Central bank rates, market rates and retail bank rates in the euro area in the context of the recent crisis

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Introduction

The economic and financial crisis that arose in summer 2007 led to a significant increase in perceptions of risk in the economy, resulting in a sizeable rise in risk and liquidity premia on credit markets. Given the nature of the crisis, the financial sector was particularly affected, with respect to its financing via both the money market and the bond market, which may have had an impact on the retail interest rates offered by banks to businesses and households. Similarly, the sovereign debt crisis that appeared in late 2009 may have had an impact on financing costs in the private sector, insofar as sovereign bond yields are often used as a reference for other interest rates in the economy. The financial crisis, along with the contagion effects of the sovereign debt crisis on the banking sector, has also affected bank balance sheets and weighed on their liquidity and solvency ratios. This may have led banks to restrict the supply of credit or increase their rate margins.

Against this backdrop, this article addresses recent trends in the financing costs of various public and private sectors in the euro area and Belgium. It pays particular attention to the monetary policy transmission process via the interest rate channel during the crisis and notably examines the extent to which the process was affected by tensions on sovereign debt markets. Furthermore, this article looks at certain unconventional monetary policy decisions adopted in the euro area (full liquidity allotment, longer-term refinancing operations, covered bond purchases and, more recently, the Securities Markets Programme).

Whereas some of these measures caused interest rates to fall further, they were implemented primarily to keep the monetary policy transmission mechanism functioning properly[1].

The first part of the article deals with the relationship between Eurosystem monetary policy decisions and market interest rates. It looks, on the one hand, at the links between central bank rates and money market rates and, on the other hand, at the trend during the crisis of the risk-free yield curve, i.e. that of AAA-rated euro area government bonds. The second section addresses the question of long-term market rates harbouring credit risk. We examine the financing costs of the public sector and the financial and non-financial private sector, as well as the relationship between the two, at both the euro area and national levels. Lastly, part three is devoted to retail bank interest rates. Using an econometric analysis, it seeks to evaluate the impact of the financial crisis and the sovereign debt crisis on lending and deposit rates, at the level of the euro area in general and in Belgium in particular. The final section presents our conclusions.

We have used data available up to the end of May 2011 throughout the article, with the exception of the last part, for which the data used are those available at the time the econometric estimations were carried out, i.e. end of April 2011.

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[1] Trichet (2009).

1. Monetary policy and market interest rates

1.1 Central bank rates and money market rates

The Eurosystem is only able to directly influence very short-term money market interest rates. It does so by adjusting its injection of liquidity so that the Eonia rate – the overnight interbank rate in the euro area – moves as close as possible to the minimum bid rate on main refinancing operations[1]. In the wake of the tensions that arose from 9 August 2007 on interbank markets, the Eonia overnight rate became more volatile. However, by adjusting the time profile for supplying liquidity – notably by offering banks the possibility of front loading – the Eurosystem managed to stabilise Eonia around the main refinancing rate in the first phase of the crisis. During this period, the cycle of interest rate increases was temporarily interrupted, after the central key rate had been raised to 4 % in June 2007. It was not until July 2008 that it was raised to 4.25 %, in a climate marked by surging inflation and the emergence of potential second-round effects.

The morning after Lehman Brothers declared bankruptcy, on 15 September 2008, the money market crashed. Because the financial crisis represented a threat to the real economy and price stability, the ECB decided to cut interest rates substantially – by a total of 325 basis points between October 2008 and May 2009 – and to take exceptional monetary policy measures, including the adoption of a fixed-rate, full-allotment policy. These actions contributed heavily to the steep drop in the Eonia rate to a level below the ECB's main refinancing rate. In particular, the ECB's execution of a series of three one-year refinancing operations, respectively in July, September and December 2009, generated an unprecedented increase in excess liquidity, which notably resulted in massive use of deposit facilities and a drop in Eonia to a level close to the deposit facility rate. As a result, Eonia stood at an average of 0.35 % between July 2009 and June 2010, whereas the key interest rate was only lowered to 1 %. The adaptation of the process for issuing liquidity during the crisis profoundly altered the relationship between the central key rate and the overnight interbank market rate, which moved closer in line with the deposit facility rate due to the significant increase in excess liquidity. With the arrival at maturity of the one-year financing operations in July, September and December 2010, the level of excess liquidity fell sharply, triggering not only an increase of, but also greater volatility in Eonia, which averaged 0.67 % in the first quarter

of 2011. In early April, the Governing Council decided to raise its interest rates by 25 basis points, given the upside risks to price stability. The decision was attributed to the acceleration in inflation in early 2011, against a backdrop of rising commodity prices, along with signals confirming the euro area's economic recovery. Considering the high level of uncertainty still surrounding the health of financial institutions, however, the Governing Council did not alter its liquidity provision policy. In accordance with what was announced in March, it was intended that refinancing operations would continue in the form of fixed-rate tenders with full allotment at least until the start of the third quarter of 2011. The increase in key interest rates spurred the Eonia rate higher, even though the full-allotment liquidity policy was maintained.
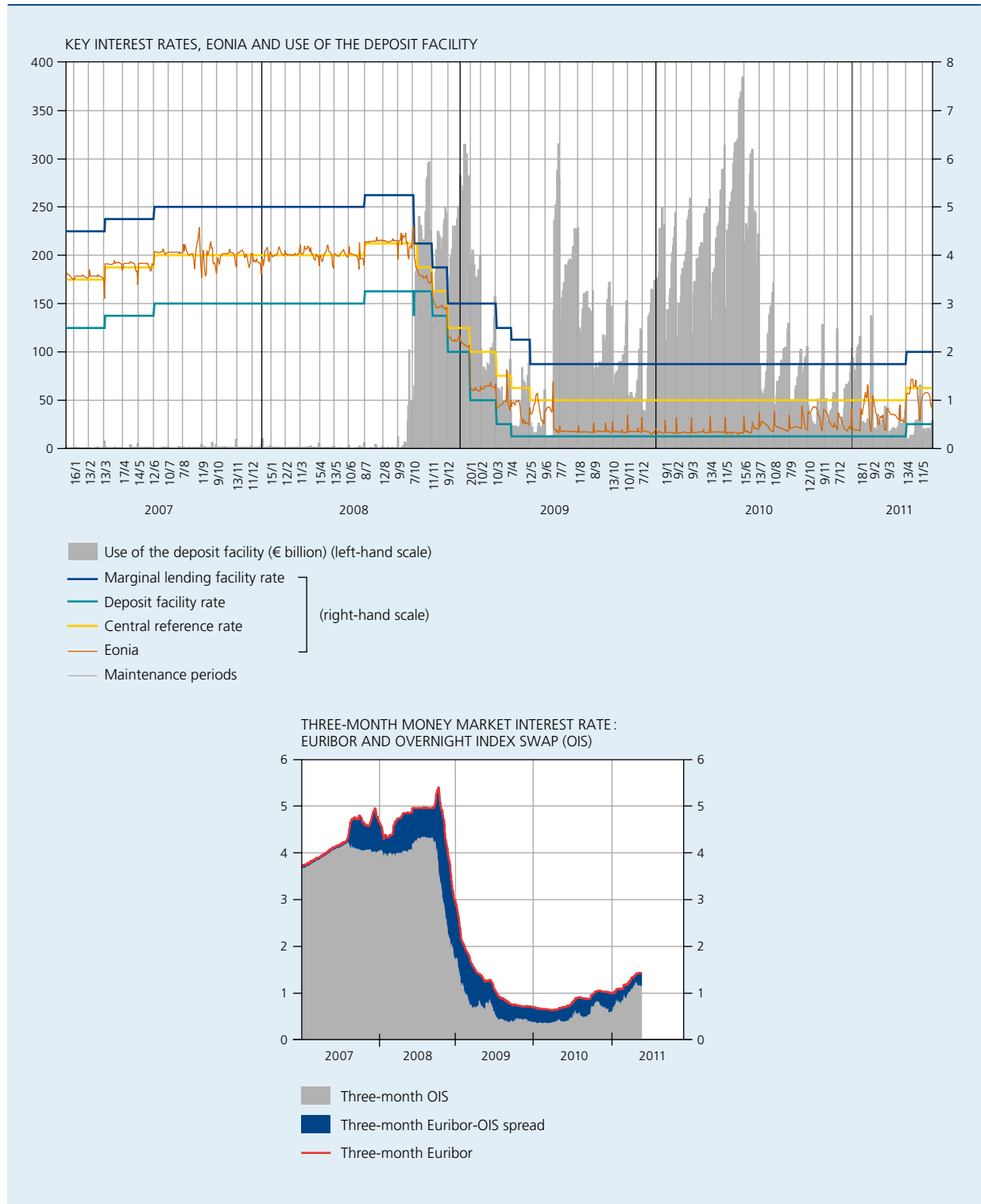
Reflecting credit institutions' reluctance to lend to one another, the risk premium between three-month Euribor and the Overnight Index Swap (OIS) climbed significantly from the first signs of money market disruptions in summer 2007. It subsequently moved in line with the intensity of the turbulences, before peaking in early October 2008. Since then, despite the fact that the ECB has no direct control over the money market beyond the immediate term, the rate cuts that it orchestrated and the various steps that it took to provide liquidity made it possible to considerably lower the three-month risk-free rate and the three-month Euribor rate at which banks lend to each other on the unsecured interbank market. Given the reference role that Euribor plays in short-term lending to the non-financial private sector, this decline passed through to the financing costs of businesses and households, and thus helped preserve efficient transmission of monetary policy. Since the end of 2009, the risk premium appears to have moved largely as a function of tensions on sovereign debt markets. In the first quarter of 2011, it trended downwards, but the decline was nevertheless more than offset by the increase in the risk-free rate related to the rise in the Eonia rate. As a result, the three-month Euribor averaged 1.2 % in the first five months of 2011, compared with just 0.67 % on average in the first half of 2010.

1.2 Monetary policy and long-term risk-free rates

Monetary policy only has a direct impact on very short-term interest rates, whereas longer-term rates, at least under normal conditions, are shaped largely independently by the market. Monetary policy expectations, which depend notably on central bank communication, nevertheless play a significant role. During the crisis, the Eurosystem did not actively communicate on future rate trends, unlike, for example, the US Federal Reserve. After

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[1] Aucremanne, Boeckx, Vergote (2007).

CHART 1   USE OF THE DEPOSIT FACILITY AND EURO AREA MONEY MARKET INTEREST RATE

(daily data)

KEY INTEREST RATES, EONIA AND USE OF THE DEPOSIT FACILITY

- ▨ Use of the deposit facility (€ billion) (left-hand scale)
- — Marginal lending facility rate
- — Deposit facility rate
- — Central reference rate   (right-hand scale)
- — Eonia
- — Maintenance periods

THREE-MONTH MONEY MARKET INTEREST RATE:
EURIBOR AND OVERNIGHT INDEX SWAP (OIS)

- ▨ Three-month OIS
- ▮ Three-month Euribor-OIS spread
- — Three-month Euribor

Sources: Thomson Reuters Datastream, ECB.

lowering its interest rate as far as it could go, the Fed announced that it intended to keep rates at that level for a prolonged period. However, the Eurosystem's communication regarding the economic outlook and the lack

– at least initially – of an upside risk to price stability led to a succession of downward revisions in expectations regarding the direction of monetary policy, resulting in a decline in long-term interest rates. The Fed also initiated a significant programme of Treasury bond purchases to lower longer-term rates. The Eurosystem did not adopt an equivalent unconventional policy. However, by providing longer-term liquidity – up to one year – it was able to put significant downward pressure on longer-term rates. Under these conditions, it is interesting to examine movements in the risk-free yield curve, measured in this case by the yield on AAA-rated euro area government bonds, during the crisis.

In early July 2007, the yield curve was relatively flat and slightly positive, principally reflecting expectations that the cycle of rate rises initiated by the ECB in 2005 – the rate had been raised from 2 % to 4 % between December 2005 and June 2007 – would continue. Since then, the curve's principal movements can be split into six stages:
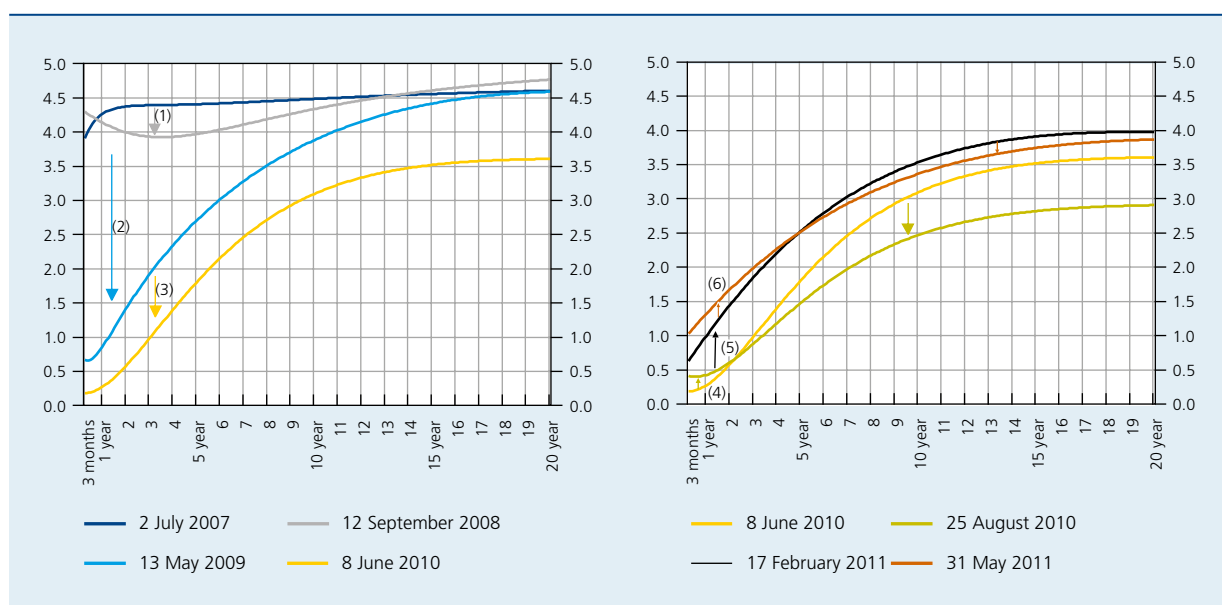
1. Despite the rise in short-term rates that followed the Eurosystem's July 2008 decision to raise its rates by 25 basis points, slightly longer-term rates dropped, attesting to expectations of slower economic growth and a downward revision in expectations regarding short-term rates, no doubt linked in part to financial market turmoil.

2. At the same time as the ECB cut rates and adopted a first round of non-standard measures, short-term rates plunged, causing the yield curve to steepen considerably. Such a steepening is normal during a phase of monetary policy easing, but the move was particularly pronounced during the present crisis due to the speed and size of the monetary easing that took place. Already by 13 May 2009 – when the first operations at 1 % were carried out – the three-month yield on risk-free government bonds was 0.67 %, or slightly lower than the secured interbank market rate, reflecting a "flight to quality" that benefited the safest government securities.

3. Following the three one-year operations and the resulting strong growth in excess liquidity, three-month yields and those with intermediate maturities continued to decline. With the persistence of a high degree of uncertainty and intensification of the sovereign debt crisis, they exerted downward pressure on longer-term yields.

4. After the first one-year operation reached maturity, which resulted in a steep drop in excess liquidity, short-term rates rose slightly. With conditions still marked by tremendous uncertainty regarding the speed of the global economic recovery and deflationary risks across the Atlantic, longer-term rates nevertheless continued

CHART 2   **RISK-FREE YIELD CURVE**
(yield on AAA-rated euro area government bonds at various maturities, in percentage points)

Legend:
— 2 July 2007   — 12 September 2008
— 13 May 2009   — 8 June 2010

— 8 June 2010   — 25 August 2010
— 17 February 2011   — 31 May 2011

Source: ECB.

to decline, reaching a floor during the Jackson Hole Conference in late August 2010. The ten-year yield on risk-free euro area government debt bottomed out at 2.5 %.

5. Signalling a better growth outlook and the disappearance of deflationary fears, long-term rates bounced back strongly in early 2011. In line with the rise in very short-term money market rates, short-term risk-free yields on government borrowings also rose. The fairly pronounced increase in yields on intermediate maturities reflects a considerable upward revision in monetary policy expectations, partly related to the change in short- and medium-term inflation risks. It is also interesting to note that the yield curve became concave again in early 2011.

6. Following the ECB's decision to raise its key interest rates by 25 basis points in April, the rise in short-term rates continued into the early part of the second quarter. On the other hand, the renewed climate of uncertainty on the financial markets exerted downward pressure on longer-term risk-free rates.

2. Long-term market interest rates with credit risk

The economic and financial crisis caused an increase in risk perceptions on the part of financial market participants and resulted in a significant increase in risk and liquidity premia in every segment of the credit market. As a result, we saw a very clear differentiation in financing costs among borrowers, both public and private. In this section, we look specifically at the trend in spreads between the financing costs of various sectors throughout the crisis. After a quick review of the situation at the euro area level, we examine the situations of individual countries, moving from the public sector to the financial private sector and the non-financial private sector. We focus in particular on the extent to which the widening gap in financing costs among public sectors from end-2009 was passed on in the financing costs of the two other sectors, and thereby attempt to gauge the impact of the sovereign debt crisis on private sector financing costs in the euro area.

2.1 Euro area level

From the first signs of money market tensions in summer 2007, yield spreads relative to the German Bund of the same maturity[1] widened for bonds issued by every sector and in particular the financial sector, whose institutions

were hit with heavy losses stemming from the subprime mortgage crisis in the US. The day after the Lehman Brothers bankruptcy in autumn 2008, they skyrocketed, ultimately narrowing considerably from March 2009 in the midst of a broad financial market recovery.

In the early stages of the crisis, the various sectors' yield spreads versus the Bund moved more or less in the same direction, albeit in varying proportions. In autumn 2009, however, the emergence of the public debt crisis marked the start of a partial decoupling of public sector borrowing costs from those of the non-financial private sector, as the trend in the bond yield spread of the two sectors shows. As public sector borrowing costs rose, the spread was whittled down to nothing, and even became negative temporarily in 2010, whereas the same yield spread between public sector and financial sector bonds remained substantially positive.

These developments tend to show that the public debt crisis had a definite impact on the financing costs of the financial sector, but only a limited impact on the rest of the private sector at the aggregate level. Similar conclusions emerge from a comparison of the yield spreads

(1) The "Bund" is the abbreviation for the long-term bonds issued by the German government. They are rated AAA by all rating agencies and their yields generally serve as a benchmark for the entire euro area bond market.

CHART 3   YIELD SPREADS ON EURO AREA PUBLIC AND PRIVATE SECTOR BONDS RELATIVE TO THE GERMAN BUND

(all maturities combined, indices weighted by outstanding amounts, daily data, in percentage points)
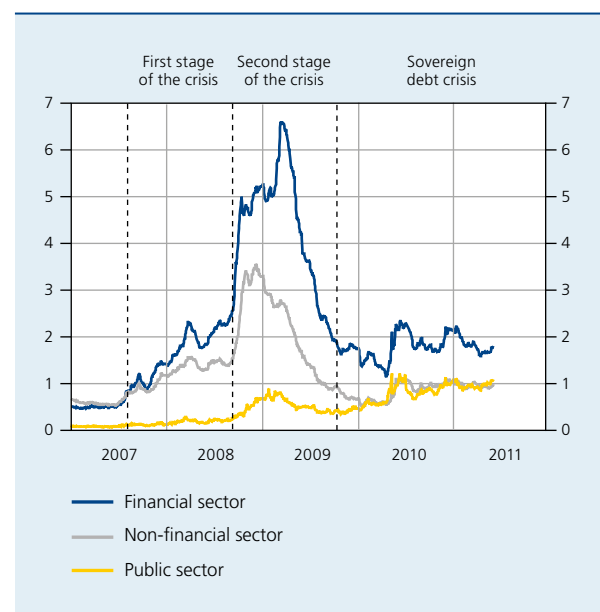
Source : Thomson Reuters Datastream.

CHART 4   YIELD SPREAD OF PRIVATE SECTOR BONDS IN THE EURO AREA AND US

(all maturities combined, indices weighted by outstanding amounts, daily data, in percentage points)

FINANCIAL SECTOR YIELD SPREAD [1]

NON-FINANCIAL SECTOR YIELD SPREAD [1]
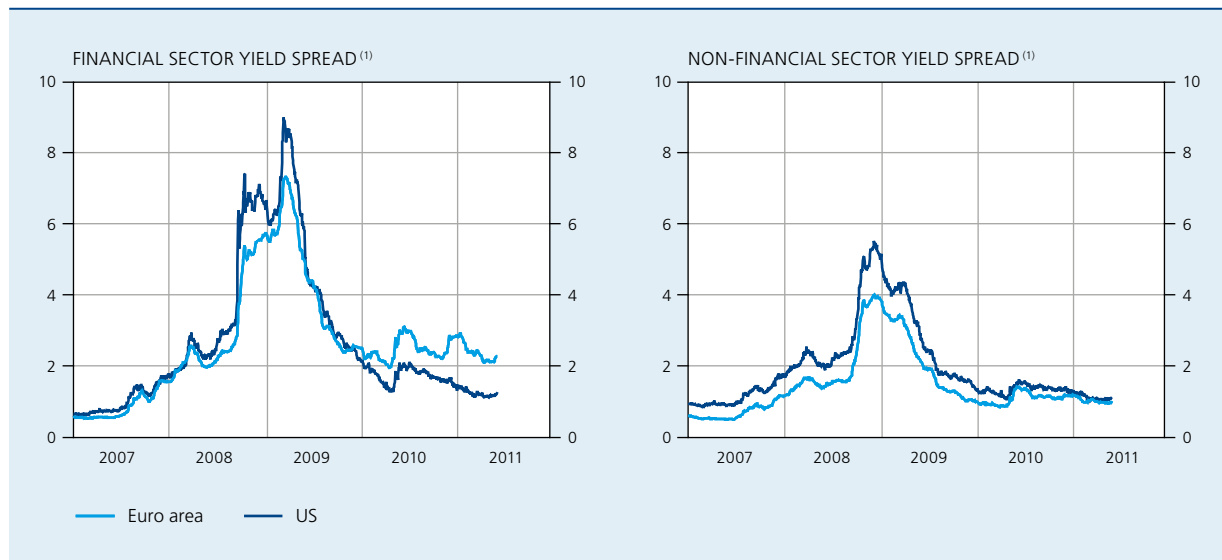
Euro area   US

Source : Thomson Reuters Datastream.
(1) Respectively versus the German Bund (euro area) and US Treasury Bill (US).

for the euro area and the US. For example, the risk and liquidity premia demanded of US financial corporations relative to the Treasury bill fell substantially from late 2009, whereas the premia demanded of European finan-cial companies vis-à-vis the Bund held fast. In the case of non-financial corporations, differences in interest rate movements compared to risk-free rates between the euro area and the United States are much less pronounced.

As relevant as they are, these aggregate results are never-theless biased by the significant weight of large countries – which benefited from the debt crisis – in indices, and they may obscure very different situations in individual countries. The next section will study the latter and, after an overview of the financing costs of euro area public sectors, examine the repercussions of the debt crisis on the cost of borrowing on the market for financial and non-financial private sectors at the country level.

2.2 Country level

2.2.1 Public sector

Whereas immediately prior to the third stage of Economic and Monetary Union, in January 1999, the government bond yields of each of the participating countries rapidly converged toward that of the German Bund, significant yield spreads emerged as early as summer 2007. After

the fall of Lehman Brothers, divergences increased sig-nificantly, and, as macroeconomic conditions worsened,

CHART 5   YIELD SPREAD ON 10-YEAR GOVERNMENT BONDS VERSUS THE GERMAN BUND IN EURO AREA COUNTRIES

(indices weighted by outstanding amounts, daily data, in percentage points)

Belgium   France   Greece
Ireland   Italy   Portugal
Spain
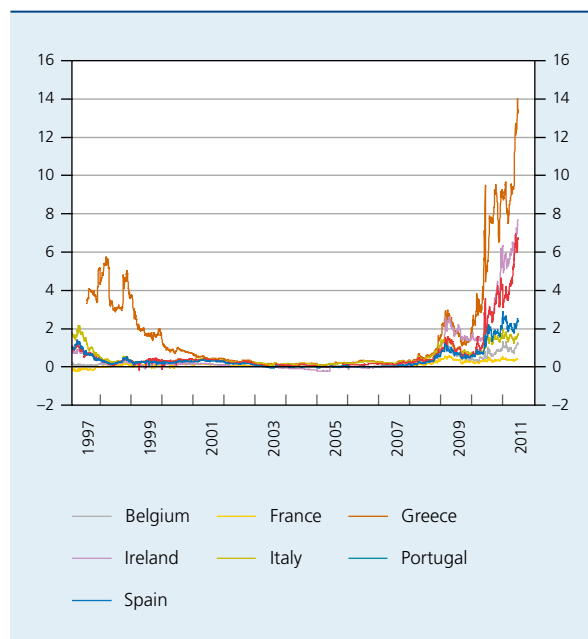
Source : Thomson Reuters Datastream.

factors specific to each economy gained in importance. Starting in late 2009 with the emergence of the sovereign debt crisis, the credit risk factors of individual countries became a determining factor. To begin with, Greek woes weighed principally on the yields of its own government bonds, but a contagion effect swiftly appeared and a general wariness took hold. Investors retreated to the least risky securities and the most liquid markets, driving yield spreads to record highs.

Since autumn 2010, uncertainty linked to the cost of the Irish bank sector bail-out, fears related to the political or macroeconomic situation in numerous other countries,

the lack of detail regarding the future mechanism for resolving euro area crises and speculation about a possible Greek debt restructuring continued to fuel the widening of yield spreads, which became particularly pronounced. For example, at end-May 2011, the unweighted average yield spread versus the ten-year German Bund was around 340 basis points (compared with 13 on average over the period 1 January 1999 to 31 July 2007). Moreover, there were significant disparities within that figure, including a spread of more than 1 320 basis points for Greece, but only 41 points for France and 32 points for the Netherlands. The spread for Belgium was around 120 basis points at end-May 2011, after reaching nearly 140 points at end-November 2010.

Box 1 – The Securities Markets Programme (SMP) and other ECB actions intended to limit the impact of the sovereign debt crisis on the monetary policy transmission mechanism

Given the reference role played by government bond yields in determining interest rates for private sector lending (asset price channel), the use of sovereign bonds as collateral in bank refinancing operations (liquidity channel) and their weight on the balance sheets of credit institutions (balance sheet channel), an efficiently functioning public debt market plays a key role in the mechanism for the transmission of monetary policy to the real economy in the euro area. This is why, amid a climate of growing investor concern over the viability of public finances in numerous countries and the rapid rise in the borrowing costs of numerous governments, in spring 2010 the Governing Council adopted a series of measures to maintain efficient policy transmission.

In particular, on 10 May 2010, the Governing Council decided to intervene in bond markets by creating the Securities Markets Programme (SMP). Under the SMP, the Eurosystem may conduct interventions in the euro area's public and private debt securities secondary markets in order to ensure the stability and liquidity of market segments that have experienced severe disruptions. Like the other non-standard monetary policy measures, the programme is temporary and is carried out in pursuit of the Eurosystem's primary objective: medium-term price stability. Its goal is to ensure that adequate transmission of monetary policy continues, but without affecting its direction. To this end, purchases made under the programme are systematically sterilised through operations specifically designed to reabsorb the liquidity injected. Most purchases under the SMP were made in the first few weeks after the programme was implemented.

Furthermore, in order to insulate banking institutions against the effects of additional weakening of sovereign bond ratings, the Governing Council suspended the minimum eligibility requirements for debt instruments issued or backed by the Greek government (in May 2010) and the Irish government (in March 2011) used as collateral. This means that Greek and Irish government debt is currently accepted as collateral for refinancing operations regardless of rating. These decisions were taken following the Governing Council's backing for the economic and financial adjustment programmes adopted by the countries in question, which formed the basis for the rescue plans put together by the European Commission and the IMF. This also implies that any suspension of the minimum eligibility threshold is conditional on correct implementation of the adjustment programmes.

Lastly, to ensure broad access to liquidity for credit institutions in the euro area in the face of a risk of paralysis on the interbank market, in May 2010 the Governing Council reintroduced a certain number of measures that it had previously abandoned. These included offering banks the possibility of obtaining liquidity in US dollars, and a six-month operation was carried out, while three-month operations were conducted again with full allotment.

2.2.2 Private sector

In the early stages of the crisis, the trend in financial and non-financial private sector financing costs[1] tended to reflect their intrinsic weaknesses. For example, Irish financial sector bond yields were particularly high due to the bursting of the country's real estate bubble. To a lesser extent, the Belgian financial sector experienced a sharp increase in its bond yields in autumn 2008 and early 2009 against the backdrop of the difficulties experienced by the main banking groups. As for the non-financial sector, it is striking to observe that the differences in financing costs between countries remain much less pronounced than in the financial sector. Only the Irish non-financial sector stood out noticeably from the early part of 2009, which is in keeping with the country's particularly severe economic slowdown.

With the arrival of the sovereign debt crisis, however, borrowing costs began to better reflect the financial health of individual countries, particularly for the financial sector. In general, the borrowing costs of financial companies in troubled countries rose substantially, whereas those in financially healthier countries proved quite resilient. For example, the cost of borrowing via the market in the Spanish financial sector, which was one of the lowest in the euro area at end-2009, climbed sharply over the course of 2010, whereas that of the German financial sector remained stable. The direct link between the financing costs of the public and financial sectors can also be illustrated by the relative stability of yield spreads between financial sector and public sector bonds from autumn 2009 onwards.

However, these close relationships do not in any way indicate a causal link, which, in the context of a financial crisis, must be considered in both directions. It is evident, for example, that in Ireland the financial sector bail-out was more of a burden on government financing costs, whereas in Greece, it was the banking institutions that fell victim to the country's poor management of its public finances.

(1) The data considered here are averages, weighted for outstanding amounts, of the implied yields on baskets of the uncovered bonds of financial and non-financial corporations. They reflect the market financing costs of the private sector in each country. However, they are not a perfect indicator because only a handful of companies are represented and the data are influenced by bonds issued during the reference period. The conclusions drawn from this analysis must therefore be interpreted with caution, particularly with respect to smaller countries, where few companies have access to financial markets for their financing. This is why we have excluded Greece from this analysis.

CHART 6　　YIELD ON EURO AREA FINANCIAL SECTOR BONDS

(all maturities combined, indices weighted by outstanding amounts, monthly data, in percentage points)
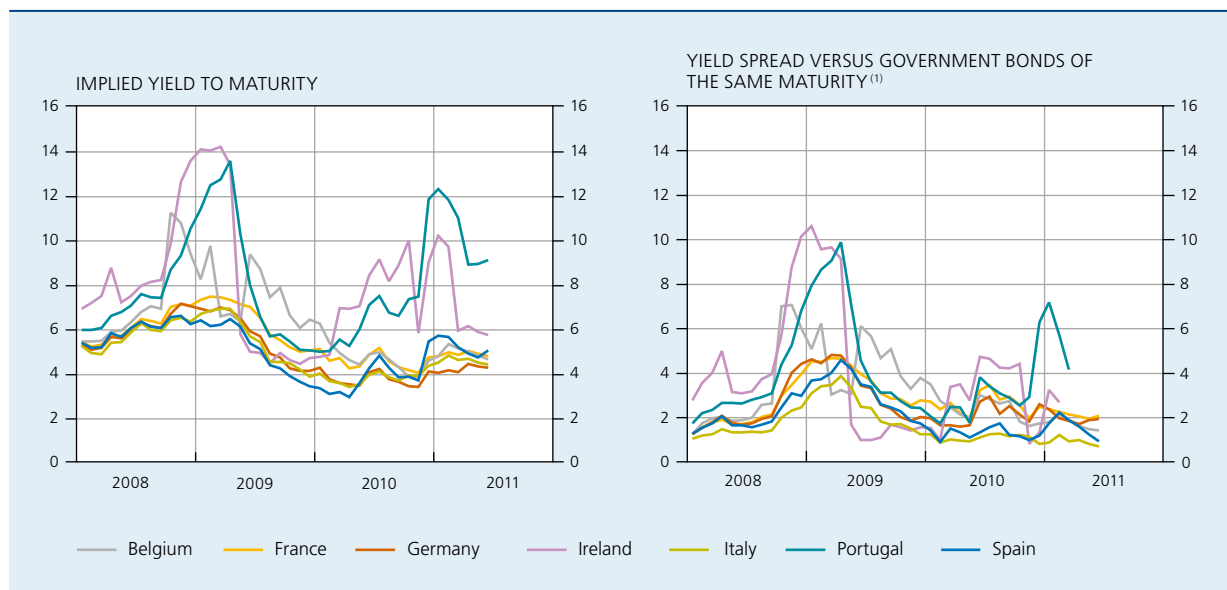
Source : Barclays Capital.
(1) So as not to introduce maturity bias, the yields on government debt used here were selected so as to ensure optimal correspondence between the maturities on public and private bonds.

Box 2 – ECB Covered Bond Purchase Programme

Alongside conventional bonds, covered bonds are an important financing tool for banks in several euro area countries. The yield on these instruments shot up following the Lehman Brothers failure, potentially disrupting the financing of many credit institutions. Under these conditions, and to give a shot in the arm to a market that had grown sluggish, the ECB announced on 7 May 2009 that it would launch a Covered Bond Purchase Programme (CBPP). This programme, which sought to bolster the supply of bank credit to non-financial sectors of the economy, ran from 6 July 2009 to 30 June 2010 and resulted in asset purchases for a nominal amount of € 60 billion. Yield spreads narrowed after the programme was launched. Certain markets also saw a significant increase in the number of issuers and amounts outstanding, and thus a deepening and broadening of their covered bond markets.

COVERED BOND YIELD SPREAD

(1- to 3-year maturities, yield spreads with the German Bund of the same maturity, indices weighted by outstanding amounts, daily data, in percentage points)
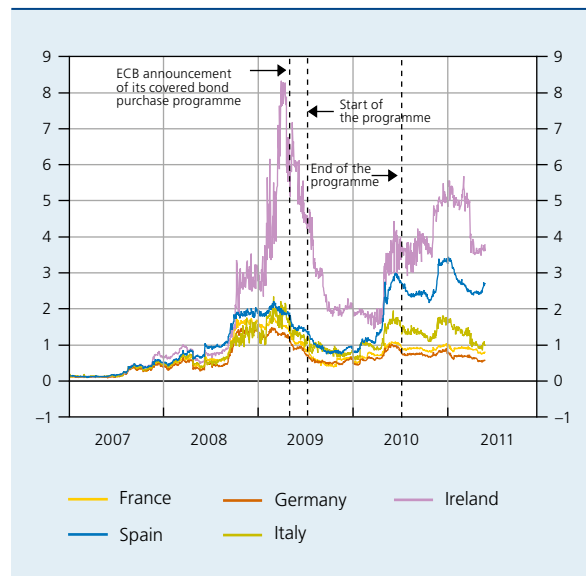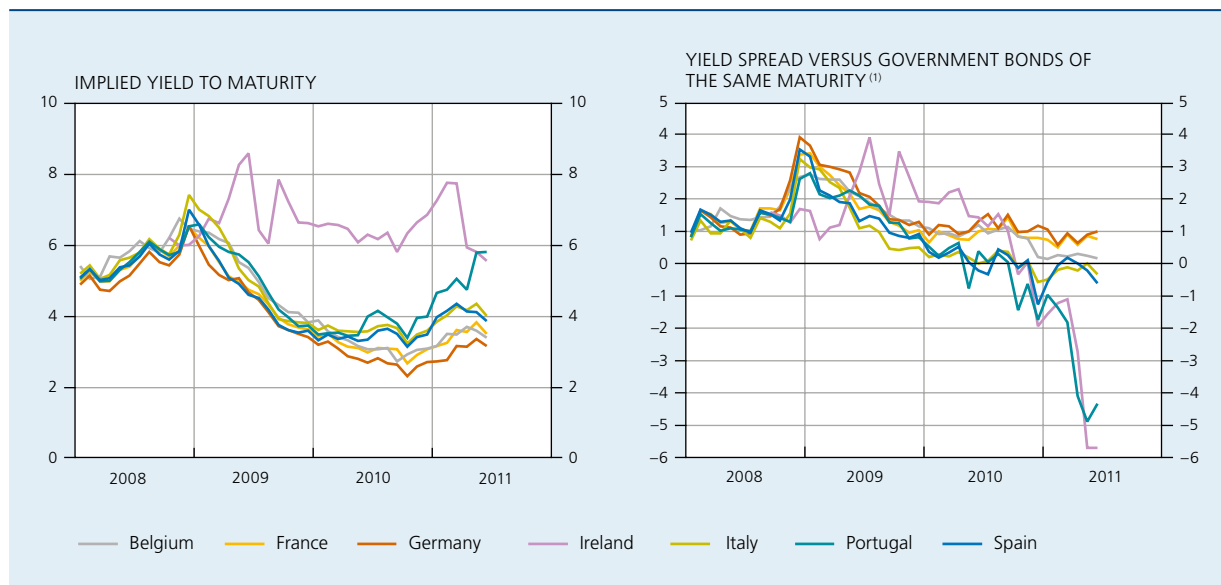

Source : Thomson Reuters Datastream.

With tensions on public debt markets intensifying in spring 2010, the yield on covered bonds in the most hard-hit countries (Ireland and Spain) again began to spike, whereas the French and German markets were mostly spared. The ECB's purchase programme was justified in the early stages of the crisis by intrinsic problems experienced by covered bond markets throughout the euro area – all countries had been affected. By contrast, such a programme was not justified in the context of the sovereign debt crisis, when covered bond market disruptions were essentially due to individual governments' public financing woes. In this case, the measures described in Box 1 are more appropriate.

CHART 7

CHART 7   YIELDS ON NON-FINANCIAL SECTOR BONDS IN THE EURO AREA

(all maturities combined, indices weighted by outstanding amounts, monthly data, in percentage points)

IMPLIED YIELD TO MATURITY

YIELD SPREAD VERSUS GOVERNMENT BONDS OF THE SAME MATURITY [1]

— Belgium   — France   — Germany   — Ireland   — Italy   — Portugal   — Spain

Source : Barclays Capital.
(1)   So as not to introduce maturity bias, the yields on government debt used here were selected so as to ensure optimal correspondence between the maturities on public
      and private bonds.

As for the non-financial sector, the spread in financing costs relative to the public sector tended to diminish. In many countries, in fact, there was a decoupling of financing costs between the non-financial and public sectors. This decoupling is particularly evident in the cases of the most troubled countries, and it is interesting to note that a certain number of Portuguese and Irish companies are currently obtaining financing at a lower interest rate than their respective governments. However, it is important to note that the indices sometimes include only a small number of companies, some of which are the subsidiaries of large international corporations, and thus do not necessarily reflect the borrowing costs of all companies in the country.

The analysis of financing costs via the market of the national private sectors thus amply confirms the conclusions of the analysis at the euro area level, i.e. that the sovereign debt crisis has had a significant impact on the borrowing costs of the financial sector, but a limited impact on those of the non-financial sector. Furthermore, it highlights the close link at the national level between the borrowing costs of the public sector and those of the financial sector.

3. Retail interest rates

Trends in money market interest rates and bond yields reflect both monetary policy decisions and the impact of the financial crisis and, more recently, the sovereign debt crisis on banks' financing costs. These trends in turn can influence the interest rates that banks offer to households and businesses. This section looks specifically at the transmission of changes in interest rates between the market interest rates and the retail interest rates. Following a brief description of retail interest rate trends during the crisis, we seek to determine the most relevant market rate for the formation of each retail interest rate analysed and examine what this relationship implied in terms of monetary transmission during the crisis.

3.1 Retail interest rate trends in the euro area during the crisis

Retail bank interest rates on both deposits and loans in the euro area have converged strongly since the establishment of the Economic and Monetary Union. However, they were affected to different degrees by the effects of the financial crisis and the turmoil on sovereign debt markets. Moreover, they have moved in different ways following the changes in key interest rates decided by the ECB. This section analyses their trends since the start of 2008.

The retail interest rates presented in this article come from the harmonised survey of monetary financial institution interest rates in the euro area (MIR). The data are available at monthly intervals since January 2003. This survey took the place of the retail interest rate (RIR) survey, which supplied non-harmonised statistics on bank interest rates[1]. In the framework of this analysis, we use the rates applied to new business in order to accurately gauge changes over time. These are synthetic interest rates which correspond to the average interest rates, weighted by outstanding amounts, applied by the monetary and financial institutions in each country. Their levels are thus influenced by the relative weight of the maturities of their components: given the positive slope of the yield curve during the crisis, the greater the amounts at short maturities, the lower the average interest rate level, and vice versa. As a result, to a certain extent the differences in level reflect country preferences with respect to maturity and, thus, must be interpreted somewhat cautiously. The series relative to countries unaffected by the sovereign debt crisis (Germany, Austria, Finland, France and the Netherlands) is the average of bank interest rates applied in those countries, weighted by the amounts on new contracts. This article covers the period from January 2008
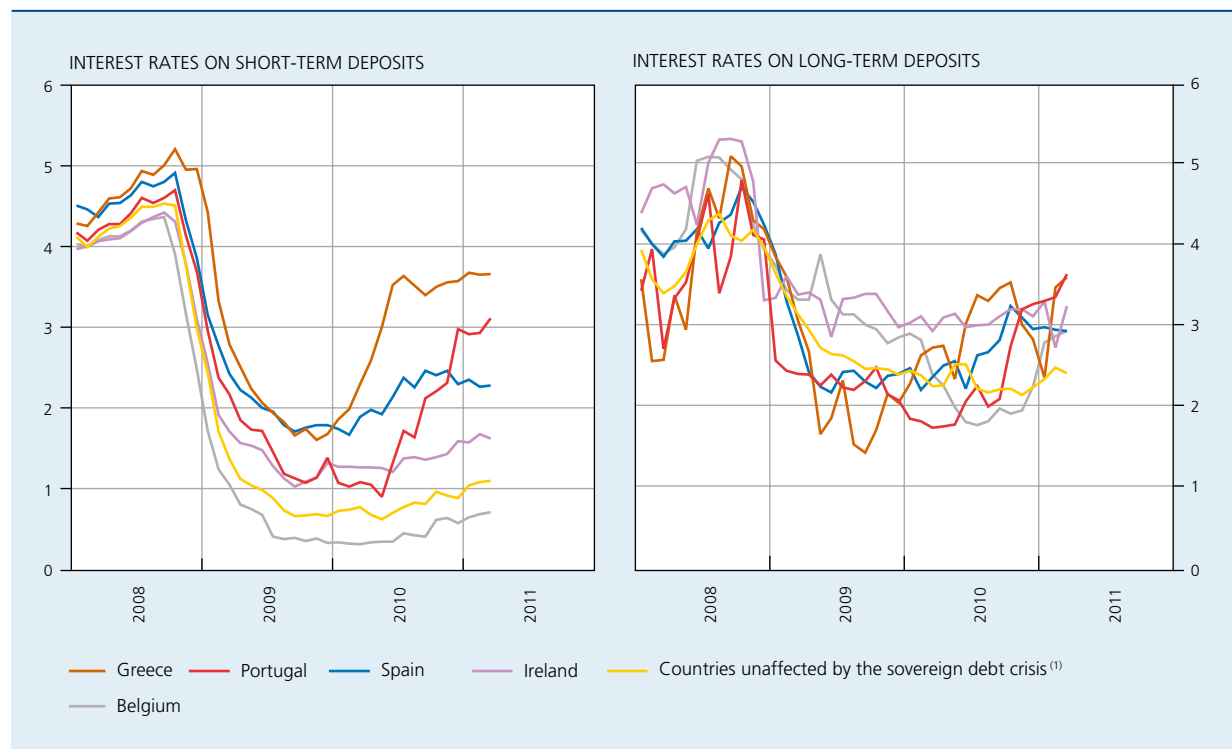
to March 2011, the last month for which the data were available at the end of May 2011.

In general, in keeping with the trend in market interest rates, short-term rates moved more substantially than did long-term rates, reacting more notably to both the increase in central bank rates in June 2008 and the successive rate cuts decided by the ECB from October 2008.

In the case of deposit rates, the interest rate on short-term deposits corresponds to the average rate, weighted by outstanding amounts, of deposits of less than one year made by households and businesses, whereas the long-term interest rate is equal to the average interest rate on deposits of more than one year. The general downward trend that began in autumn 2008 was in keeping with the trend in market interest rates. However, the transmission was not uniform among countries. For example, it appears that from autumn 2008, the dispersion of interest rates increased substantially, particularly for short-term rates. Furthermore, the dispersion intensified

(1) For a detailed description of the differences between the two surveys, see Baugnet and Hradisky (2004).

CHART 8   SHORT-TERM AND LONG-TERM DEPOSIT INTEREST RATES IN EURO AREA COUNTRIES
(monthly data)

INTEREST RATES ON SHORT-TERM DEPOSITS

INTEREST RATES ON LONG-TERM DEPOSITS

— Greece   — Portugal   — Spain   — Ireland   — Countries unaffected by the sovereign debt crisis[1]
— Belgium

Sources: NBB, ECB.
(1) Germany, Austria, Finland, France and the Netherlands.

starting in 2010 against the backdrop of the sovereign debt crisis: from early 2010, short-term interest rates increased in the countries most affected by financial difficulties (particularly Greece, Spain and Portugal), whereas in the least affected countries, the rise in interest rates on short-term deposits has been more recent and much less pronounced. This may be because credit institutions in the countries hit hardest by the crisis wanted to limit fund withdrawals in order to hold on to a vital source of financing and thus prevent further weakening of their balance sheets.
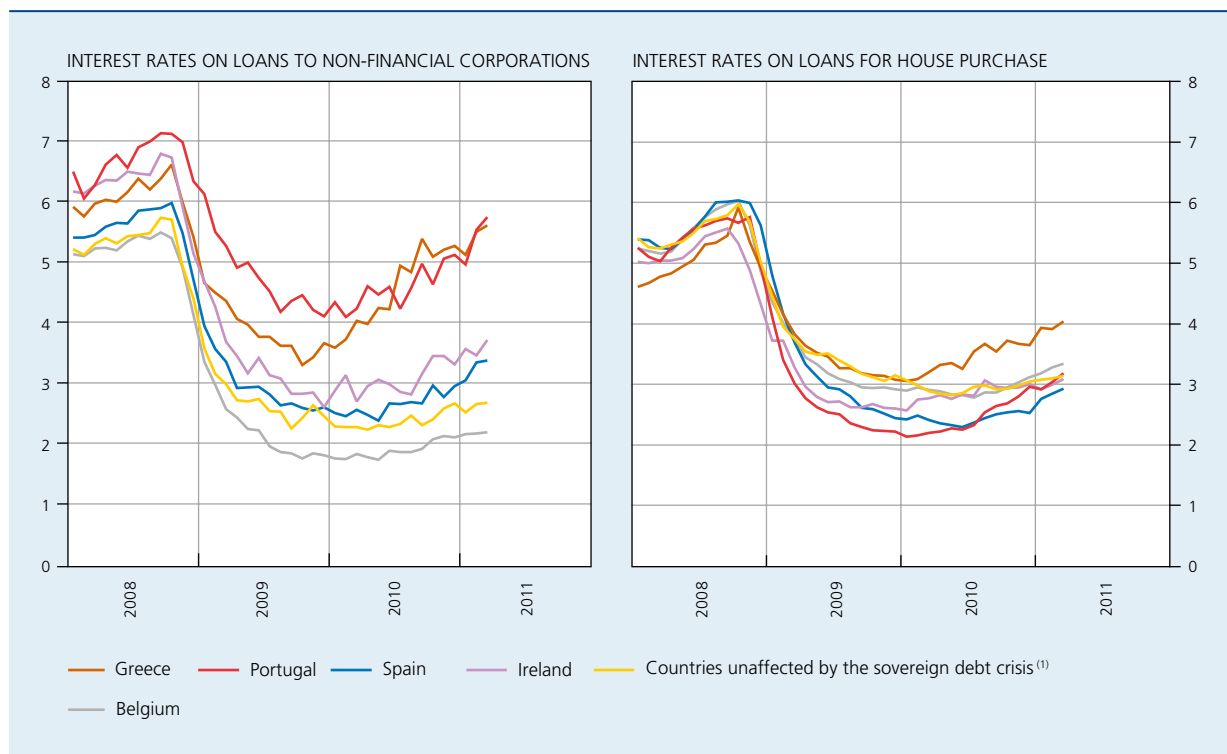
With respect to lending rates, interest rates on short-term loans to non-financial corporations include rates on loans of less than one year for amounts above and below € 1 million. As with short-term deposit rates, they rose over the course of 2008 before plunging abruptly following the interest rate cuts orchestrated by the ECB. Furthermore, during the downward movement, disparities between countries increased. Initially, these disparities were relatively limited and appear to be largely attributable to varying trends in the average maturity of loans between countries. However, they increased significantly starting in late 2009 and especially early 2010, when the

credit institutions in the countries hit hardest by the sovereign debt crisis raised their interest rates more vigorously than those in other countries, thereby passing on the increase in their financing costs.

Interest rates on floating-rate loans for house purchase with an initial rate fixation period of up to one year (treated here as short-term rates) also reflected the upward trend through October 2008 and the decrease in central bank rates thereafter. However, the dispersion between the interest rates of various countries remained relatively limited, although it also increased towards the end of 2009. As with loans to non-financial corporations, the banks in the countries hit hardest by the sovereign debt crisis appear to have raised their interest rates more than institutions in other countries, but the upward movement is much less pronounced than in short-term loans to non-financial corporations.

Long-term lending rates correspond to the interest rates on loans of more than one year. In general, the same observations can be made as for short-term lending rates. These rates followed the trend in market interest rates, although to a lesser extent because long-term interest

CHART 9   SHORT-TERM LENDING INTEREST RATES IN EURO AREA COUNTRIES
(monthly data)

INTEREST RATES ON LOANS TO NON-FINANCIAL CORPORATIONS

INTEREST RATES ON LOANS FOR HOUSE PURCHASE

— Greece   — Portugal   — Spain   — Ireland   — Countries unaffected by the sovereign debt crisis [1]
— Belgium

Sources: NBB, ECB.
(1) Germany, Austria, Finland, France and the Netherlands.

CHART 10   LONG-TERM LENDING INTEREST RATES IN EURO AREA COUNTRIES

(monthly data)

INTEREST RATES ON LOANS TO NON-FINANCIAL CORPORATIONS

INTEREST RATES ON LOANS FOR HOUSE PURCHASE

Greece   Portugal   Spain   Ireland   Countries unaffected by the sovereign debt crisis [1]

Belgium
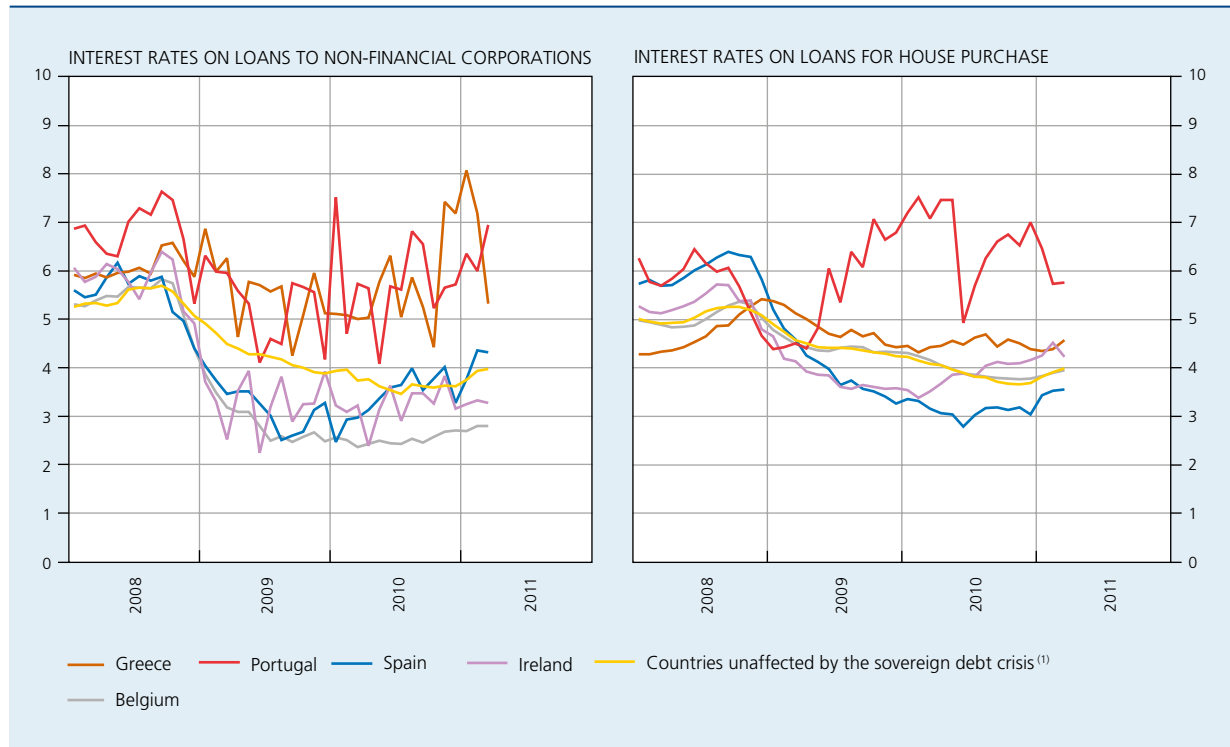
Sources : NBB, ECB.
(1) Germany, Austria, Finland, France and the Netherlands.

rates are relatively more stable, and dispersion increased in the context of the sovereign debt crisis. The significant volatility observed in several countries with respect to interest rates on loans to non-financial corporations can be explained by the relative weakness and volatility of the amounts of this type of loan. In the countries hit hardest by the sovereign debt crisis, the weight of long-term loans is fairly small compared with short-term loans. More generally, short-term lending plays a preponderant role in these countries, and the importance of short-term interest rates is much greater in these countries compared with the euro area average.

Overall, retail interest rates in Belgium are similar to those in the countries unaffected by the sovereign debt crisis, and in some cases are lower. The particularly moderate level of short-term interest rates offered to non-financial corporations is attributable to the relatively high level of very short-term maturities for loans to and deposits of non-financial corporations : deposits of less than one month of non-financial corporations represent approximately 40 % of all deposits of less than one year, and because they are based on the Euribor of the corresponding maturity, they negatively affect the aggregate interest

rate level for all deposits of less than one year. Similarly, between 40 % and 50 % of short-term loans to non-financial corporations have a maturity of less than one month. As for long-term business loans, shorter maturities are also relatively more important, which explains the low level of the synthetic interest rate.

The moderate increase in Belgian interest rates since the start of 2010 corroborates the conclusion cited above, i.e. that the repercussions of the sovereign debt crisis on the financing costs of Belgian banks have so far been limited, although they have tended to increase since the end of 2010.

3.2 Analysis of the transmission mechanism to retail interest rates during the crisis

To analyse the question of monetary policy transmission during the crisis, first of all we must determine if the relationship between market interest rates and retail interest rates was stable over the period, while also trying to determine the market interest rates most relevant for explaining the formation of retail interest rates.

CHART 11 SHORT- AND LONG-TERM MARKET INTEREST RATES
(monthly data)

SHORT-TERM RATES

Three-month OIS
Three-month Euribor

LONG-TERM RATES

Seven-year swap rate
Seven-year government bond yield (euro area)
Seven-year government linear bond yield (Belgium, OLO)

Sources : NBB, ECB.

In the years preceding the crisis, the market interest rates likely to be the reference rates for retail rate formation followed very similar trends. This made it difficult to determine unambiguously which rate was used to set retail rates. However, one of the consequences of the financial crisis has been a widening of spreads between market rates with similar maturities, which makes it possible to determine with greater precision the most relevant rate for the formation of retail interest rates. This exercise can be applied both to short-term interest rates and longer-term maturities. Since August 2007, there has been a considerable spread between Euribor and OIS rates, whereas long-term swap rates and government bond yields did not diverge until late 2009 (and especially since 2010), when the sovereign debt crisis intensified.

Divergences between market interest rates during the crisis will thus allow us to examine this question, but also to observe possible disruptions in the monetary policy transmission mechanism attributable to the crisis, as well as the possible transmission of risk premia related to the crisis. Thus, if the analysis shows that the relevant short-term interest rate is Euribor, this indicates that the spread relative to OIS was transmitted to retail interest rates, which may be considered a disruption of the transmission mechanism. As for long-term interest rates, if the relevant rate is the rate at which the government borrows, the sovereign debt crisis might also represent a disrupting factor in the transmission mechanism.

Box 3 – Market interest rates used in this article

▸ **Eonia** *(Euro OverNight Index Average)* : the reference rate for unsecured overnight interbank lending in the euro area. Under normal circumstances, this is the rate that the ECB seeks to influence.

▸

▶ **Three-month Euribor** *(Euro Interbank Offered Rate)*: the reference rate for three-month unsecured inter-bank loans. The three-month Euribor rate is often used as a reference for setting interest rates on loans to households and non-financial corporations. Euribor is also calculated for other maturities ranging from one week to twelve months. This article also uses the six-month Euribor.

▶ **Three-month OIS rate** *(Overnight Indexed Swap rate)*: this is the fixed rate paid in exchange for a stream of payments based on the Eonia overnight rate over a three-month period. It mainly reflects market expectations regarding the overnight rate over the coming three months. The three-month Euribor-OIS spread provides a measure of credit and liquidity risk on the unsecured money market. As such, it is a good indicator of the tensions affecting it. This article also uses the six-month OIS.

▶ **Seven-year swap rate**: fixed interest rate paid in exchange for a stream of payments based on six-month Euribor over a period of seven years. This rate is not affected by credit risk, but rather by the risk of default of the parties. Swap rates also exist for other maturities.

▶ **Seven-year government bond yield**: a long-term yield on sovereign debt. The spread between the seven-year swap rate and the seven-year government bond yield provides a measure of credit and liquidity risk on the sovereign debt market.

3.2.1 Methodology

The theory suggests that there is a stable relationship between the market interest rate and the retail interest rate, and that causality moves from market rates towards retail rates. In practice, this assumption can be tested using a vector error correction model (VECM), which assumes a stable relationship between the two rates over the long term. This method is commonly used to analyse monetary policy transmission[1], because this type of model makes it possible to estimate the long-term relationship, the direction of the causality, and the short-term dynamic for the two variables in question.

The estimated formal relationship is as follows:

$$\Delta br_t = \alpha_{br}\,(br_{t-1} - \beta mr_{t-1} - \gamma) + \sum_{i=1}^{n} \partial_{br,t-i}\,\Delta br_{t-i} + \sum_{i=1}^{n} \theta_{br,t-i}\Delta mr_{t-i} + u_{br,t}$$

$$\Delta mr_t = \alpha_{mr}\,(br_{t-1} - \beta mr_{t-1} - \gamma) + \sum_{i=1}^{n} \partial_{mr,t-i}\,\Delta br_{t-i} + \sum_{i=1}^{n} \theta_{mr,t-i}\Delta mr_{t-i} + u_{mr,t}$$

where *br* is the retail bank interest rate, *mr* is the market interest rate used as a reference, the coefficients α represent the speeds of adjustment towards the long-term equilibrium, β measures the degree of transmission over the long term, the coefficients θ and δ measure the short-term dynamic, and *u* are the error terms. The term in the parentheses is the cointegration vector and represents the long-term relationship between the interest rates, whereas the rest of each of the equations shows the short-term dynamic. The constant (γ) included in the error correction term makes it possible, in this basic model, to account for other factors that influence the determination of the interest rates and that are not specified in our analysis (such as the effects of competition among banks). The number of lags used in each model (n) is chosen according to the Schwarz information criterion. There is a stable long-term relationship – the so-called cointegration relationship – between the market interest rate and the retail interest rate, and the causality of this relationship goes in

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[1] See, for example, Mojon (2000); Toolsema, Sturm and Haan (2002); Baugnet and Hradisky (2004); Sorensen and Werner (2006); and ECB (2009).

the right direction – i.e. from the market interest rate to the retail interest rate – if α_{br} is significantly negative (the more negative it is, the faster the adjustment towards the long-term relationship) and if, by contrast, α_{mr} is not significantly different from zero. Consequently, estimating the complete system, and not just the retail interest rate equation, enables us to verify the robustness of the initial assumption. The degree of transmission over the long term, for its part, indicates the extent to which the retail interest rate incorporates changes in the market interest rate over the long run. A unitary degree of transmission (β =1) indicates a complete pass-through. Furthermore, dealing with both interest rates in an integrated system makes it possible – through an orthogonal transformation of the error terms u [1] – to break down the variation in the two variables as being the result of two structural shocks: one affecting the market interest rate and the other affecting the retail interest rate.

Each retail interest rate studied is set against two reference market interest rates, with the goal of determining which rate is the most relevant to the formation of retail interest rates. The short-term market interest rates are OIS and Euribor. The long-term market interest rates are the swap rate and the government bond yield for the corresponding maturity. Each model is, moreover, estimated using two samples to test the stability of the relationship between each of the market rates and the retail rate. The first sample covers the period leading up to the crisis; it begins in January 1997 and ends in July 2007. The second sample includes the crisis period and ends in February 2011, last month for which data were available at the time of running the estimations. The results of these estimations are summarised in a table in the annex.

For each of the estimated models, the analysis of the impulse response functions and the historical decompositions will provide a response to the questions posed.

The impulse response functions will show how the retail interest rate reacts to a shock to the market interest rate. Observing this reaction before and after the crisis, considering each of the market interest rates, will indicate the stability of the relationships between the retail interest rate and each of the market interest rates, which will help determine the most relevant market rate. The rate whose relationship with the retail interest rate is characterised by a significant degree of stability can be considered the most relevant market interest rate.

The technique of historical decomposition enables us to determine the extent to which the retail interest rate is explained by:
– a reference level (forecast of the variable in the absence of a shock to the market interest rate or to the retail interest rate);
– the contribution of a shock to the market interest rate (dynamic effect on the retail interest rate of a normal transmission of variations in the market interest rate);
– the contribution of a shock to the retail interest rate itself (which explains the specific movements in the retail interest rate not attributable to the second factor).

If the model corresponds to the initial hypothesis, i.e. that the market interest determines movements in the retail interest rate, the portion attributable to shocks to the market interest rate will be larger than the portion due to shocks to the retail interest rate itself. If, however, the financial crisis affects retail interest rates and the transmission mechanism (beyond the influence linked to the choice of relevant market interest rate), this impact will show up in the presence of the contribution of this second shock. Furthermore, the sign of the contribution of this shock during the financial crisis is an important part of the analysis: in principle, we can expect that possible distortions of the transmission due to the crisis translate into a positive and relatively persistent contribution from this shock. This would indicate that the retail interest rate is too high relative to the market interest rate in the context of a normal transmission, and that it thus incorporated an additional risk premium due to the crisis.

The time series of bank interest rates were constructed using retail interest rates (RIR) from the old survey of credit institutions, available up until September 2003, and monetary financial institution interest rates (MIR), available from January 2003, taken from the new harmonised survey of euro area interest rates. For each of the interest rates, the two statistical series were combined by systematically carrying over the difference in interest rates for the month of January 2003, while retaining the dynamic of each of the series. It was verified that the two series were strongly correlated during the nine months for which data from both of them overlap [2].

The market interest rates used are, for the short term, Euribor (as well as BIBOR when analysing Belgian rates, through December 1998) and OIS. For the long term, we used three- and seven-year Euribor swap rates, and three- and seven-year euro area government bond yields (synthetic); we also used the interest rate on seven-year Belgian government linear bonds (OLOs) to analyse long-term retail interest rates in Belgium.

(1) A Choleski decomposition (Enders (2003)) was used for this purpose. In choosing the order of the variables, the market interest rate was treated as the most exogenous rate (no contemporary impact of the retail interest rate on the market interest rate).
(2) While the use of these non-homogeneous series is not ideal, it is warranted in cases such as this one where the alternative is to resign oneself to using a smaller amount of data. We follow an approach used by the ECB (ECB (2009)).

3.2.2 Results

The goal of this analysis is not to perform an exhaustive study of the crisis's effects on monetary policy transmission in the euro area and Belgium, but to illustrate a certain number of transmission problems associated with the crisis. As a result, the study covers a sample of short- and long-term lending and deposit rates offered by banks in the euro area and Belgium.

3.2.2.1 Euro area

The analysis of the euro area includes both deposit and lending rates. Among deposit rates, we analyse the overnight deposit rate and the savings deposit rate. As for lending rates, we analyse the rates on short- and long-term loans to non-financial corporations and on consumer loans. A cointegration relationship has been identified for all of the estimated models but one. The results for the two samples are detailed in the annex.

Initially, the comparison of impulse response functions makes it possible to visualise the extent to which the models are stable over the period analysed, and relative to the two market interest rates considered. The charts illustrating the impulse response functions measure the effects of a shock the size of one standard deviation (that occurs at period 0) over the course of the following 36 periods (months), and indicate whether it is permanent or temporary. They include confidence intervals estimated using Hall's bootstrap method[1], with a probability of 95 %.

The cases in which the conclusion is the most evident are those of short-term interest rates, for which the market rates used began to diverge in the second half of 2007. In the case of both the rate on short-term loans to NFCs and overnight deposits, for the models estimated using Euribor, the shock to the market rate had a fairly stable and permanent impact on the retail interest rate for the two samples considered. Conversely, the models estimated using the three-month OIS become problematic when the crisis period is included in the analysis. In the case of the interest rate on short-term loans to non-financial corporations, when the analysis is performed on a long series, the shock to the OIS rate no longer has a permanent impact on the retail interest rate, whereas the impact of Euribor was similar both before and during the crisis (which testifies to the stability of the relationship). A similar result was obtained for overnight deposits (not illustrated). In the case of savings deposits (not illustrated), the impulse response functions do not clearly indicate a relevant interest rate.

This indicates that, during the crisis, short-term retail interest rates moved in step with Euribor rather than OIS. These interest rates can thus be considered "contaminated" by the widening spread between the two market interest rates; at the same time, the ECB's adoption of unconventional measures made it possible, as we explained above, to counteract this effect by reducing OIS
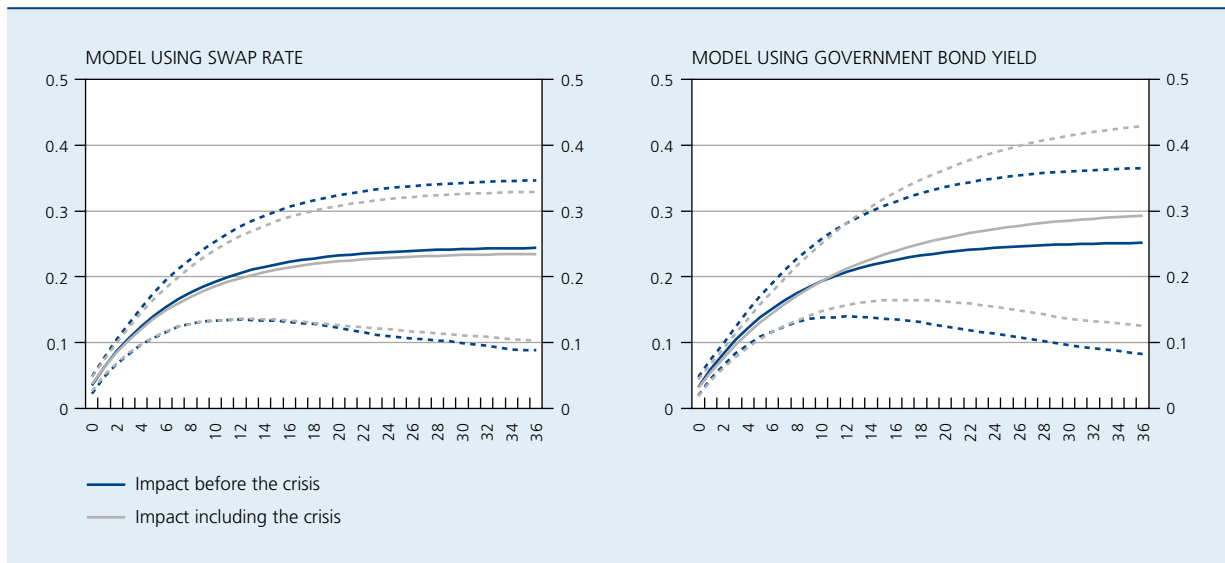
[1] The bootstrap method supplies a certain number of indications regarding the estimates obtained from a sample by using "new samples" drawn from the initial sample. Here we use Hall intervals constructed on 1,000 drawings.

CHART 12   IMPULSE RESPONSE FUNCTIONS OF THE INTEREST RATE ON SHORT-TERM LOANS TO NON-FINANCIAL CORPORATIONS IN THE EURO AREA AFTER A SHOCK TO THE MARKET INTEREST RATE
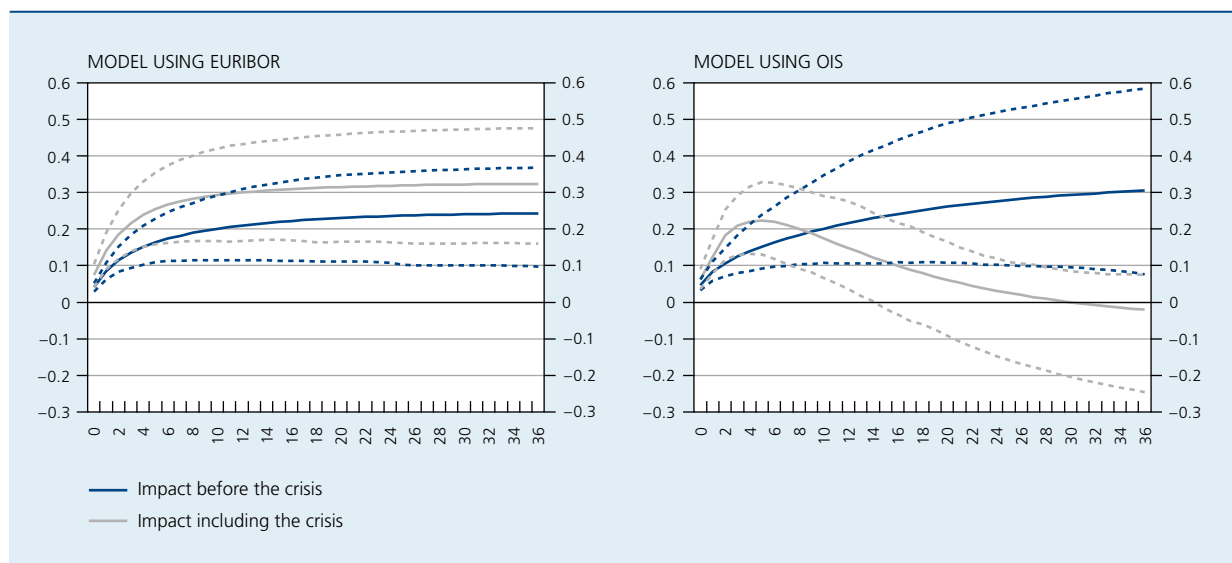
Source : NBB.

CHART 13   IMPULSE RESPONSE FUNCTIONS OF THE INTEREST RATE ON LONG-TERM LOANS TO NON-FINANCIAL CORPORATIONS IN
        THE EURO AREA AFTER A SHOCK TO THE MARKET INTEREST RATE

MODEL USING SWAP RATE

MODEL USING GOVERNMENT BOND YIELD

— Impact before the crisis
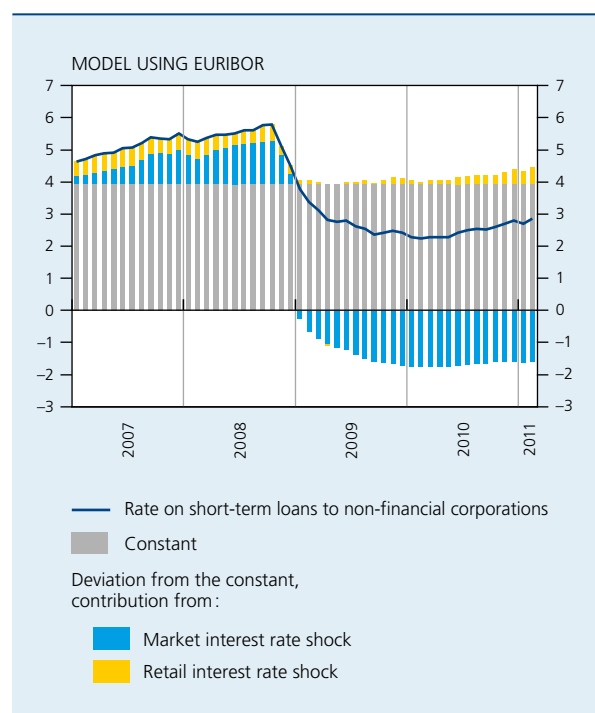
— Impact including the crisis

Source : NBB.

(which fell to a level below the ECB's central key rate) and, subsequently, Euribor.

The analysis of longer-term interest rates enables us to observe whether the sovereign debt crisis has had (or may have) a material impact on the cost of lending to businesses and households in the euro area, on the basis of the spreads recorded between government bond yields and swap rates. In the case of long-term loans to non-financial corporations, the relationship with each of the market interest rates remains very stable after the crisis. Unlike in the previous exercise, it thus appears too early to draw firm conclusions regarding the impact of the sovereign debt crisis on this interest rate. This is almost certainly due to the small amount of data that reflect a widening spread between the market interest rates considered in this analysis (the widening of spreads between the two market interest rates was relatively brief in 2009 and began relatively late in 2010). In the case of the interest rate on consumer loans (not illustrated), the models (estimated using the three-year swap rate and the government bond yield of the same maturity) again do not allow us to firmly conclude that the former interest rate grew less relevant as a result of the crisis.

Consideration of the historical decomposition of the relationship becomes important especially in cases where the analysis of patterns of impulse response functions is not decisive. It allows us to observe the impact of each of the two shocks.

Regarding the short-term interest rates analysed, this historical decomposition appears to confirm the hypothesis

CHART 14   HISTORICAL DECOMPOSITION OF THE INTEREST
        RATE ON SHORT-TERM LOANS TO NON-FINANCIAL
        CORPORATIONS IN THE EURO AREA

MODEL USING EURIBOR

— Rate on short-term loans to non-financial corporations

◻ Constant

Deviation from the constant,
contribution from :

◼ Market interest rate shock

◼ Retail interest rate shock

Source : NBB.

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CHART 15   HISTORICAL DECOMPOSITION OF THE INTEREST
RATE ON SAVINGS DEPOSITS IN THE EURO AREA

MODEL USING EURIBOR

—— Rate on savings deposits

■ Constant

Deviation from the constant,
contribution from :

■ Market interest rate shock
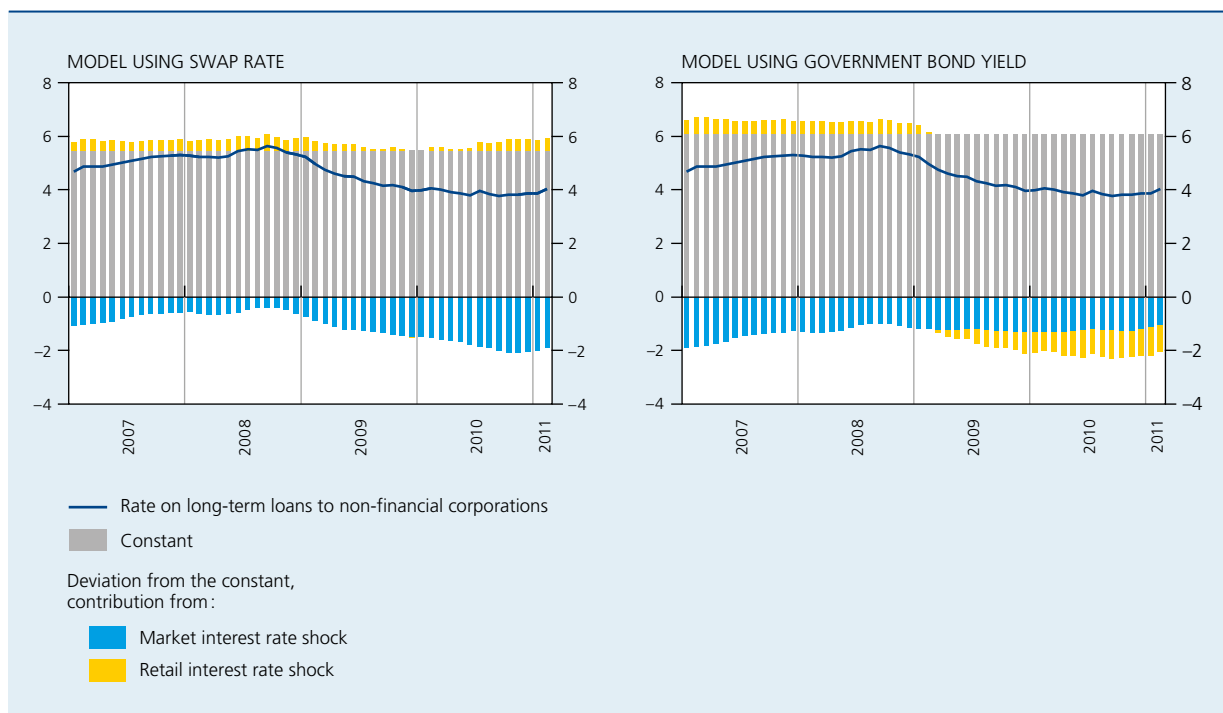
■ Retail interest rate shock
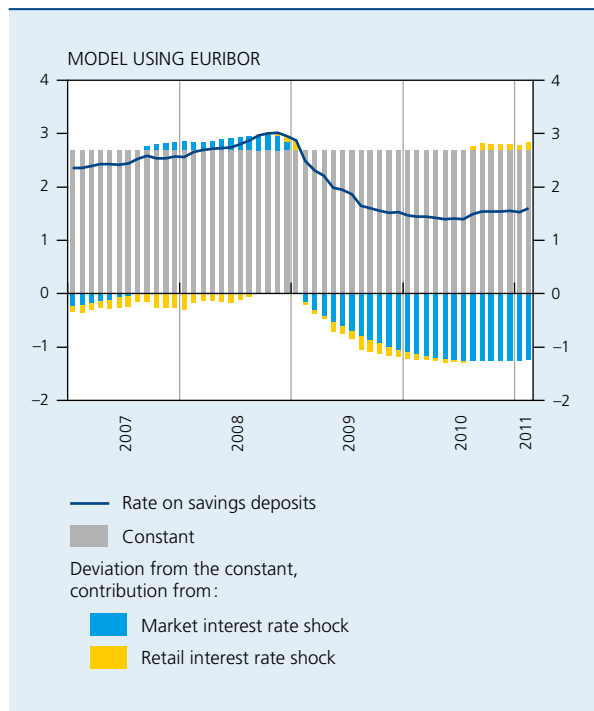
Source : NBB.

cited earlier, that the reference interest rate is three-month Euribor. Interest rates on short-term loans to non-financial corporations, as well as the interest rates on savings deposits and overnight deposits (not illustrated) in the euro area, were determined to a large extent by shocks to the market interest rate. This indicates that the risk premia that have widened the Euribor-OIS spread since summer 2007 were transmitted to the interest rates on both loans to NFCs and deposits.

Furthermore, in the two cases illustrated, a moderately positive contribution from the shock to the retail interest rate itself appears late in the period. This may reflect an additional increase in the financing costs of banks not integrated into Euribor, which, given the growing mistrust vis-à-vis a number of banks, has become less representative of the marginal financing costs of those banks.

The historical decomposition of the interest rate on long-term loans to non-financial corporations appears to indicate that the reference market interest rate is the swap rate. However, this result is tenuous. In the case of the model estimated using the swap rate, the contribution of the shock to the retail interest rate becomes positive at the end of the period. This could be interpreted as the upwards influence of the sovereign debt crisis and the increase in

CHART 16   HISTORICAL DECOMPOSITION OF THE INTEREST RATE ON LONG-TERM LOANS TO NON-FINANCIAL CORPORATIONS IN
THE EURO AREA

MODEL USING SWAP RATE

MODEL USING GOVERNMENT BOND YIELD

—— Rate on long-term loans to non-financial corporations

■ Constant

Deviation from the constant,
contribution from :

■ Market interest rate shock

■ Retail interest rate shock

Source : NBB.

bank financing costs, but the impact is relatively weak (some 50 basis points for the euro area as a whole). In the case of the model estimated with government bond yields, which are clearly contaminated by the sovereign debt crisis, the retail interest rate is subject to a significant negative shock to itself, apparently to offset the additional upwards effect of this alternative reference rate. Overall, for the euro area as a whole, the sovereign debt crisis thus does not yet appear to be materially reflected in the trend in retail interest rates on long-term loans to non-financial corporations. The conclusion is roughly the same for the interest rate on consumer loans (not illustrated). However, this does not prevent the sovereign debt crisis from affecting the retail interest rates of certain countries, notably those hit hardest by the crisis. This is in substance what emerged from the descriptive analysis presented in the previous section.

3.2.2.2. Belgium

The Belgian retail interest rates analysed include both lending rates (interest rates on short- and long-term loans to non-financial corporations, and loans for house purchase) and deposit rates (savings deposits). The cointegration relationships are less evident than in the case of euro area interest rates, especially for the short-term sample (up to July 2007), but barring that, the models produce results compatible with the initial hypotheses.

Analysis of the estimated models' impulse response functions indicates, as with the euro area, a high degree of stability for the long-term interest rate models (not

illustrated), even though for long-term loans to non-financial corporations, government bond yields appear to gain in importance for the sample that includes the crisis period.

Regarding short-term interest rates, the impulse response functions do a good job of showing the relevance of Euribor during the crisis period for savings deposit rates and the instability of the model estimated using the OIS, as was the case for the euro area. However, the conclusion is much less clear in the case of short-term loans to non-financial corporations. For the latter, the model estimated using the OIS even seems to improve if the crisis period is included in the sample, whereas the corresponding model using Euribor produces the opposite result.
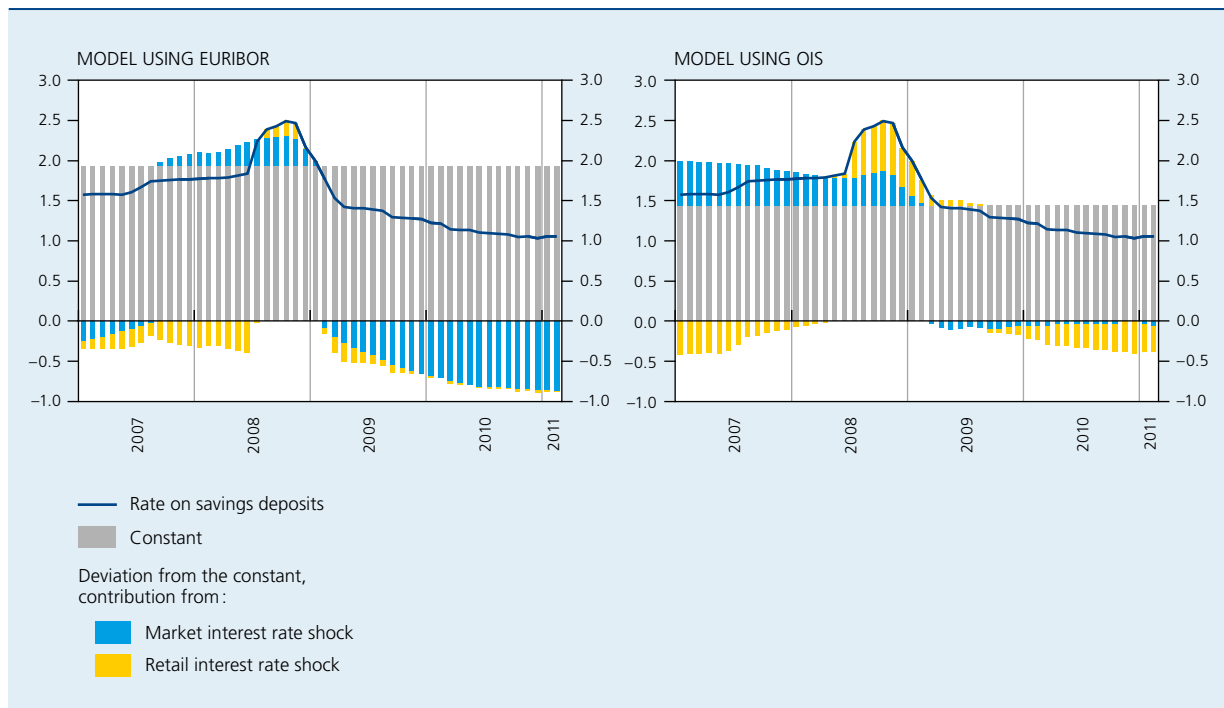
For the deposit rate analysed, the historical decompositions also indicate that Euribor is the most relevant market interest rate. The shocks to Euribor explain virtually all of the movement in savings deposit rates during the crisis. As a result, it must have incorporated the increase in the risk premium that widened the Euribor-OIS spread since the start of the crisis. Conversely, in the case of the model estimated using the OIS, both the increase and decrease in the retail interest rate are principally due to the shock to the retail rate, which indicates that this model is insufficient for explaining the events during the crisis. The savings deposit interest rate is particularly important in Belgium, because it includes the interest rate applied to savings accounts, the type of deposit most frequently used by Belgian households.

CHART 17   IMPULSE RESPONSE FUNCTIONS FOR THE INTEREST RATE ON SHORT-TERM LOANS TO NON-FINANCIAL CORPORATIONS IN BELGIUM FOLLOWING A SHOCK TO THE MARKET INTEREST RATE
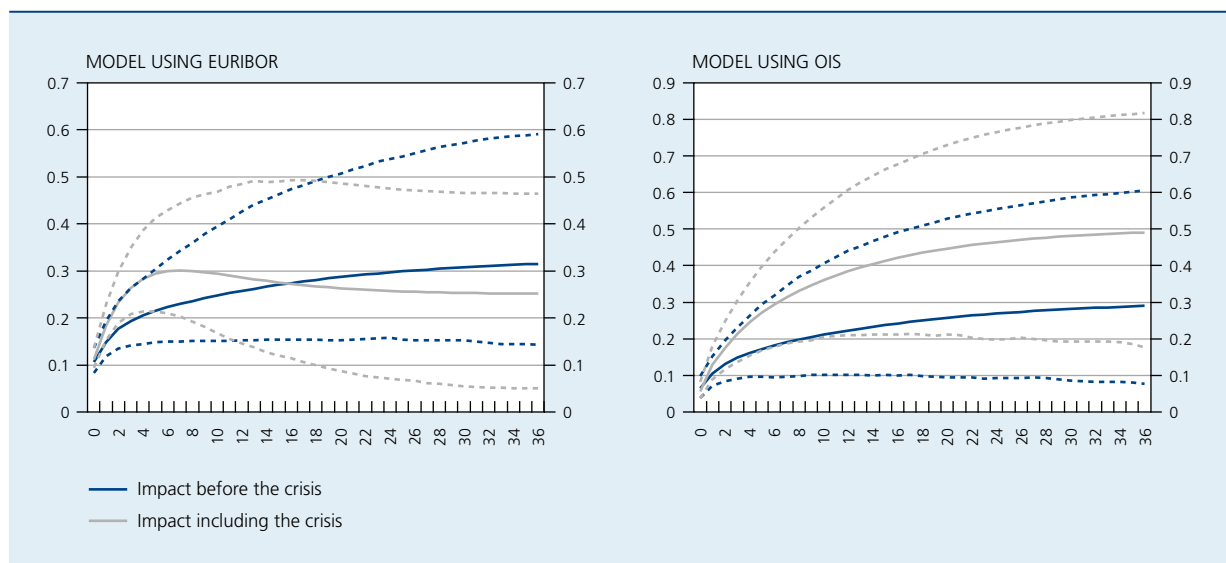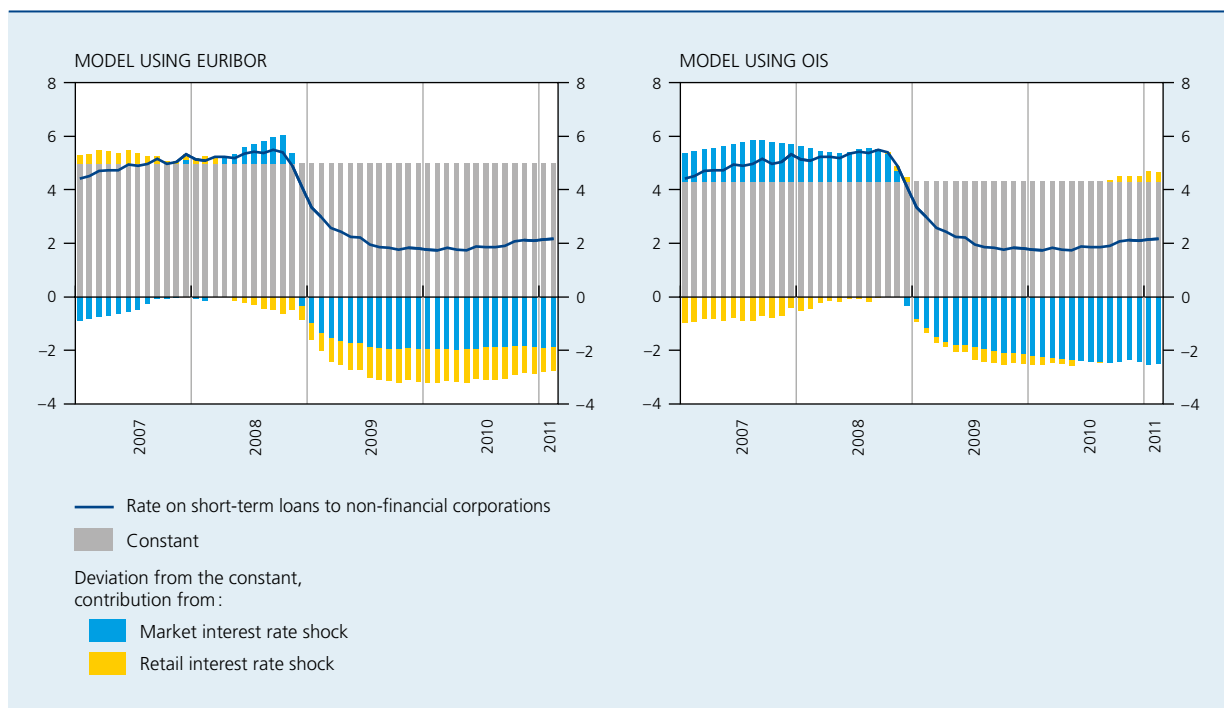

Source : NBB.

CHART 18 HISTORICAL DECOMPOSITION OF THE INTEREST RATE ON SAVINGS DEPOSITS IN BELGIUM

MODEL USING EURIBOR

MODEL USING OIS

— Rate on savings deposits

▨ Constant

Deviation from the constant,
contribution from :

▨ Market interest rate shock

▨ Retail interest rate shock

Source : NBB.

CHART 19 HISTORICAL DECOMPOSITION OF THE INTEREST RATE ON SHORT-TERM LOANS TO NON-FINANCIAL CORPORATIONS
IN BELGIUM

MODEL USING EURIBOR

MODEL USING OIS

— Rate on short-term loans to non-financial corporations

▨ Constant

Deviation from the constant,
contribution from :

▨ Market interest rate shock

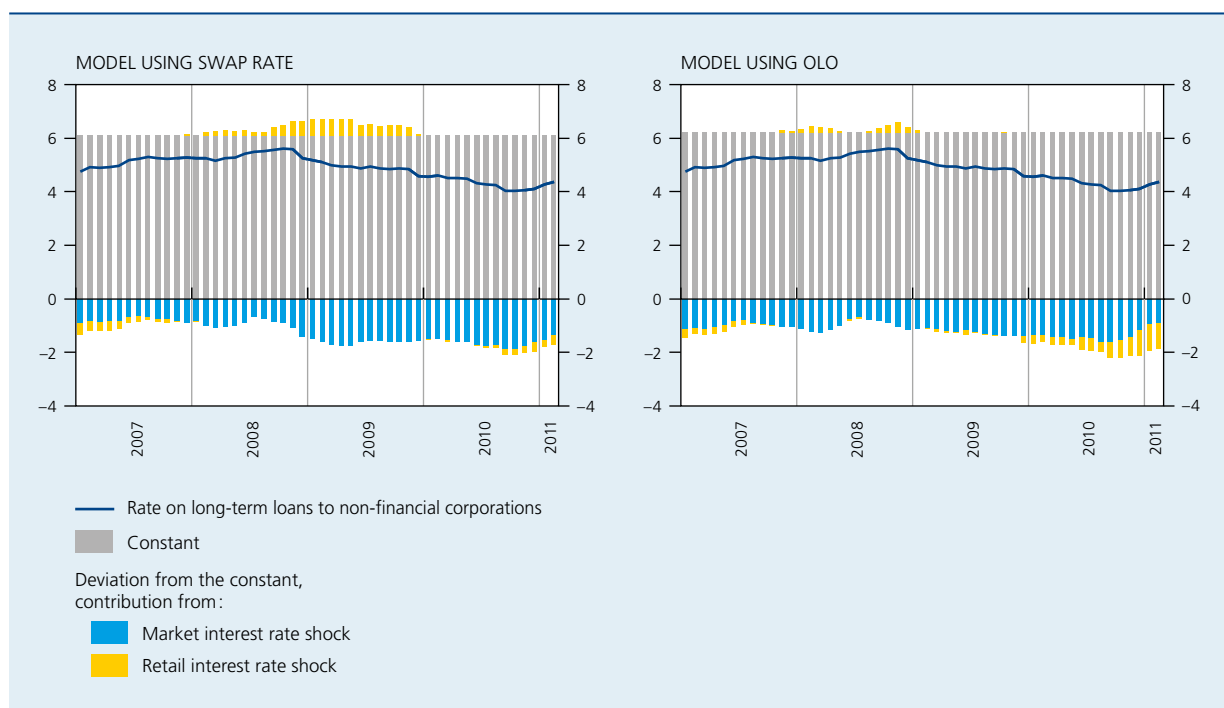▨ Retail interest rate shock

Source : NBB.

As for the interest rate on short-term loans to non-financial corporations, the historical decompositions, like the impulse responses, appear to indicate that it was unaffected by the Euribor-OIS spread, which is in contrast to the results for the euro area. The relevant rate for determining the retail interest rate appears to be the OIS rate, which does not incorporate the risk premia associated with unsecured interbank loans. This result could be linked to a composition effect, as a consequence of the high percentage of loans with very short-term maturities in Belgium, given that the risk premium on rates with very short maturities is generally quite low. In the model estimated using the OIS, the shock to the market interest rate explains virtually all of the variation in the interest rate on short-term loans to non-financial corporations. However, this model indicates a slight positive contribution from the shock to the retail interest rate at the end of the period (of around 37 basis points in February 2011), which probably reflects the recent increase in the financing costs of Belgian banks.

The interest rate on long-term loans to non-financial corporations is analysed in relation to that of the seven-year swap rate and the seven-year OLO. The swap rate had a considerably negative effect on the interest rate on loans

to non-financial corporations in Belgium, but the latter was affected by the positive contribution of the shock to the retail interest rate early in the rate-cutting period (late 2008 and 2009). This seems to indicate that the interest rate on long-term business loans initially fell less quickly than usual, specifically during the period during which the financial crisis seriously affected the Belgian banking sector. However, this positive contribution disappeared towards the end of 2010, with the shocks to the retail interest rate on itself contributing to its decline, which strengthens the hypothesis that the increase in government bond yields did not pass through to this interest rate. In the case of the model estimated with the OLO, the impact of the retail interest rate on itself is less significant in 2009, but more important in 2010. At the end of the period, this impact is moreover clearly negative, as in the euro area. This seems to indicate that the recent increases in the OLO yield due to the sovereign debt crisis have not been incorporated into the trend in the interest rate on loans to non-financial corporations in Belgium.

The final lending rate analysed is the interest rate on loans for house purchase, which in Belgium has a long average maturity. The impact of the shock to the mortgage rate

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HISTORICAL DECOMPOSITION OF THE INTEREST RATE ON LONG-TERM LOANS TO NON-FINANCIAL CORPORATIONS IN BELGIUM

MODEL USING SWAP RATE

MODEL USING OLO

— Rate on long-term loans to non-financial corporations

Constant

Deviation from the constant, contribution from:

Market interest rate shock

Retail interest rate shock

Source : NBB.

CHART 21   HISTORICAL DECOMPOSITION OF THE INTEREST RATE ON LOANS FOR HOUSE PURCHASE IN BELGIUM
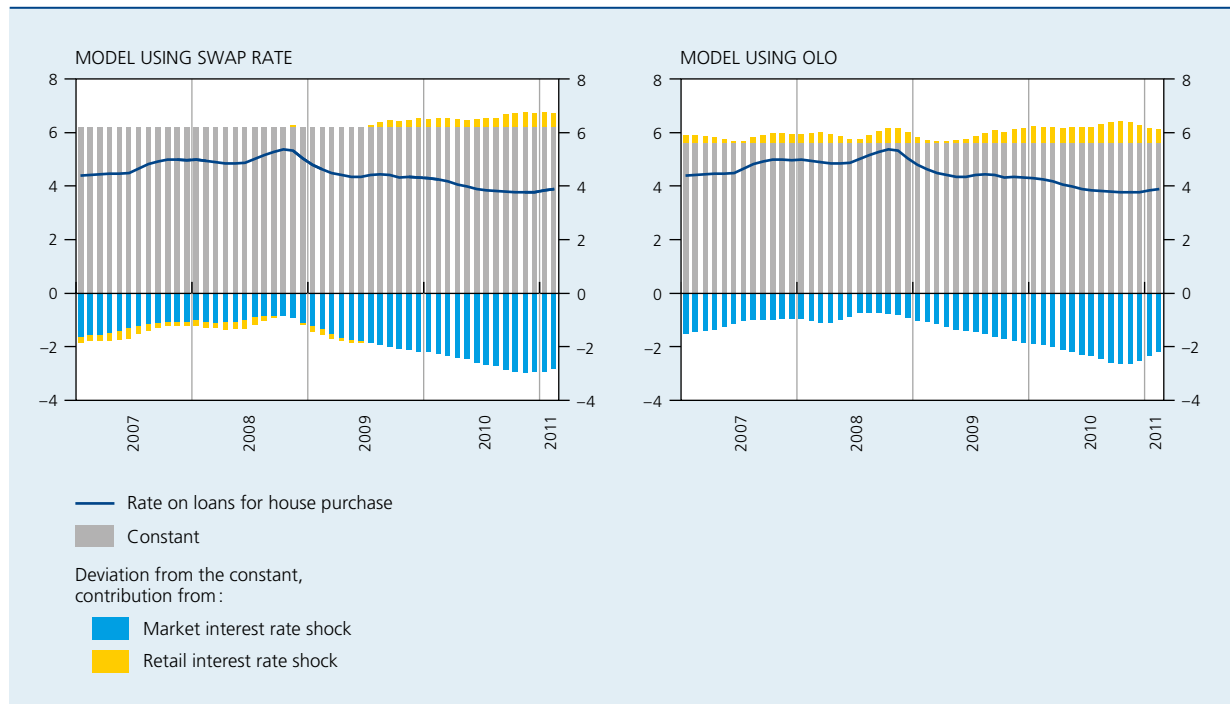
Source : NBB.

itself is relatively weak, but with a positive contribution at the end of the period in both the swap rate and the OLO models. It is difficult to draw firm conclusions at this stage. However, the positive contributions late in the period point to a certain transmission of the increase in government bond yields and, thus, of the sovereign debt crisis.

Like the other interest rates analysed here, the interest rate on loans for house purchase corresponds to new business and is not influenced by the periodic revision of interest rates on mortgage loans issued earlier. The transmission to the interest charges paid on mortgage loans, however, takes place via rates on new loans and interest rate revisions, which are based on the interest rate on government debt (OLO). Thus, it appears that the Belgian mortgage loan market is relatively vulnerable in the event of an aggravation of tensions on the public debt market.

For both Belgium and the euro area, the transmission of monetary policy appears to have been more disrupted in the case of short-term than of long-term interest rates. In general, the former were affected by the widening of the Euribor-OIS spread, and have thus incorporated the increase in risk and liquidity premia. The only exception is the rate on short-term loans to non-financial corporations

in Belgium, which has rather followed the OIS. However, this phenomenon is likely attributable to the preponderance of loans at very short-term maturities in the aggregate of short-term loans to non-financial corporations in Belgium.

As for long-term interest rates, the pass-through appears, on the contrary, to have remained largely stable, for both Belgium and the euro area as a whole. The analysis shows, however, a certain influence of the sovereign debt crisis on several lending interest rates towards the end of the period. Notably, it appears that the rate on loans for house purchase in Belgium has been slightly affected by the widening of the spread between Belgian government bond yields and the swap rate.

Conclusions

The economic and financial crisis that emerged in summer 2007 and the sovereign debt crisis that erupted in late 2009 generated considerable pressure on financing costs in the euro area and presented major monetary policy challenges. However, the cuts in key interest rates orchestrated by the ECB and the adoption of several exceptional monetary policy measures amply offset the increase in

risk premia on both the interbank and bond markets, and helped maintain efficient monetary policy transmission.

Thus, while tensions on the market for government debt securities had a certain impact on business and household borrowing costs, their effects were relatively limited at the euro area level, even though, due to its direct involvement in public financing, the financial sector was materially affected. The same conclusions apply to Belgium, where only interest rates on loans for house purchase appear to have been slightly influenced by the increase in sovereign debt yields. Conversely, in the countries that bore the brunt of the sovereign debt crisis, both businesses and households saw their borrowing costs rise significantly. In general, it appears that at the national level, private sector borrowing costs moved in step with government financing costs, although some decoupling has also been observed, basically at the level of the non-financial sector.

These results are reassuring in that they demonstrate the relative effectiveness of the monetary policies adopted during the crisis and the relatively limited repercussions of the sovereign debt crisis on the rest of the euro area economy. Even so, in the countries hit hardest, the private sector has been deeply affected by the rise in public sector borrowing costs, and measures to clean up the fiscal positions of those countries must remain a top priority.

Annex

MAIN RESULTS OF THE ECONOMETRIC ANALYSIS

Retail interest rate	Market interest rate	Cointegration		Long-term pass-through β		Speed of adjustment α_{br}		Speed of adjustment α_{mr}	
		from 1997-01 to 2007-07	from 1997-01 to 2011-02	from 1997-01 to 2007-07	from 1997-01 to 2011-02	from 1997-01 to 2007-07	from 1997-01 to 2011-02	from 1997-01 to 2007-07	from 1997-01 to 2011-02
Euro area									
Overnight deposits	3-month Euribor	Yes***	Yes***	0.27	0.29	−0.07	−0.06	Not significant	Not significant
	3-month OIS	Yes***	Yes**	0.24	0.20	−0.13	−0.05	Not significant	Significant
Savings deposits	3-month Euribor	Yes***	Yes***	0.38	0.38	−0.09	−0.13	Not significant	Not significant
	3-month OIS	Yes***	Yes***	0.29	0.31	−0.25	−0.18	Significant	Significant
Short-term loans to NFCs . . .	3-month Euribor	Yes***	Yes***	0.83	0.76	−0.11	−0.12	Not significant	Not significant
	3-month OIS	Yes***	No	0.81	0.57	−0.15	0.00	Not significant	Significant
Consumer loans	3-year swap	Yes***	Yes***	0.55	0.59	−0.12	−0.16	Not significant	Not significant
	3-year government bond yield	Yes***	Yes***	0.52	0.56	−0.18	−0.17	Not significant	Not significant
Long-term loans to NFCs . . .	7-year swap	Yes***	Yes***	0.95	0.89	−0.18	−0.18	Not significant	Not significant
	7-year government bond yield	Yes***	Yes***	0.89	0.98	−0.22	−0.16	Significant	Significant
Belgium									
Savings deposits	3-month Euribor	No	Yes*	0.44	0.45	−0.03	−0.03	Not significant	Not significant
	3-month OIS	No	Yes**	0.44	0.19	−0.03	−0.04	Not significant	Significant
Short-term loans to NFCs . . .	6-month Euribor	No	No	1.07	1.06	−0.14	−0.02	Not significant	Significant
	6-month OIS	Yes***	Yes***	1.01	0.94	−0.03	−0.11	Not significant	Not significant
Long-term loans to NFCs . . .	7-year swap	Yes**	Yes***	0.72	0.65	−0.21	−0.17	Not significant	Significant
	7-year OLO	Yes*	Yes***	0.69	0.74	−0.18	−0.17	Significant	Not significant
Loans for house purchase . . .	7-year swap	Yes***	Yes***	1.42	1.23	−0.12	−0.11	Not significant	Not significant
	7-year OLO	Yes***	Yes***	1.51	1.39	−0.08	−0.09	Not significant	Not significant

* Indicates the presence of a cointegration vector at 15 % (*), at 10 % (**), at 5 % (***) (trace test : probability threshold for which the hypothesis that there is no cointegration vector can be rejected).

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