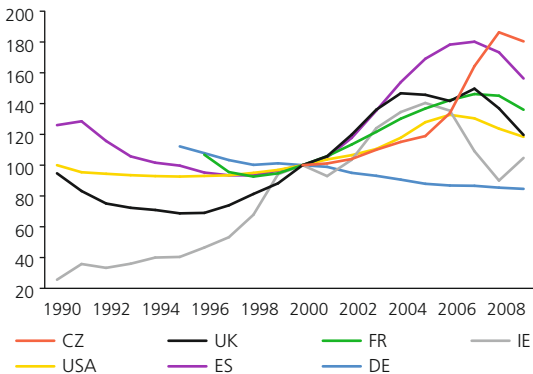


Source: Thomson Reuters

CHART III.7 BOX

## Price-to-rent ratios – international comparison

(absolute index; 2000 = 100)



Source: Thomson Reuters

65 Adalid, R., Detken, C. (2009): *Real Time Early Warning Indicators for Costly Asset Price Boom/Bust Cycles. A Role for Global Liquidity*, ECB Working Paper Series 732.

66 The relatively high value of the *price-to-rent* ratio for the Czech Republic (see Chart III.7 Box) is due, for example, to its very low value at the beginning of the period, linked, among other things, to relatively high nominal interest rates.

67 Himmelberg, C., Mayer, C., Sinai, T. (2005): *Assessing High House Prices: Bubbles, Fundamentals and Misperceptions*, The Journal of Economic Perspectives, Vol. 19, No. 4, pp. 67–92.

68 Salge, M. (1997): *Rational Bubbles: Theoretical Basis, Economic Relevance, and Empirical Evidence with a Special Emphasis on the German Stock Market*, Springer Verlag, 1997, ISBN 3540626298.

69 Levin, E. J., Wright, R. E. (1997): *The Impact of Speculation on House Prices in the United Kingdom*, Economic Modelling, Vol. 4, No. 4, pp. 567–585.

70 These tests pertain mainly to the stock market (often testing the relationship between dividends and share prices) and even direct tests are sensitive to misspecification of the model (e.g. the omission of an important determinant).

71 Hlaváček, M., Komárek, L. (2009): *Property Price Determinants in the Czech Regions*, CNB Working Paper No. 12/2009.

72 Both the econometric model (based on standard and panel regressions) and the HP filter identified two periods with overvalued property prices in the Czech Republic. However, the response at the end of the dataset is not realistic owing to the drawbacks of the HP filter.

To sum up, approximate identification of bubbles is possible ex post, but: (i) continuous asset price monitoring is a necessary condition for this; (ii) we recommend using the entire range of methods and models available, from the simplest (trend curves and filters) to the comprehensive (models taking into consideration supply and demand factors and other theoretical models); (iii) it is desirable to create structurally rich models (facilitating examination of the effects of asset market bubbles); (iv) it is vital to respect specifics across countries and markets (for example, large and growing deviations from trend in countries with undeveloped financial markets do not necessarily imply the existence of a bubble, owing to base effects).

### 3.2 THE PROPERTY MARKET

The Czech residential property market recorded a decline in apartment prices of roughly 14% in 2009. This decline was driven mainly by the economic downturn and labour market deterioration in the Czech Republic. Though the price decline in the Czech Republic was smaller than in some other economies, prices of apartments probably approached their equilibrium levels. This is indicated also by improving ratios of apartment prices to wages and rental returns. The number of housing starts declined in response to the falling prices. However, the high rate of apartments under construction persists and the time to sell apartments is getting longer. Developers' situation is also worsening because of a further fall in demand for commercial property combined with a rise in the vacancy rate.

#### RESIDENTIAL PROPERTY PRICES

##### Property prices fell in 2009...

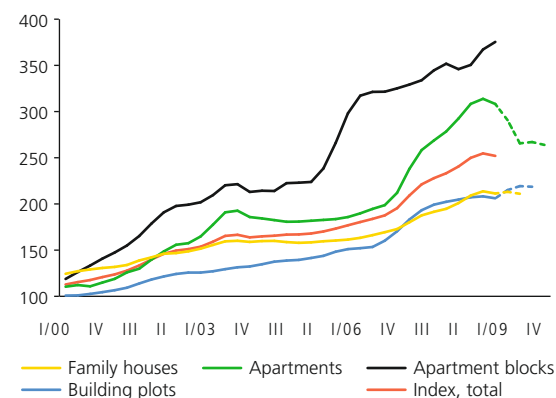
Between 2005 and 2008 property prices in the Czech Republic rose practically continuously in all segments, but since 2009 they have been declining. This decline relates primarily to apartment prices, which, according to preliminary estimates based on property transfer prices, were down by roughly 14% year on year at the end of 2009 H1 (see Chart III.16). Prices have not responded so strongly in property market segments where prices were rising more moderately in 2006–2008. Prices of family houses were flat year on year in mid-2009 and estimates of land prices based on supply prices even indicate modest growth (of around 5%). The latest available data on apartment block prices from the end of 2008 indicate continued growth, although the relatively low number of transfers in this segment of the property market deserves mention.

##### ...while the decline in transfer prices was deeper than that in supply prices

Prices of apartments, for which data sources are the widest, are showing different growth rates for transfer prices and supply prices (see Chart III.17).

CHART III.16

**Property prices – transfer prices according to tax returns**  
(absolute index; 1999 Q1 = 100)



Source: CZSO, CNB calculation

Note: 2009 data preliminary or calculated from supply prices (for prices of apartments and building plots).

Transfer prices showed the fastest growth in 2007 Q3, then their year-on-year growth rate slowed, whereas supply prices peaked around 2008 H1. Transfer prices recorded their subsequent year-on-year decline again rather earlier than supply prices. In the case of supply prices, a partial stabilisation of the situation can be observed at the end of 2009, with annual declines of just above 10%. Recently, then, the changes in transfer prices have been preceding those in supply prices and have also usually been more pronounced.<sup>73</sup> This suggests some anticyclicity in the difference between these prices, with a decline in demand on the property market leading first of all to a decline in the actually realised prices.

Together with the turnaround in property prices there were also changes in the cross-regional price growth structure. During the period of fast growth in apartment prices these prices rose faster in the other regions than in Prague, but the opposite is true now. The largest year-on-year declines are being recorded in regions which previously saw the largest increases in prices (year-on-year price declines of around 20% in the Moravia-Silesia and Hradec Králové regions, for example). Small price declines have been recorded in the Karlovy Vary and Ústí regions for example.

### The decline in prices was linked with the worse overall economic situation in the Czech Republic...

The decline in property prices in 2009 was linked mainly with the worse overall economic situation. According to a CNB analysis,<sup>74</sup> property prices were previously largely driven by demand, in particular by demographic factors (natural population growth and net migration) and market factors (unemployment rate, number of vacancies and wage growth). Moreover, according to standard models of economic behaviour, part of the demand was also driven by speculation on further growth in property prices in the future. Most of these factors showed a significant year-on-year deterioration in 2009. Natural population growth decreased by one-quarter from its high 2008 levels, while net migration dropped by two-thirds compared to the record levels observed in 2007, reaching a five-year low. The registered unemployment rate increased by 3.3 p.p. year on year, coming close to the 10% level, while the number of vacancies fell by two-thirds year on year at the end of the year.<sup>75</sup> Such a rapid deterioration in the labour market situation is historically unprecedented (for more details on the labour market, see section 2.3). The deterioration in these demand-side factors explains most of the observed decline in apartment prices; only a small part corresponds to the bursting of the bubble observed in 2007 and 2008

73 However, the fact that transfer prices are preceding supply prices cannot be used for analysing the current trend in flat prices, since these prices are published with a long lag and are usually revised relatively significantly.

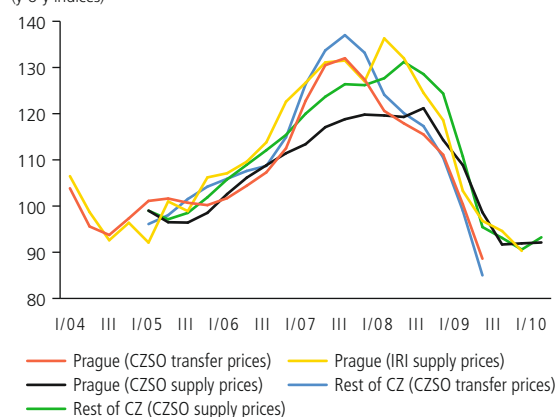
74 Hlaváček, M., Komárek, L. (2009): *Property Price Determinants in the Czech Regions*, CNB Working Paper No. 12/2009.

75 Wage growth remained relatively high at the end of 2009 (according to the LFS, average wage growth rose by 4% year on year in 2009 and by 5.2% in 2010 Q1). However, the high growth in wages was due largely to one-off factors of a statistical nature, in particular a lower sickness rate and changes in the employment structure, with low-wage and high-sickness-rate employees being laid off first. See CNB (2010): *Inflation Report II/2010*, CNB.

CHART III.17

#### Property prices – transfer prices and supply prices

(y-o-y indices)

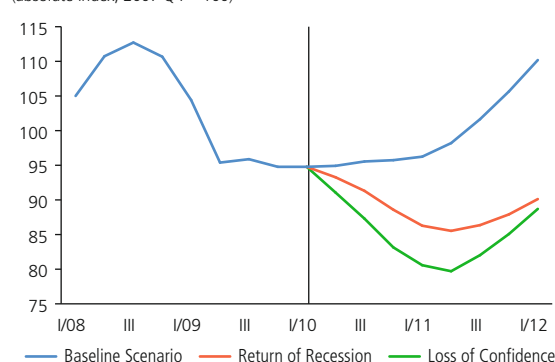


Source: CZSO, IRI

CHART III.18

#### Property price scenarios

(absolute index; 2007 Q4 = 100)

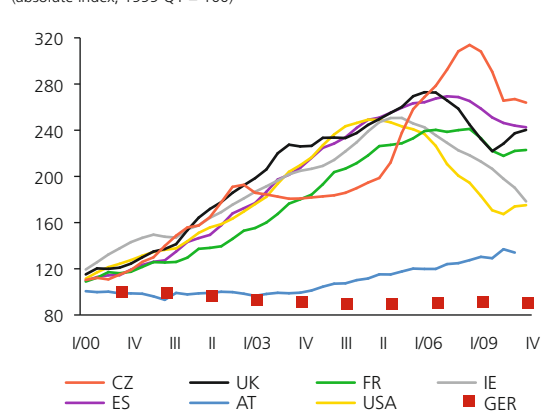


Source: CZSO, CNB calculation

CHART III.19

#### Property prices – international comparison

(absolute index; 1999 Q1 = 100)

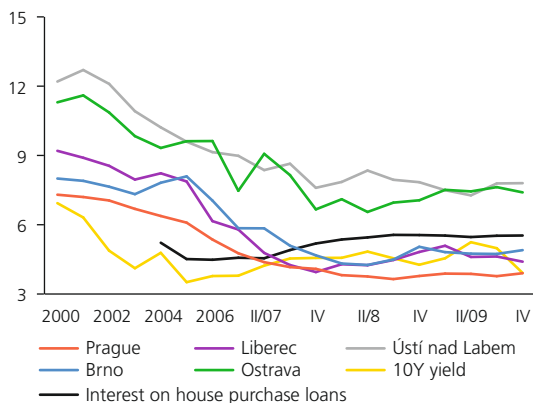


Source: BIS, CZSO, Case-Shiller (US), Nationwide (UK)

CHART III.20

**Rental returns**

(averages for period in %; comparison with yields on 10Y government bond and house purchase loan rates)

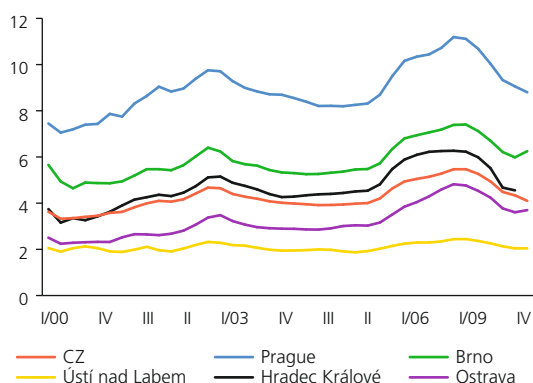


Source: IRI, CNB

CHART III.21

**Price-to-income ratios**

(ratio of price of 68 m<sup>2</sup> apartment to wage for last four quarters)



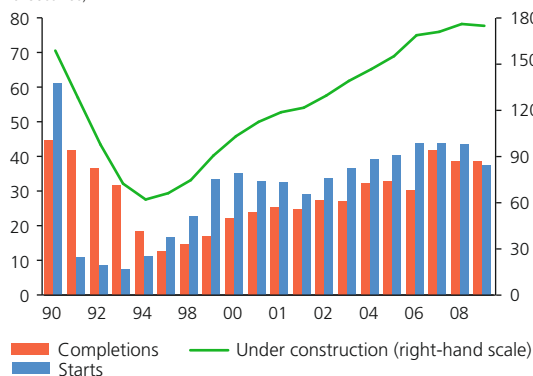
Source: CZSO, CNB calculation

Note: 2009 data preliminary or calculated from supply prices

CHART III.22

**Housing construction**

(numbers of starts, completions and dwellings under construction in given year in thousands)



Source: CZSO

(about 15% of the price decline, see Chart III.4 Box). Chart III.4 Box also shows that according to the econometric model apartment prices are currently close to their equilibrium values, which were obtained on the basis of fundamentals.<sup>76</sup> Hence, if the aforementioned fundamental factors do not show any further significant deterioration, property prices should tend to remain flat in the near future. The most probable *Baseline Scenario* sees renewed price growth in mid-2011 (see Chart III.18). In the not very likely stress scenarios *Return of Recession* and *Loss of Confidence*, apartment prices may decrease further by about 8% and 16% respectively at the one-year horizon in response to worsening macroeconomic fundamentals.

**...and followed the price decline abroad**

The decline in property prices in the Czech Republic in 2009 followed declines in property prices abroad, which started to emerge in 2008 when apartment prices were still rising in the Czech Republic. For example, property prices in the USA fell by as much as 33% compared to the peak observed in 2006, those in the UK were down by as much as 19% in 2009 compared to their record levels, and those in Spain and France declined by about 10% (see Chart III.19). Some countries saw a slight recovery in 2009 H2, with prices rebounding by around 5% in the USA and the UK and by 2.4% in France. Although the overall increase in property prices in the Czech Republic in the last decade was higher than that abroad, the decline in property prices in 2009 might have been sufficient, since the price increase in 2006–2008 can be attributed partly to the converging nature of the Czech economy and the effect of convergence of prices towards those prevalent abroad.<sup>77</sup> On the other hand, in comparison with neighbouring advanced economies (Germany and Austria), which are the Czech Republic's major trading partners and where property prices were broadly flat in the last decade, the price growth in the Czech Republic seems rather high, particularly relative to the average wage.

**Price sustainability ratios improved**

The continuing rise in apartment prices in the Czech Republic in 2008 resulted in quite a significant deterioration in the indicators of sustainability of these prices to their worst-ever values, whereas in 2009 both the *apartment rental return* and the *price-to-income* ratio showed a slight improvement. Rental returns in the three largest cities (Prague, Brno and Ostrava) increased by 0.3–0.8 p.p. at the end of 2009 compared to the record low levels observed in mid-2008 (see Chart III.20). The rental return also mostly improved in the other regions

<sup>76</sup> Of course, this conclusion applies only within the econometric models considered, taking into account the spreads of their estimates. Equilibrium prices, or price gaps, are calculated in two alternative ways in Chart III.4 Box: using a time series analysis on quarterly data for the Czech Republic as a whole and using panel regression across the Czech regions on annual data. For details see the above-mentioned paper by Hlaváček and Komárek (2009).

<sup>77</sup> This can also be illustrated by the fact that the situation in the Czech Republic is comparable with that in other countries as regards *price-to-income* and *price-to-rent* ratios (see Charts III.5–III.7 Box).

compared to 2008, with the largest increase being recorded in Olomouc (1 p.p.). A pronounced decline in the rental return was recorded only in Karlovy Vary (-0.8 p.p. year on year). The rental return increased even though interest rates on house purchase loans were generally flat and long-term market interest rates were falling.

The estimated *price-to-income ratio* (see Chart III.21) improved considerably for all Czech regions (declines of 10–20% from the peaks observed in 2008 Q2 and Q3). However, on average it is slightly below the levels observed in mid-2003, when a bubble associated with the Czech Republic's accession to the EU emerged on the property market. According to both indicators, Prague seems to be the riskiest region, although it has much better values for other relevant indicators and has so far been less affected by the economic recession than the other Czech regions.

#### Housing construction declined and the time to sell new apartments increased

The decline in apartment prices in 2009 was also reflected in a decline in housing construction, which started in 2008 Q4. In particular, there was a sharp annual decline (of 14%) in the number of starts, while the number of completions was flat, as was the high number of dwellings under construction (see Chart III.22). The largest decline in the number of starts was observed for apartment blocks (down by 20% to a six-year low), which suggests a decrease in activity by developers. In parallel with the decline in the number of starts, the time to sell is getting longer (see Chart III.23). In the past developers were able to sell almost 80% of all the apartments in their projects before construction was completed, whereas in 2009 they managed to sell only 68%. There is also a relatively large differentiation between individual projects, with about one-third of projects lagging significantly behind the sales projection. Combined with the tightening of credit standards by banks, such delays in selling apartments may cause developers to incur additional unexpected costs, which, in turn, may lead to insolvency in some cases.

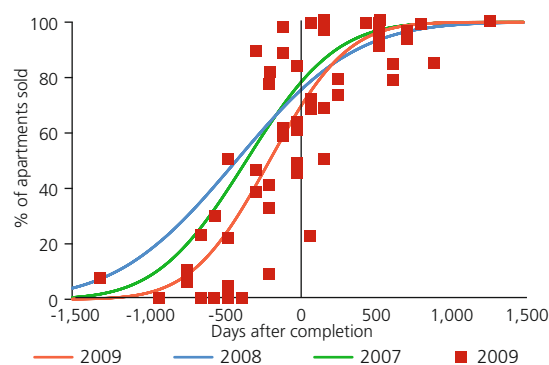
### COMMERCIAL PROPERTY PRICES

#### The commercial property market faced a liquidity shortage...

The risks to the developer sector in 2009 were further increased by a none-too-good situation in the commercial property market, which faced a liquidity shortage in the first three quarters. The volume of investment transactions was very low, declining by a sizeable 80% from its 2007 peak to the levels seen at the start of the millennium, when the property market was still only developing (see Chart III.24). The Czech property investment market was virtually abandoned by foreign investors (only one German real estate fund was active), which withdrew to their domestic markets. The market was dominated by Czech and Slovak investors in 2009, which made 15 of the total 20 transactions and accounted for 52% of the market. Developers

CHART III.23

#### Progress in selling of residential development projects in Prague



Source: Czech Technical University

Note: Red points show individual projects and progress with their sale.

CHART III.24

#### Planned supply and realised demand on the commercial property market (2006 = 100)



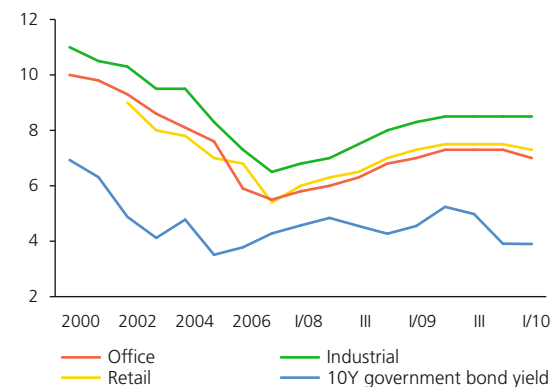
Source: King Sturge

Note: Supply of industrial, retail and office property calculated from new supply in m<sup>2</sup>; realised investments from data in EUR.

CHART III.25

## Yields on commercial property

(%)



Source: King Sturge

Note: The figures for industrial and office property are expert estimates.

responded with a lag to the decline in liquidity in the market in 2009 with a similarly strong decline in planned construction of 40–50% depending on the type of property. A continuing strong decline in construction is expected for 2010. This decline started in 2009, when, for instance, no office construction projects were launched.

**...which was reflected in an increase in required yields**

The number of transactions in the property market was so low in 2009 that it was virtually impossible to determine prices and related primary yields (a higher yield means that the investor demands a lower price for any given rent) for some segments of the market.<sup>78</sup> In spite of this, it can be said that the decline in demand was reflected in a further decline in prices and a related rise in yields (see Chart III.25). Since 2007, the latter has grown by 1.8 p.p. for office buildings, 2.0 p.p. for industrial real estate and 2.1 p.p. for retail property. Yields have increased despite a decline in yields on alternative investment in long-term government bonds (of 0.4 p.p. year on year), which means that investment in commercial property has become relatively attractive. The market recovered somewhat at the end of 2009, as the volume of real estate transactions was more than three times higher in Q4 than in the other three quarters put together.

**The vacancy rate also rose**

The economic crisis was also reflected in the commercial property market in a significant increase in the vacancy rate for both the office market and the industrial market. The vacancy rate for the office market has doubled over the last two years, from 5.8% to 11.8% at the end of 2009 (see Chart III.26), despite a 10% year-on-year decline in rents in the centre of Prague and despite the aforementioned year-on-year fall of more than 50% in the supply of new offices. The vacancy rate for offices put on the market in 2008–2009 was even 31% at the end of 2009. The vacancy rate for industrial real estate has increased over the last two years from around 10% to 17.6%, again despite a decline in new supply of 50%.

**The risks to developers were also reflected in growth in NPLs**

The aforementioned risks to the developer sector can be illustrated by growth in the NPL ratio in this sector in 2009 (see Chart III.27). The NPL ratio of the developer sector has long been lower than that of the non-financial corporations sector. For a selected group of developers<sup>79</sup>, however, the NPL ratio has risen significantly since mid-2009, exceeding the NPL ratio for non-financial corporations as a whole. At the same

CHART III.26

## Vacancy rate and total stock of office property

(vacancy rate in %; stock in thousands of m<sup>2</sup>)

Source: King Sturge, Prague Research Forum

78 As there were no significant sales in the industrial and retail segments, the return estimates are only expert estimates by real estate agents and investment consultants.

79 The NPL ratio in Chart III.27 is calculated in two ways; both use the CNB's Central Credit Register as the source of data. The first method is based on selected developers linked to the projects in Chart III.23 (about 400 entities including related companies). The second series shows loans granted to all corporations in the "real estate activities" sector (CZ-NACE 68) and the "development of building projects" sector (CZ-NACE 411). However, these sectors also include other real estate companies, such as estate agencies, property management companies and owners' associations and housing cooperatives. The last two were not included in the calculation.

time, the share of loans to developers in total loans to non-financial corporations rose from around 9% at the end of 2002 to a current level of about 23%. Developers also record a higher share of loans in foreign currency than other non-financial corporations (24.6% versus 18.4%). Some developers were forced to sell both commercial and residential projects towards the end of the year. The volume of these forced sales has so far been relatively small, but going forward they can be expected to exert downward pressure on prices on the one hand and to help get the overall property market moving on the other hand.

### 3.3 THE FINANCIAL INFRASTRUCTURE<sup>80</sup>

Under Act No. 6/1993 Coll., on the Czech National Bank, the Czech National Bank administers payments and clearing between banks, foreign bank branches and credit unions. It maintains the smoothness, security and reliability of the interbank payment system CERTIS and the short-term bond system SKD. These systems play a key role in financial stability, as they can become a channel for the propagation of shocks from one financial institution to the whole financial system. Given the stable situation in the Czech banking sector, however, no such propagation occurred in 2009.

#### Declines persist in both the value of transactions processed by SKD and the value of intraday credit

The value of the transactions processed by SKD rose continuously from 2000 to 2006. In 2007 there was a slight decline, which continued in the two following years and in the first few months of 2010. The decline was associated with lower volumes of repo operations and a downswing in the short-term bond market. An average of CZK 143 billion was processed daily in 2009, down by around 15% from a year earlier (see Chart III.28). SKD's turnover in roughly 25 days equalled annual nominal GDP.

The value of intraday credit also decreased.<sup>81</sup> The volume of intraday credit had been showing a gradual upward trend in previous years, but in 2008 it declined by 50% (see Chart III.29). In 2009 it decreased by a further 17% (to CZK 3,006 billion). The decline in the use of intraday credit may reflect slightly lower interbank payment turnovers and a downswing in the short-term bond market. It may also indicate that banks have no problems with intraday liquidity owing to a more prudent approach to liquidity management and thus have no need to use this instrument (see sections 3.1 and 4.1).<sup>82</sup>

<sup>80</sup> This section is devoted solely to the financial infrastructure systems administered by the CNB.

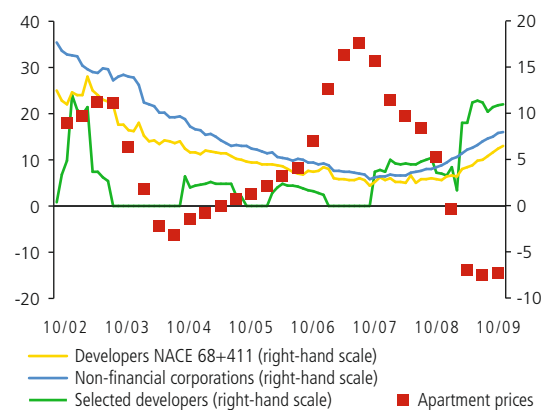
<sup>81</sup> The use of intraday credit supports smooth and stable interbank settlements. Through SKD, the CNB provides CERTIS participants with interest-free intraday credit to boost their cash liquidity during the day and thus ensure smooth operation of the payment system. All intraday credit extended to commercial banks by the CNB is collateralised.

<sup>82</sup> However, the importance of this indicator should not be overestimated, since past experience shows that banks have often made surprisingly little use of interest-free intraday credit despite having sufficient collateral. Only four banks use of intraday credit regularly.

CHART III.27

#### NPL rates versus apartment price growth

(%; year-on-year growth for apartment prices)

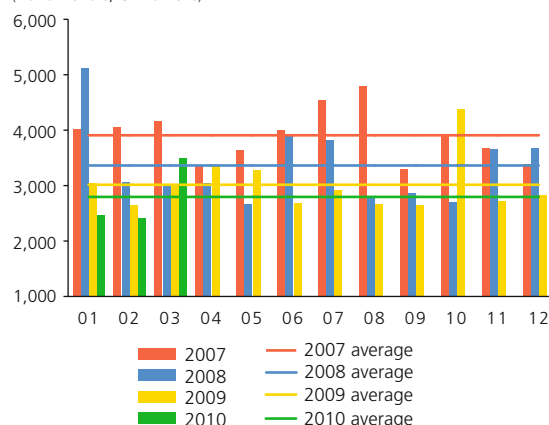


Source: CZSO, CNB<sup>79</sup>

CHART III.28

#### Total value of transactions processed by SKD in individual months of 2007, 2008, 2009 and 2010

(x-axis months; CZK billions)

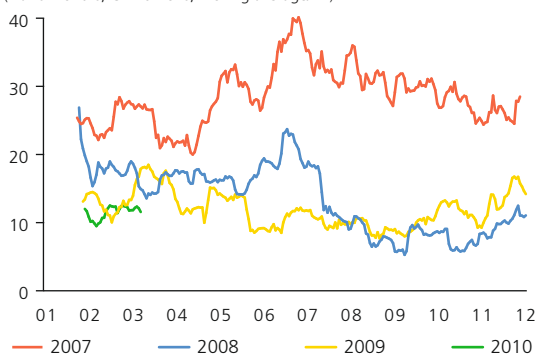


Source: CNB

CHART III.29

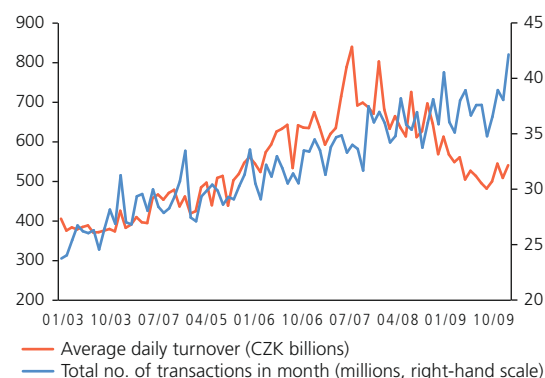
#### Comparison of intraday credit values in 2007, 2008, 2009 and 2010

(x-axis months; CZK billions; moving average/21)



Source: CNB

CHART III.30

**CERTIS interbank payment system – number of transactions processed in 2003–2008**

Source: CNB

TABLE III.2

**CERTIS INTERBANK PAYMENT SYSTEM – STATISTICAL INFORMATION**

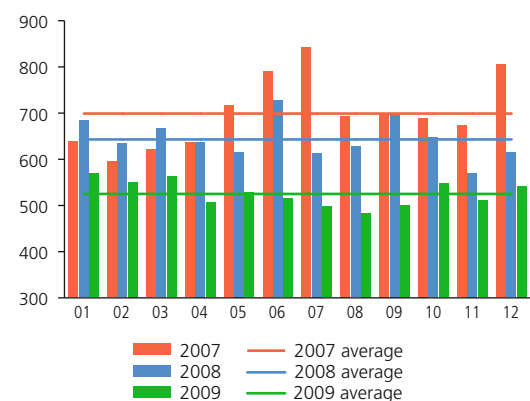
Period	Turnover (CZK billions)	Average daily turnover (CZK billions)	No. of transactions (millions)	Average daily no. of transactions (millions)	GDP/Average daily turnover
2002	100,343	431	262	1.12	5.6
2003	96,938	385	317	1.26	6.6
2004	110,127	434	333	1.32	6.4
2005	123,354	488	356	1.40	6.0
2006	151,537	604	382	1.52	5.3
2007	174,854	697	411	1.64	5.1
2008	162,993	644	436	1.72	5.7
2009	131,679	525	450	1.79	6.9

Source: CNB

CHART III.31

**Average daily turnovers in CERTIS in individual months of 2007, 2008 and 2009**

(x-axis months; CZK billions)



Source: CNB

**CERTIS ran smoothly**

The economic slowdown also affected payment activity and thus led to a decline in the monitored characteristics of the CERTIS system. Although the upward trend in the number of payments settled continued into 2009, average daily turnover fell by 18% year-on-year (compared to 6% in 2008; see Charts III.30 and III.31). In 2009, CNB Clearing processed 450 million transactions totalling CZK 131,679 billion. The average daily value of the transactions was CZK 525 billion (see Table III.2). These figures reveal the extent of payment settlement in CERTIS and its significance for financial stability. It took roughly seven days to reach a turnover equal to annual nominal GDP.

**The value of currency in circulation recorded an annual decline in 2009**

The value of currency in circulation fell by CZK 11.9 billion in 2009, the first decrease since the introduction of the Czech currency in 1993. At the end of the year, it stood at CZK 387.3 billion (see Chart III.32). This decrease was due to the gradual dissolution of hoarded money<sup>83</sup> remaining after extraordinary amounts had been withdrawn from bank accounts in October 2008 in response to the global financial crisis.

**A new payment system act has had impacts on private and public law banking practice**

An amendment of the Payment System Act entered into force on 1 November 2009.<sup>84</sup> This statute, which transposes a relevant EU directive<sup>85</sup> into Czech law, introduces among other things numerous duties in respect of payment service contracts, which include current account agreements. In addition to the already regulated entities with banking licences, the new law subjects other entities providing payment services to certain regulatory and supervisory requirements.<sup>86</sup>

The new statute introduces two categories of previously unregulated payment service providers. The first category covers payment institutions authorised to provide payment services on the basis of authorisation by the CNB. To be granted such authorisation, a payment institution must comply with numerous regulatory requirements (capital adequacy, protection of funds intended for payment transactions, information duty to the CNB). Harmonisation of regulatory and supervisory requirements within the EEA will enable authorisations granted to payment institutions in one member state to be recognised in other member states (the so-called single passport). Provision of services in the host state will be subject only to a reporting duty to the home supervisory authority. This should enhance competition in the payment services market.

<sup>83</sup> Hoarded money is money that people keep as cash at home rather than investing in financial products.

<sup>84</sup> Act No. 284/2009 Coll., on the Payment System.

<sup>85</sup> Directive 2007/64/EC of the European Parliament and of the Council of 13 November 2007 on payment services in the internal market.

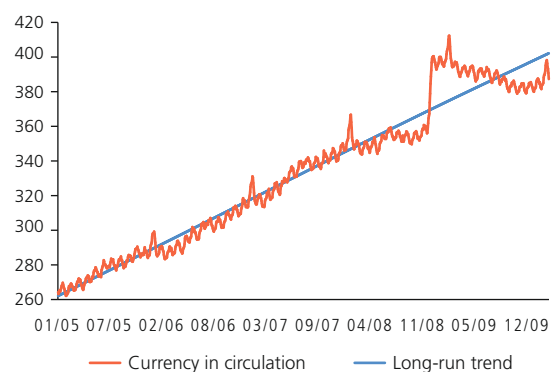
<sup>86</sup> This includes, for example, entities that carry on non-cash foreign exchange transactions (spot transactions).

The other category comprises small-scale payment service providers on the basis of registration with the CNB, for which the regulatory and supervisory regime is less strict. Nevertheless, the authorisation of such providers is limited to the home member state.

As regards the regulation of private law relationships, the law stipulates uniform standards for payments and the protection of payment services users. Although the duties stipulated by the new statute are not completely new for banks and other already regulated payment services providers, some duties, in particular the information duty, may necessitate changes in operating procedures and client documentation.

**CHART III.32****Currency in circulation 1995–2009**

(CZK billions)



Source: CNB

Note: Trend curve calculated using HP filter.