

Determinants of Belgian bank lending interest rates

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In Belgium, as elsewhere in the euro area, bank lending is an important source of finance for companies and individuals, and the lending rates charged by credit institutions therefore play a decisive role in the transmission of monetary policy. This article analyses the determination of lending rates charged by Belgian banks on the basis of the available statistical information, which recently underwent some fundamental changes.

Section 1 offers an overview of the key determinants of credit institutions' lending rates, and includes a box describing the impact of the solvency requirements. Section 2 analyses the transmission of monetary policy impulses to the risk-free market interest rates for various maturities, followed by the pass-through from market interest rates to the lending rates charged by Belgian banks. Section 3 draws first lessons from the new statistics on bank interest rates for the period June 2003-May 2004.

1. Main determinants of bank lending rates

Bank lending rates are a key link in the monetary policy transmission process⁽¹⁾. The central bank has tight control over very short-term money market rates. Changes in these rates affect the longer term interest rates on the money and bond markets, because those longer term rates must correspond to the combination of current and expected future short-term rates and a risk premium linked to the uncertainty over that future development, plus a possible liquidity premium⁽²⁾. The risk-free yield curve forms a basis for determining the banks' lending

rates, since it influences the cost of their resources and can also be regarded as an opportunity cost of lending.

The banks set their deposit rates below the risk-free yield curve, at least as regards "retail funds", as they offer depositors a flexibility and service which are not available on the direct finance market. They set their lending rates at a higher level in order to cover, among other things, their administrative expenses and the credit risk. Since they often practise maturity transformation, their liabilities having a shorter duration than their assets, the interest margin will also be influenced by the slope of the risk-free yield curve, which is positive on average (reflecting the interest rate risk, i.e. uncertainty over future short-term interest rates).

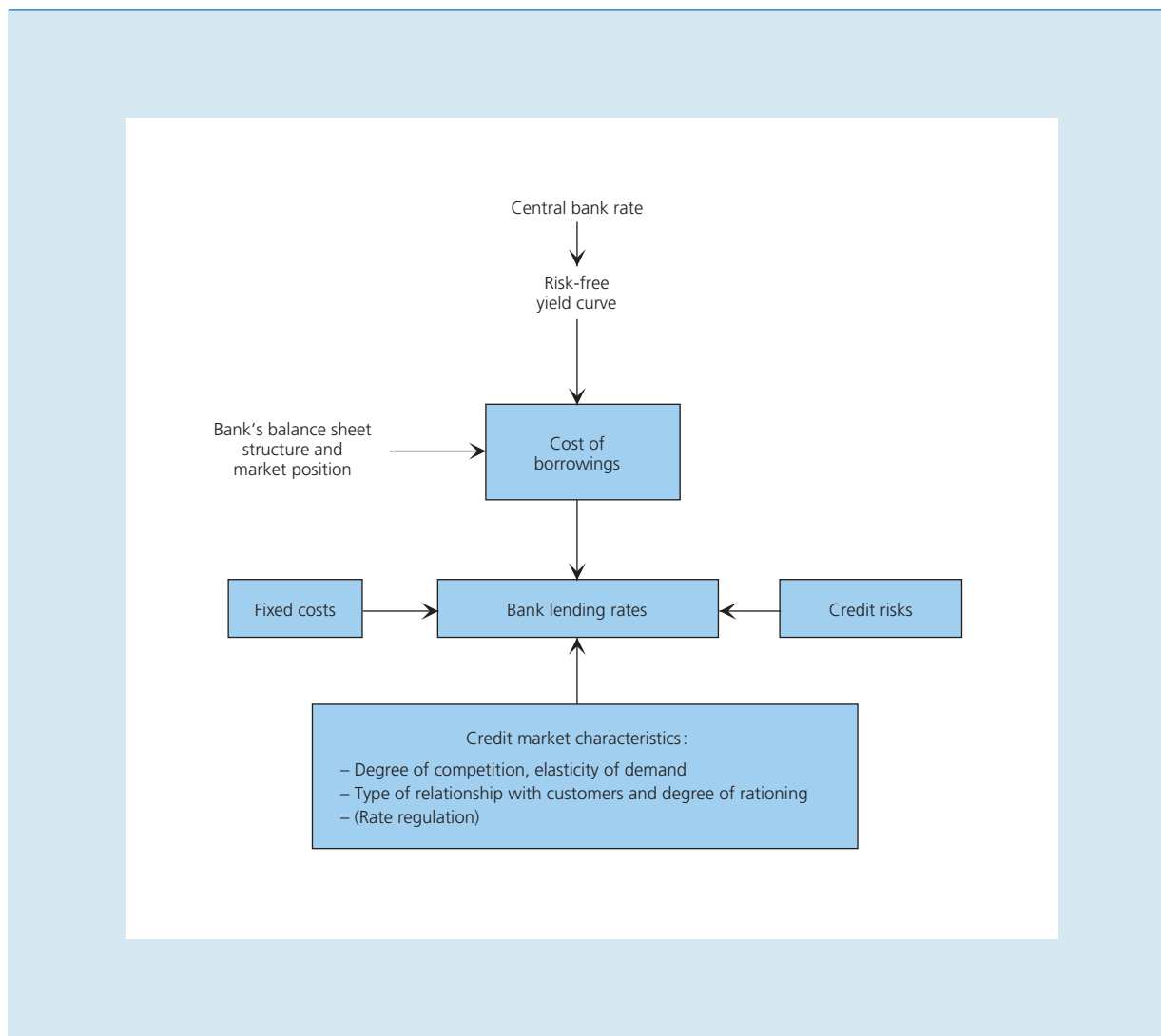
* The authors are grateful to V. Périlleux and A. Bruggeman for their valuable advice, and to N. Masschelein for writing the box.

(1) For a summary of this process, see Périlleux V. and Wibaut Q. (2004).

(2) The existence of this liquidity premium originates from the liquidity preference theory of J.M. Keynes, which states that investors prefer assets which are least susceptible to capital losses due to a change in interest rates. As the risk of capital loss increases over time, long-term securities are therefore more vulnerable to these losses and thus less liquid than short-term securities. According to this theory, long-term securities should therefore offer a higher interest rate than short-term securities in order to compensate the investor for this type of risk.

CHART 1

KEY FACTORS DETERMINING BANK LENDING RATES



Lending rates are influenced by a series of factors other than the risk-free yield curve. These factors result from the specificity of the loan market and may also feel the effects of monetary policy decisions.

By definition, the financial markets do not feature perfect competition with perfect information. A loan is not a conventional commodity, but a promise to repay which may prove worthless (risk of default). The information is asymmetrical – the lender does not have as much information as the borrower about the latter’s ability and willingness to repay the sum borrowed – which leads to the problems of *moral hazard* (risk that the borrower may fail to meet his obligations) and *adverse selection* (risk of attracting the least reliable borrowers). The banks play an essential role in the financial system by reducing the problem of asymmetric information, as they specialise in selecting and monitoring borrowers, and take on the credit risk.

The fixed costs and the risk associated with this function have to be paid for, and are therefore also factors which determine lending rates. The existence of fixed costs explains why the interest rate on small loans is higher than that on large loans. The existence of default risks leads to variations according to the borrower, the term of the loan, the collateral provided (mortgage, etc.) and even the size of the banks (law of large numbers). In addition, these risks are influenced by the economic situation and therefore also by the effect of monetary policy on overall demand. This comes under the heading of “balance sheet channel” in the transmission of monetary policy via credit (“credit view”): all other things being equal, a tightening of monetary policy increases the default risk, because the contraction of demand for goods and services in the economy and the increase in interest charges cause a deterioration in the balance sheet position of borrowers; the increase in longer term interest rates also reduces the

value of the collateral (property, equities); the banks therefore have to impose tighter restrictions on lending⁽¹⁾.

The asymmetric information and other market imperfections also affect the other aspect of banking activity, the raising of funds. For that reason, we must go back to the cost of the funds. Owing to the imperfections of the financial markets, the balance sheet structure of the banks plays a role – their liquidity and solvency, and the availability or non-availability of deposits at low interest – as does the banks' position on the capital market, particularly their size, which makes it easier or less easy for them to finance themselves by issuing securities. The absence of

perfect substitutes to deposits as resources for the banks lies at the root of another channel for the transmission of monetary policy, namely the credit channel in the narrow sense, or the "bank lending channel": all other things being equal, a tightening of monetary policy which leads to higher market interest rates encourages the economic agents to replace deposits (earning lower interest) with securities, and the reduction in deposits forces the banks in turn to restrict the supply of loans.

(1) Cf. for example Stiglitz J. E. and Greenwald B. (2003).

Box – Impact of capital requirements on interest margins

N. Masschelein

The Basle Committee on Banking Supervision has now finalised the second Basle Accord which will take effect at the end of 2007. In the first accord dating from 1988, this committee stipulated that banks must maintain a minimum capital totalling 8 p.c. of the risk-weighted assets. The second accord aims to achieve a better match between the amount of capital that a bank must set aside for loans and the risk profile of the borrower. Since the costs of holding this capital are taken into account in the interest margin, a reduction or increase in the capital requirements according to the level of creditworthiness will be reflected in a reduction or increase in the interest margin.

Basle II provides for two ways of calculating the capital requirements to cover the credit risk: the standardised approach and the internal ratings based approach or IRB. The standardised approach is the less advanced method and comes closest to Basle I. In this approach, the creditworthiness of a counterparty is determined on the basis of external ratings, set by independent credit rating agencies (such as S&P, Moody's or Fitch IBCA). Banks applying the sophisticated method can use internal rating models to calculate their capital requirements.

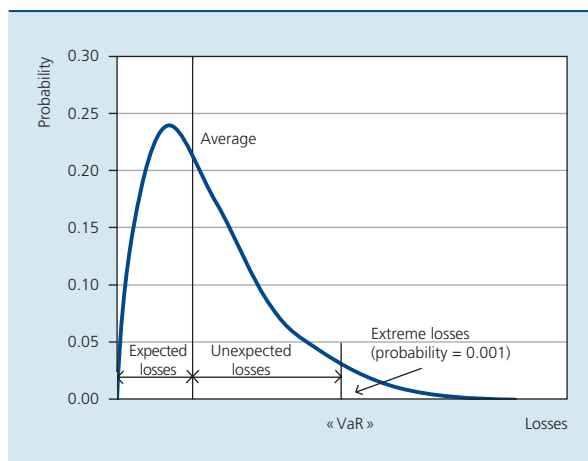
These capital requirements are meant to form a buffer to cope with unexpected losses. Unexpected losses are defined as the difference between the expected losses and a certain limit value as determined by the Value-at-Risk or VaR concept (see chart below)⁽¹⁾. Under Basle II, this limit value was set in such a way that the regulatory capital requirements are sufficiently high to cover all losses with the exception of the extreme 0.1 p.c. of cases. In other words, there is a 0.1 p.c. risk that a deteriorating situation in the loan portfolio may cause the bank to fail.

(1) The expected (or average) losses are covered by forming provisions. The amount of these provisions is calculated by taking the probability of counterparty default and multiplying it by the losses incurred if that counterparty defaults and the size of the claim. The VaR (Value at Risk) is a method of calculating potential losses in a loan portfolio with a particular reliability interval and for a particular period (usually one year in the case of the credit risk). For more details of this method, see BIS (1999).



In practice, however, most banks set a percentile which is lower than 0.1 p.c. so that the capital held by these banks exceeds the amount specified by the regulations. One of the main reasons for this is the importance of the disciplinary role of the market. Banks very often choose a limit value which corresponds to a desired external rating, because in many cases a good external rating is necessary in order to guarantee access on attractive terms to certain important markets (such as the interbank market).

LOSS PROBABILITY DISTRIBUTION



We can illustrate the impact of the new capital requirements on the interest spread by means of an example. We assume that the bank applies the internal ratings based approach and that it aims at a return on equity (ROE) of 13 p.c. We also take the case of a bank making a loan to a large enterprise⁽¹⁾.

The table below shows the impact of the borrower's risk profile on the provisions and the capital requirements. For an enterprise with a default ratio of 0.14 p.c. (corresponding to an A rating by S&P) and a loss given default (LGD) of 45 p.c., the bank holds provisions totalling at least 0.06 p.c. Basle II requires an additional buffer for unexpected losses of at least 2.72 p.c.⁽²⁾ That corresponds to capital costs of 0.35 p.c. For a loan granted to an enterprise with a default ratio of 2 p.c. (corresponding to a BB rating by S&P), Basle II requires a capital ratio of at least 8.67 p.c. This capital requirement entails capital costs of 1.13 p.c. Both the provisions and the capital costs, which vary according to the creditworthiness of the borrower, will clearly be passed on in the interest which the enterprise is charged.

(1) A large enterprise is one with a turnover of more than € 50 million. Basle II has special rules covering loans to SMEs.

(2) For the exact formulas for calculating the capital requirements, see the accord itself (www.bis.org). Here, a scale factor of 1.06 was applied as currently proposed by Basle. That may change in the future.



IMPACT OF THE CREDIT RISK ON PROVISIONS AND CAPITAL REQUIREMENTS

(as p.c. of the claim, except for the probability of default)

Probability of default (PD)	Loss given default (LGD)	Provisions (PD × LGD)	Capital requirement for IRB ⁽¹⁾	Capital costs if ROE = 13 p.c.	Total costs (capital and provisions)
0,02 (AA)	45	0.01	0.86	0.11	0.12
0.14 (A)	45	0.06	2.72	0.35	0.41
0.75 (BBB)	45	0.34	6.25	0.81	1.15
2,00 (BB)	45	0.90	8.67	1.13	2.03

(1) It is not possible to make a straight comparison between these capital requirements and the 8 p.c. set by Basle I, because the concepts used are different. It should be borne in mind that the general aim of Basle II is to tailor the capital requirement more closely to the risk incurred by each individual bank, but not necessarily to alter the overall amount of capital.

In addition, the prudential regulations, which impose minimum capital requirements according to the risk-bearing assets, influence the attitude of the banks towards risk and the cost of the resources required, in the knowledge that equity is more expensive than deposits (see box).

Finally, the lending rates are not, of course, determined on the basis of the average costs regardless of any interaction with demand for credit, but are also dependent on the characteristics of the credit market. On the one hand, the level of competition influences prices, as on any market, and that has repercussions on profits and even on the fixed costs in so far as the employees receive part of any monopoly rent. Taking account of the characteristics of the relationship between a bank and its borrower, it is possible that the banking sector may feature monopolistic competition, in which each bank is confronted by demand that is not perfectly elastic and where the “law of one price” does not apply. The level of competition and the elasticity of demand may vary according to the type of loan and the circumstances.

On the other hand, the specific characteristics of the financial markets are also a factor in the type of interaction between the supply and demand for credit. In fact, it is not necessarily in the banks’ interest to increase their lending rates: above a certain threshold, there is a danger that customers with the least risky projects will be discouraged, while it is mainly potential borrowers for the riskiest projects (and even over-optimistic or deceitful borrowers) who will be attracted (adverse selection), so that the effect of the increased default outweighs the effect of the higher interest rate, and the expected return declines. In these circumstances, it makes sense for the banks to stick to that maximum interest rate and to ration any additional demand for loans.

It is therefore evident that the lending rates need not reflect the bank financing conditions as a whole. Banks which have built up a long-term relationship with their customers are better equipped to assess the risks and will have less need to resort to rationing, which will tend to be confined to new borrowers. Finally, the regulations on lending rates may sometimes involve rationing. That is only the case at present for consumer credit, where maximum rates were fixed in order to protect the weakest consumers: the financial institutions may not lend money at a rate which exceeds the (very high) maximum rates, and are thus obliged to refuse credit to borrowers presenting the highest risks; that helps to curb excessive debt levels.

2. The transmission of monetary policy impulses to bank lending rates

The efficiency of the monetary policy transmission process depends on various parameters, such as the size and speed of the adjustments which credit institutions make to deposit and lending rates following a change in the central bank’s key rate. As already stated, the central bank only has direct control over very short-term interest rates. However, fluctuations in these rates affect the yield curve to varying degrees, and may influence the rates applied by financial institutions. The rates at which banks remunerate deposits and grant loans are a key factor affecting the majority of decisions by economic agents concerning consumption, savings or investment. The behaviour of the financial institutions is therefore of fundamental importance, since these institutions may reinforce, weaken or even neutralise the impact of monetary policy on the real economy.

This section discusses the transmission of monetary policy impulses to lending rates charged by Belgian banks, and can be divided into two stages. The first stage will examine how changes in the overnight rate affect the other interest rates on the risk-free yield curve. That is followed by an analysis of the impact of fluctuations in these market rates on lending rates with similar maturities. The advantage of this two-stage approach is that it takes better into account the marginal costs of the financial institutions and does not confuse two different mechanisms.

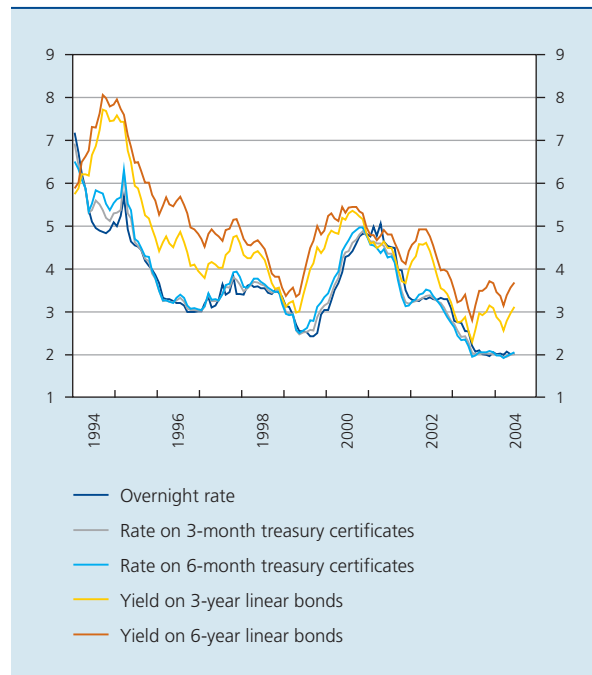
The market interest rates considered here are the rates on Belgian government debt securities. The data used for the lending rates were obtained from the old survey of Belgian credit institutions (RIR: Retail Interest Rates⁽¹⁾) covering the period from January 1993 to December 2003. The rates thus recorded relate to six types of contract, two of which are intended for individuals and four for companies. The year 1993, when short-term interest rates see-sawed as a result of the crisis in the European exchange rate mechanism, was eliminated from the sample.

In the period considered, 1994-2003, interest rates were lower than in the two preceding decades, which had begun with accelerating inflation followed by the gradual restoration of the credibility of monetary and fiscal policy in the majority of industrialised countries, and which ended with the effects of the German reunification. During the first five years of the period under review, which preceded the start of European monetary union, interest rates generally followed a downward trend. In the ensuing five years they initially increased in response to the economic boom and the inflationary pressure, and then subsided again.

2.1 From the central bank rate to the market rates

The central bank's key interest rate acts as a benchmark for money market interest rates and influences longer term interest rates. However, the longer the maturity, the more market interest rates are affected not just by the risk and liquidity premiums but also by expectations regarding future movements in short-term interest rates, which are in turn dependent on macroeconomic variables, such as the outlook for growth and inflation, as well as the credibility of the policy conducted by the central bank. Other variables, such as the movement in yields on the US bond market, also affects the level of long-term interest rates in the euro area and in Belgium. At the end of the day, the effect of a fluctuation in the key rate is uncertain. For example, an increase in that rate may have hardly any impact on longer term interest rates because it was expected; then again, it may trigger a knock-on effect

CHART 2 MARKET INTEREST RATE FOR VARIOUS MATURITIES



Source : NBB.

because it is regarded as sustainable owing to better growth prospects; and finally, it may cause long-term interest rates to fall if it contributes towards restoring the credibility of the central bank in an inflationary context.

If we take the overnight rate on the money market, over which the central bank has fairly tight control, we find that the interest rates on treasury certificates with a maturity of less than one year track its movements fairly closely. In contrast, the yield on linear bonds, with a longer maturity, may move entirely in the opposite direction for a time. For instance, in the first half of 1994, short-term interest rates fell by more than 200 basis points, continuing the downward trend which started in 1993 after the exchange rate crisis, while long-term interest rates increased by an equivalent amount, as a result of a contagion effect following the US bond market crash. Similarly, the hopes of an economic recovery on both sides of the Atlantic in late 2001 and early 2002 caused long-term interest rates to rise by just under 100 basis points, while short-term rates dipped by around 50 basis points, before stabilising.

(1) This survey was replaced by a new harmonised survey of interest rates in the euro area (MIR: MFI Interest Rates), introduced at the instigation of the ECB at the beginning of 2003, which will be discussed in section 3. Where discount credit is concerned, the interest rates were obtained from a separate survey of three Belgian credit institutions.

The pass-through of changes in the overnight rate to the other market interest rates was estimated for the period from January 1994 to June 2004 using the non-linear least squares method on the basis of equations with an error correction term in the following form⁽¹⁾:

$$\Delta mr_t = \alpha + \beta * \Delta cbr_t - \gamma * (mr_{t-1} - \delta * cbr_{t-1}) + \varepsilon_t \quad (1)$$

where *mr* is the market interest rate (rates on 1-month, 2-month, 3-month, 6-month and 12-month treasury certificates, yields on 3-year and 5-year linear bonds) and where *cbr* corresponds to the overnight rate. Coefficient β refers to the degree of transmission in the short term, more precisely within the month, while coefficient δ represents long-term transmission and ε is the error term.

It must be made clear that this econometric analysis can only reflect part of the impact of monetary policy on market interest rates. In fact, the movements in the market rates may precede the changes to the central bank rate owing to expectations regarding the future monetary policy stance. Thus, if a reduction in the key rate is expected, that may affect market rates even before it is implemented. However, the analysis takes no account of this effect.

Subject to that reservation, pass-through within the month seems to be fairly high overall for treasury certificates, although it does tend to decline sharply as the maturity lengthens: it ranges from 0.92 for 1-month

treasury certificates to 0.46 for 12-month treasury certificates. As regards long-term interest rates, the impact within the month is slight in the case of 3-year linear bonds and virtually nil for 5-year bonds.

The long-term pass-through of overnight rate fluctuations to market interest rates is complete or almost complete for maturities of up to one year. For the maturities of more than one year considered, it is 0.7 or more. Although it therefore appears that the central bank interest rate may – at least in part – have a knock-on effect on the longer term interest rate, that effect does not materialise immediately but only after a varying length of time. That is one of the reasons against overestimating the ability of monetary policy to prime the pump of economic growth in the short term by cutting the key rates.

(1) This specification is deliberately simple because the analysis aims to present a general picture of the broad trends in the transmission of changes in the interest rate controlled by the central bank to the risk-free yield curve. It takes no account of the impact of risk and liquidity premiums or of the effect of other economic variables on the determination of the level of interest rates. In the light of the Phillips-Perron and ADF (Augmented Dickey-Fuller) tests, the hypothesis of the non-stationarity of all the series used cannot be rejected. In addition, the hypothesis of the absence of co-integration can be rejected for 1-month, 2-month and 3-month treasury certificates. However, for clarity we have also used the error correction specification in the case of market interest rates for which the hypothesis of the absence of co-integration cannot be rejected in so far as the estimated coefficients for the degree of transmission in the short and long term are statistically no different from those calculated by using the autoregressive distributed lag model, which is more suitable in this case. As regards the number of lags in the market rate and the overnight rate in the short-term dynamics, the Akaike and Schwarz criteria would have suggested richer specifications (up to twelve lags in terms of level). However, the usefulness of this simple specification lies in the fact that the degree of pass-through can be calculated more easily in the medium term. Finally, in order to attenuate the correlation of the residues in the equations for the rate on 12-month treasury certificates and for the yield on 3-year and 5-year linear bonds, the right-hand term also comprises the change in the market interest rate after a lag of one period.

TABLE 1 DEGREE OF TRANSMISSION OF THE OVERNIGHT RATE TO THE LONGER TERM MARKET INTEREST RATES

	Within the month	After 3 months	After 6 months	After 12 months	In the long term
1-month treasury certificates	0.92 (0.05)	0.99	1.00	1.00	1.00 (0.02)
2-month treasury certificates	0.88 (0.06)	0.96	0.99	1.01	1.01 (0.04)
3-month treasury certificates	0.82 (0.07)	0.91	0.96	0.99	1.00 (0.06)
6-month treasury certificates	0.64 (0.08)	0.72	0.78	0.85	0.95 (0.17)
12-month treasury certificates	0.46 (0.09)	0.62	0.80	0.85	0.89 (0.27)
3-year linear bonds	0.18 (0.10)	0.35	0.51	0.63	0.79 (0.43)
5-year linear bonds	0.02 (0.10)	0.13	0.23	0.38	0.70 (0.54)

Source: Own calculations.

Note: The standard deviations are shown in brackets.

Furthermore, the amount of time taken for the actual effect of a change in the central bank rate to be fully reflected in market interest rates increases as the maturity lengthens: in the case of 1-month treasury certificates, the eventual impact is almost fully apparent after three months, whereas it takes roughly a year in the case of 3-month treasury certificates; in the case of 5-year linear bonds, only just over half of the final impact of the change in the overnight rate is observed after twelve months.

Finally, the econometric analysis clearly illustrates the theoretical findings outlined above, particularly the fact that the effect of a change in the central bank rate on market interest rates becomes more uncertain and vague as the maturity lengthens. The more the market rates relate to longer maturities, the steeper the decline in the accuracy with which the pass-through is estimated, so that in the case of 5-year bonds the sign of both the short-term and the long-term pass-through is statistically not determined.

2.2 From market interest rates to bank lending rates

The comparison of the offered rates on standard contracts, obtained from the RIR survey⁽¹⁾, with the corresponding reference rates⁽²⁾ reveals that there are substantial differences in the size of the adjustments made to lending rates by the Belgian banks.

As regards short-term loans, the changes in the money market rate were reflected promptly and more or less completely in the interest rate on fixed-term advances, a financial instrument designed mainly for large enterprises. The rates offered by the banks on cash credit and discount credit seem to take a little longer to adjust but they were adapted fully up to the end of 2000. Since that date, interest margins on these last two credit categories have widened considerably: cuts in the interest rate on short-term risk-free instruments took longer to be passed on in the interest rates offered, and the reductions were no longer entirely proportionate.

Similarly, it is evident that since the end of 2000 the margins on long-term loans granted to both businesses and individuals have increased. In this connection it is interesting to note that the interest rate offered to companies on investment loans – which until 2002 tallied fairly closely with the yield on euro area corporate bonds with a comparable duration and a BBB rating – deviated from that rate in 2003 and has risen towards the yield on corporate bonds with a lower rating, namely BB. However, it must also be said that the interest rates actually charged – as recorded by the new survey – were considerably lower in

the second half of 2003 than the rate on investment loans according to the RIR survey⁽³⁾.

It is possible that the increase in the margins on most short-term and long-term loans resulted from an adjustment to the conditions applied in neighbouring countries, owing to cross-border mergers of credit institutions. This is probably also due to the economic gloom, the problems caused by a number of loans granted at the end of the last decade and the prospect of a new Basle Accord.

Over the period January 1994-December 2003 as a whole, the pass-through of market interest rate changes to lending rates is estimated on the basis of aggregate data per product line, using equations with an error correction term in the following form⁽⁴⁾:

$$\Delta br_t = \alpha + \beta * \Delta mr_t - \gamma * (br_{t-1} - \delta * mr_{t-1}) + \varepsilon_t \quad (2)$$

where br is the lending rate and mr the market interest rate for a corresponding maturity. Once again, the coefficients β and δ correspond respectively to the degree of transmission in the short and long term, while ε represents the error term.

It is estimated that transmission within the month is complete in the case of fixed-term advances and in the order of 90 p.c. for investment loans and 80 p.c. for cash credit and discount credit. In contrast, only 40 p.c. of the change in the reference rate is passed on immediately in the rates charged on mortgage loans, and less than 30 p.c. in the case of consumer credit. Over a long period⁽⁵⁾ the various lending rates are aligned in full, or almost in full, with the market rate, except in the case of consumer credit. The Belgian credit institutions therefore appear to adjust the rates on loans to businesses more promptly and completely than the rates on personal loans.

(1) Except for discount credit where the interest rate corresponds to the average of the interest rates offered by the three biggest banks.

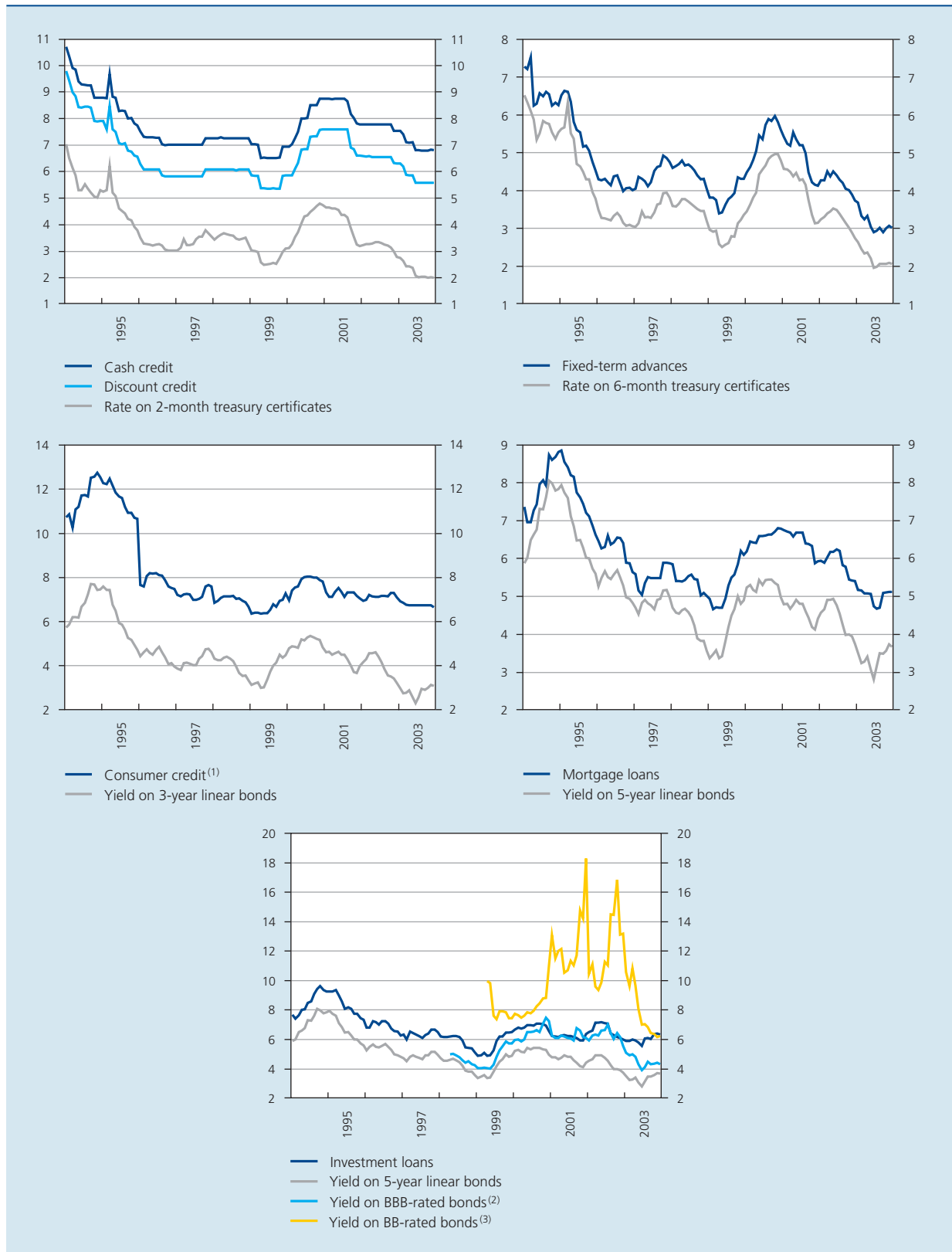
(2) The term of the reference interest rate corresponds to that expressly stated in the various standard contracts, except for cash credit on which the reference rate was selected on the basis of the correlations.

(3) Cf. table 4.

(4) The null hypothesis of non-stationarity cannot be rejected for the various lending rates obtained from the RIR survey at the usual levels of probability. The assumption of the absence of co-integration can be rejected in the case of fixed-term advances, mortgage loans and investment loans. However, we also used the specification with error correction for discount credit, cash credit and consumer credit in so far as the estimated coefficients for the short and long term pass-through are statistically no different from those calculated by using the autoregressive distributed lag model, which is more suitable in this case. Finally, a dummy was introduced into the consumer credit equation, in order to take account of the change of definition, introduced in January 1996.

(5) The hypothesis that the estimated transmission coefficient is equal to 1 in the long term cannot be rejected using standard levels of probability.

CHART 3 LENDING RATES CHARGED BY BELGIAN BANKS AND REFERENCE INTEREST RATES



Sources: Bloomberg, NBB.

(1) The definition of consumer credit was changed in January 1996.

(2) Yield on euro area corporate bonds with a BBB rating and a term of between three and five years.

(3) Yield on euro area corporate bonds with a BB rating and an average duration of just over four years.

TABLE 2 DEGREE OF TRANSMISSION FROM MARKET INTEREST RATE TO LENDING RATES CHARGED BY BELGIAN BANKS

	Within the month	After 3 months	After 6 months	After 12 months	In the long term
Discount credit (T2)	0.78	0.79	0.80	0.81	0.83
Cash credit (T2)	0.80	0.81	0.81	0.82	0.85
Fixed-term advances (T6)	1.10	0.95	0.95	0.95	0.95
Consumer credit (OLO3)	0.27	0.56	0.59	0.59	0.59
Mortgage loans (OLO5)	0.41	0.64	0.76	0.85	0.88
Investment loans (OLO5)	0.89	0.88	0.87	0.85	0.82

Source : Own calculations.

Note : The reference rate is shown in brackets (T2 corresponds to 2-month treasury certificates, OLO3 to 3-year linear bonds).

A recent study by De Graeve *et al.* (2004), which was also conducted on the basis of the RIR survey data, but taking account of measurement errors and the heterogeneity of the banks, comes to comparable conclusions as regards the scale of the transmission in the short and long term, namely that the adjustment of the rates on loans to individuals appears to be slower and less than proportionate, compared to the rates on loans to companies. Although our estimates on the basis of the aggregate data differ somewhat from the results of the said study, the differences are not statistically significant, except in the case of the short-term coefficient for cash credit and the long-term coefficient for investment loans⁽¹⁾.

As regards the bank characteristics which influence the degree and speed with which bank interest rates are aligned with changes to the market interest rate, De Graeve *et al.* (2004) find that credit institutions with a higher capital ratio and greater liquidity pass on changes in market interest rates more slowly and less than proportionately in their deposit and lending rates. Finally, the degree of pass-through seems to decline with the bank's market share in a particular financial product.

(1) On the basis of the standard deviations calculated by De Graeve *et al.* (2004). In the first case, we slightly overestimate the scale of the adjustment, while in the second case we underestimate it.

TABLE 3 COMPARISON OF THE ESTIMATED DEGREES OF TRANSMISSION

	Within the month		In the long term	
	This article	De Graeve <i>et al.</i>	This article	De Graeve <i>et al.</i> (2004)
Discount credit	0.78 (0.06)	0.67 (0.06)	0.83 (0.14)	0.85 (0.04)
Cash credit	0.79 (0.05)	0.66 (0.05)	0.84 (0.21)	0.82 (0.03)
Fixed-term advances	1.10 (0.18)	1.01 (0.09)	0.95 (0.02)	0.92 (0.04)
Consumer credit	0.27 (0.12)	0.19 (0.10)	0.59 (0.05)	0.69 (0.09)
Mortgage loans	0.41 (0.08)	0.35 (0.05)	0.88 (0.06)	0.87 (0.06)
Investment loans	0.89 (0.07)	0.79 (0.06)	0.82 (0.20)	1.01 (0.03)

Sources : De Graeve *et al.* (2004) and own calculations.

Note : De Graeve *et al.* (2004) estimate the degree of transmission on the basis of panel data with co-integration where it occurs. The optimum number of lags in the specifications is selected on the basis of the Schwarz criterion, with a maximum of six lags, in levels, for the lending rate and the corresponding market rate. The standard deviations are shown in brackets.

3. The new harmonised interest rate survey

3.1 Features of the new survey

In January 2003, the ECB launched a new survey (MIR survey: MFI Interest Rates) on the interest rates which monetary financial institutions in the euro area apply to their customers. In Belgium, this new survey replaced the RIR survey (Retail Interest Rates), mentioned in the preceding section.

The Belgian part of the MIR survey differs in many respects from the RIR survey⁽¹⁾. First, while the old survey data were provided voluntarily by the banks, the selection of participants in the MIR survey is based on a *stratified random sample*, which ensures that the survey is far more representative. Second, while the previous survey concerned normalised standard contracts, which were not necessarily representative of the activity of each reporting bank, the *categories* covered by the MIR survey⁽²⁾ may comprise products which are commercially very divergent, if those products have certain characteristics in common. Third, in the new survey the interest rates are *weighted* on the basis of the amounts of new credit actually granted by each declarant in each category⁽³⁾, while in the earlier survey the rates notified by the banks were weighted on the basis of the outstanding amounts for the categories in their balance sheet which roughly corresponded to the standard contract. Fourth, the rates recorded via the new survey are the *contractual interest* rates, i.e. the rates actually applied, whereas the earlier survey referred to the advertised rates, without taking account of any commercial negotiation.

These substantial methodological differences cause a break in the series. That is evident from the following table, which compares the average results for the two surveys for the second half of 2003, a period in which, one can assume, the new survey had already got over any “teething troubles”, and the old survey was still continuing.

3.2 Preliminary results for Belgium

The MIR survey results have not been available long enough – especially as the observations for the initial months could be less reliable – to conduct a meaningful chronological analysis, such as an analysis of the pass-through of market interest rate changes. Moreover, the movements in the market interest rates have been relatively small in recent months. For those reasons, the

analysis will be confined to the initial conclusions which can be drawn from the average levels of the lending rates charged by Belgian banks during the one-year period ending in May 2004, and their dispersion.

The structure of the lending rates per type of loan clearly shows the effects of the amount, duration and risk of the loan. The contractual rates for loans to corporations vary in inverse proportion to the size of the loan. That is because of the fixed costs, but it may also indicate a negative correlation between the size of the borrower firms and the assessment of the risk. The rates charged increase with the term of the loan. That reflects the positive slope of the risk-free yield curve over the period considered (the difference between five-year and three-month rates averaged 1.4 percentage points), but may also point to an increase in the spreads according to the duration, on account of the higher risk of long-term loans. Since the data on the lending rates are calculated on the basis of maturity intervals, however, it is difficult to compare them with the risk-free yield curve⁽⁴⁾. Finally, the rates on loans for house purchase, which are systematically backed by a mortgage in Belgium, are relatively low. The statistics do not make any other distinctions on the basis of the credit risk.

Lending rates applied to households are usually higher than those applied to corporations, perhaps mainly because of the amounts being borrowed.

As a yardstick of the rate dispersion, the interquartile interval⁽⁵⁾ also provides some interesting information. The rate dispersion may be due to the heterogeneity of the credit characteristics, particularly the risks. It may also indicate a lack of competition, since competition would cause prices to converge. However, such an interpretation must be treated with due caution, since cartels could also lead to a reduction in the rate dispersion.

There is a positive correlation between the dispersion of the rates and their level. It is greatest in the case of overdrafts, followed by consumer credit, and is lowest for house purchase loans. The heterogeneity of the risks appears to be the dominant factor, since there is

(1) A more detailed account of the method may be found on the Bank's website: www.nbb.be/DQ/MIR/N/method_1.htm or www.nbb.be/DQ/MIR/F/method_1.htm.

(2) The new MIR survey covers ten instruments relating to new contracts for deposits and loans to households and non-financial corporations, for varying terms. Altogether, there are 31 rates, including 18 lending rates and 2 annual percentages rates of charge on loans to households.

(3) In the case of overdrafts, on the basis of the outstanding amounts.

(4) The weighting on the basis of the amounts of the new contracts makes this even more difficult; this is because shorter term loans tend to be given a higher weighting since they are renewed more often.

(5) The interquartile interval is defined as the difference between the first quartile and the third quartile; it comprises 50 p.c. of the data and is not sensitive to extreme observations.

TABLE 4 COMPARISON OF THE RESULTS OF THE SURVEYS OF LENDING RATES CHARGED BY BELGIAN BANKS

(Average level in the second half of 2003)

MIR survey			RIR survey		
Instruments	Initial determination of interest rate	Interest rate	Instruments	Initial determination of interest rate	Interest rate
Loans to non-financial corporations					
Overdrafts		7.37	Cash credit (basic rate)		6.81
Loans ≤ € 1 million	≤ 1 year	3.78	Fixed-term advance € 250,000 to 375,000 (most solvent customers) Investment loan € 125,000 to 250,000 (lowest rate)	6 month	2.99
	> 1 year ≤ 5 year	4.01		5 year	6.34
	> 5 year	5.00			
Loans > € 1 million	≤ 1 year	2.90			
	> 1 year ≤ 5 year	3.24			
	> 5 year	4.37			
Loans to households					
Overdrafts		10.45			
Consumer credit	≤ 1 year	6.65	Loan subject to flat-rate charges, purchase of a new car, € 7,500 (basic rate)	3 year	6.73
	> 1 year ≤ 5 year	7.76			
	> 5 year	9.28			
Lending for house purchase	≤ 1 year	3.57	20-year mortgage loan (lowest advertised rate)	5 year	4.97
	> 1 year ≤ 5 year	4.32			
	> 5 year ≤ 10 year	4.64			
	> 10 year	4.74			
Other lending	≤ 1 year	3.95			
	> 1 year ≤ 5 year	4.43			
	> 5 year	5.09			

Source : NBB.

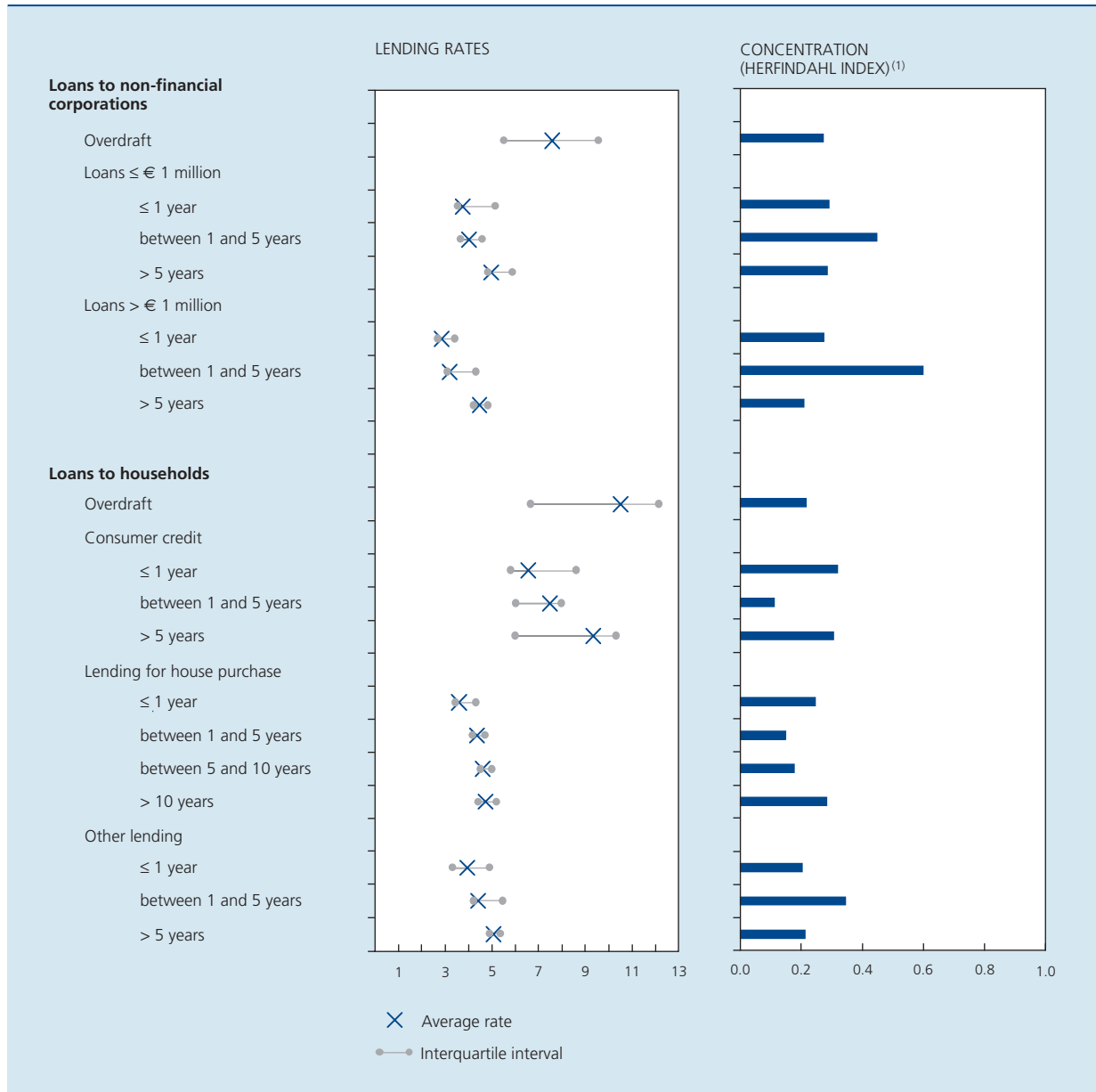
apparently no correlation between the degree of concentration in the various markets and the rate dispersion. Thus, the concentration is below average in the home loan market, where the rates applied fall within a narrow margin, but also in the case of overdrafts, where there is a wide rate dispersion.

A brief examination of the impact of some individual characteristics of the reporting banks on their lending rates confirms a number of the findings made by Bruggeman A. and Wouters R. (2001) on the basis of the RIR survey data.

There is a positive correlation between the banks' capital ratio, measured on the basis of the capital and reserves as a percentage of the balance sheet total, and the lending rates they charge⁽¹⁾. The explanatory variable is the credit risk: a higher capital ratio requires the granting of loans generating higher returns, and thus representing higher risks, in order to achieve a particular return on the equity. Conversely, relative specialisation in higher risk lending requires better solvency.

(1) The results of the simple linear regression (on the basis of the individual data) show the positive influence of the capital ratio on the level of interest rates for virtually all eighteen products; the coefficient is significant (at 90 p.c.) for six of these products.

CHART 4 LENDING RATES CHARGED BY BELGIAN BANKS AND CONCENTRATION INDICES PER LOAN TYPE
(Average June 2003-May 2004)



Source : NBB.

(1) Sum of the squares of market shares, calculated on the basis of new contracts (outstanding amounts for overdrafts). The higher the index, the greater the concentration on the market segment.

In contrast, the more liquid banks, i.e. those with a higher proportion of cash, interbank loans and other short-term assets in their balance sheet total, seem to charge lower rates⁽¹⁾. The availability of a stock of liquid assets creates scope for granting loans which are generally claims with relatively low liquidity.

Finally, the size of the banks measured on the basis of their balance sheet total usually has a negative influence on the interest rate level⁽²⁾. Various interpretations are possible. The banks could tend to pass on in their rates the scale advantages gained in terms of access to cheaper sources

(1) The coefficient is estimated as negative for all products, significant (at 90 p.c.) for five products.

(2) The coefficient is estimated as negative for most products, significant (at 90 p.c.) for nine products.

of finance and risk diversification (law of large numbers), rather than exploiting a dominant position to push up the average level of their margins – the correlation between market share per type of loan and the rates applied is also usually negative⁽¹⁾. In addition, there is a negative correlation between the size and the degree of capitalisation, which may indicate that smaller banks specialise in riskier loans. Furthermore, large corporations whose average risk is probably assessed as lower and which have access to means of funding other than bank loans, deal mainly with the big banks.

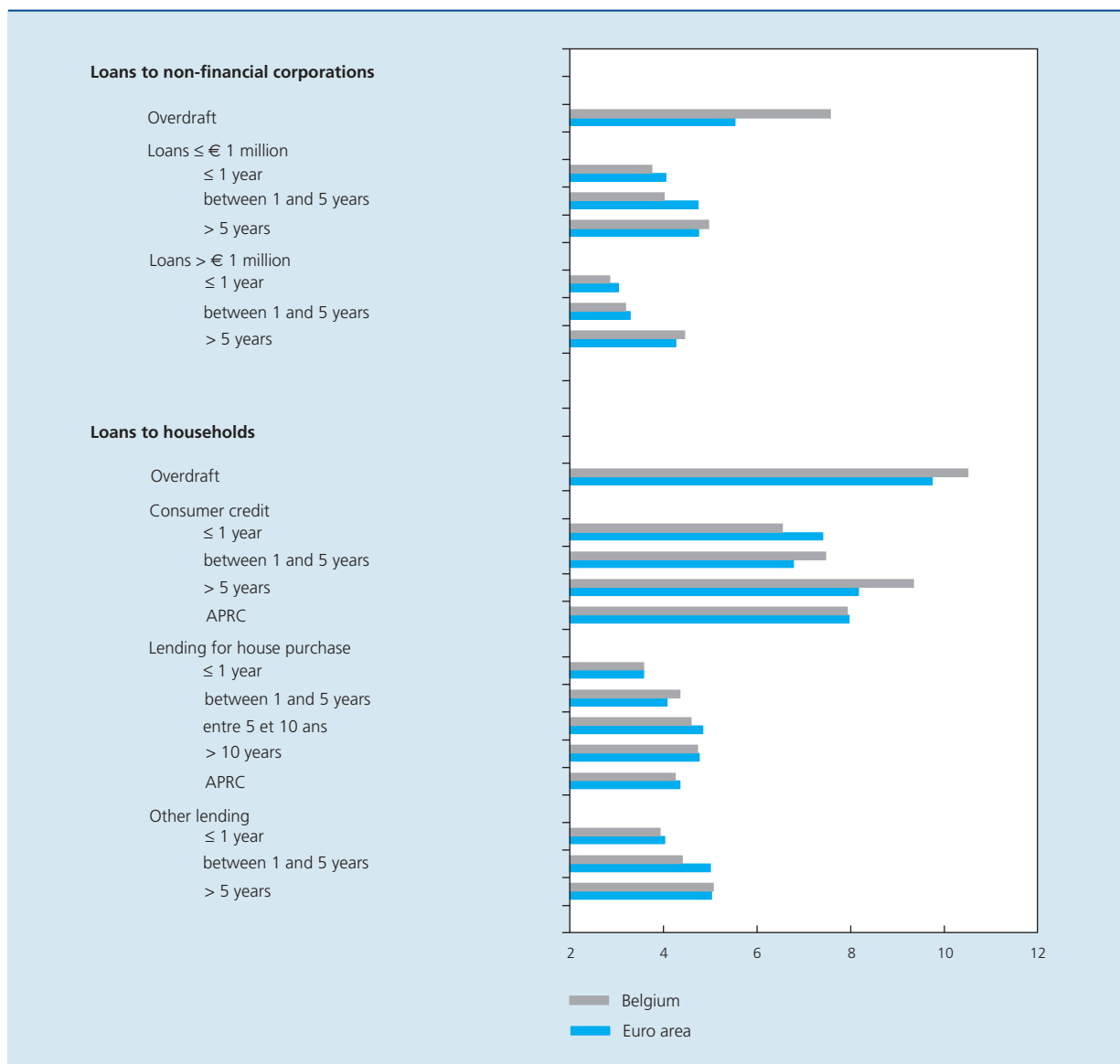
(1) The coefficient is estimated as negative for most products, significant (at 90 p.c.) for six products.

These initial indications can be supplemented by a more detailed analysis once longer statistical series are available.

3.3 International comparison

The harmonised statistics of the MIR survey offer the first opportunity to make a valid comparison between Belgium and the euro area. With occasional exceptions, the differences during the period June 2000-May 2004 were minimal.

CHART 5 LENDING RATES IN BELGIUM AND IN THE EURO AREA
(Average June 2003-May 2004)



Sources: ECB, NBB.

As regards loans to non-financial corporations, the Belgian rates are below the euro area average for the majority of the loans, i.e. loans up to 1 million euro, on which the rates are fixed for the short or medium term. In contrast, interest rates on overdrafts are significantly higher. The difference between the rates for small amounts as opposed to large amounts is less in Belgium than in the euro area, regardless of the period for which the interest rate is initially fixed. It should be remembered that this difference may be due to the fixed costs entailed in granting loans, but it may also reflect some differentiation between large enterprises and other firms.

As regards loans to households, the interest rates for mortgage loans in Belgium are very close to the average European rates, but overdrafts are more expensive. Where consumer credit is concerned, various deviations occur. However, the annual percentage rate of charge, which represents an average of all rates applied, weighted on the basis of new business, taking account of the costs of taking up the loan, is close to the European average.

Conclusion

The way in which credit institutions adjust their lending rates is one of the parameters determining the efficiency of the monetary policy transmission process. By studying the banks' behaviour it is therefore possible to arrive at a better assessment of the presumed effects of monetary policy decisions on the real economy. This article shows that the central bank exerts an influence over lending rates, but to varying degrees, as other factors also play a role.

The central bank only has tight control over very short-term interest rates on the money market. Changes in these rates influence the other, longer term market rates which in turn form the basis for determining the bank interest rates. In accordance with economic theory, it seems that the pass-through of the overnight rate to the risk-free market interest rates becomes weaker, slower and more uncertain the longer the term considered. The pass-through of the market rates to lending rates, studied on the basis of the results of the earlier survey of bank interest rates, presents a mixed picture.

The Belgian credit institutions seem to adjust rates on business loans more promptly and fully than rates on loans to individuals. In the case of consumer credit, the transmission is only partial, even over a long period. Also, the data from the earlier survey indicate a widening of the spreads between most lending rates and the market rate for comparable maturity during the period 2001-2003.

One of the reasons for these wider spreads could be alignment with conditions in neighbouring countries, as a result of cross-border mergers of credit institutions. Be that as it may, the new harmonised survey of bank interest rates shows that the lending rates charged by Belgian credit institutions are currently very close to the euro area, average with a few exceptions: they are lower for short and medium-term corporate lending, but significantly higher for overdrafts.

The results of the new survey reveal that the average lending rates vary according to the amount, duration and risk of the loan. There are particularly wide dispersions in the case of rates on overdrafts and consumer credit. There appears to be a positive correlation between a bank's capital ratio and the level of its lending rates, while the size and liquidity of the banks exert the opposite effect.

Bibliography

- BIS (1999), "Credit risk modelling: Current practices and applications", *Basle Committee on Banking Supervision*, No. 49.
- Bruggeman A. and Wouters R. (2001), "Determinanten van de debt rentes toegepast door Belgische kredietinstellingen", *NBB Working Paper*, No. 15.
- Cotarelli C., Ferri G. and Generale A. (1995), "Bank lending rates and financial structure in Italy", *IMF Staff Papers*, vol. 42, No. 3, pp. 670-700.
- Cotarelli C. and Kourelis A. (1994), "Financial structure, bank lending rates, and the transmission mechanism of monetary policy", *IMF Staff Papers*, vol. 41, No. 4, pp. 587-623.
- de Bondt G.J. (2002), "Retail bank interest rates pass-through: New evidence at the euro area level", *ECB Working Paper*, No. 136.
- De Graeve F., De Jonghe O. and Vander Vennet R. (2004), "The determinants of pass-through of market conditions to bank retail interest rates in Belgium", *NBB Working Paper*, No. 47.
- Hamilton J.D. (1994), *Time series analysis*, Princeton.
- Mojon B. (2000), "Financial structure and the interest rate channel of ECB monetary policy", *ECB Working Paper*, No. 40.
- Périlleux V. and Wibaut Q. (2004), "The transmission of monetary policy impulses in Belgium", *NBB Economic Review*, 2nd quarter, pp. 37-45.
- Stiglitz J.E. and Greenwald B. (2003), *Towards a new paradigm in monetary economics*, Cambridge.
- Weth M. A. (2002), "The pass-through from market interest rates to bank lending rates in Germany", *Deutsche Bundesbank Discussion Paper*, No. 11/02.