



July 7, 2006

## Early repayment of fixed-rate mortgages

**There is no free lunch**

**There are moves afoot to foster the integration of Europe's mortgage credit markets.** In 2007 the European Commission plans to publish a white paper containing proposals to this end that build on the findings of expert groups.

**Brussels is focusing its attention on, among other things, the differing national rules regarding the early redemption of fixed-rate mortgages.** This brings the threat of encroachment on the freedom of contract that would not only have a negative impact on the economy, but also run counter to the interests of consumers.

**At present, banks and borrowers can exclude the option of early repayment from the terms of a fixed-rate mortgage agreement.** Then only under certain conditions is the bank obliged to accept the borrower's request for a redemption of the contract and is in this case entitled to receive an early repayment fee.

**Fixed-rate mortgages are very popular with customers because they enable long-term planning of interest payments and repayments of the principal.** The exclusion of early redeemability makes it easier for the banks to manage their interest rate risk, thus enabling low-cost refinancing. The banks pass on these benefits to their customers, which helps to boost the popularity of fixed-rate mortgages even further.

**Banks incur costs if they provide the option of early redeemability on fixed-rate mortgages.** They would have to factor these costs into their interest rate calculations: mortgages would become more expensive. All borrowers of fixed-rate mortgages would then have to pay for a right that only a few wish to exercise. This would not only have repercussions for consumers but would also dent the popularity of fixed-rate mortgages. The latter would also have ramifications for the stability orientation of the German financial system.

**Major changes to the banks' lending business have an inevitable impact on these banks' refinancing arrangements.** The Pfandbrief segment is one such case. In the worst case it would have to be modified considerably.

**Instead of intervening directly in product markets the Commission should facilitate market integration that is driven by market forces.** Secondary market measures are a good way of achieving this.

www.  
dbresearch.com

**Author**

Stefan Schäfer  
+49 69 910-31832  
stefan-a.schaefer@db.com

**Editor**

Bernhard Speyer

**Technical Assistant**

Martina Ebling

Deutsche Bank Research  
Frankfurt am Main  
Germany  
**Internet:** www.dbresearch.com  
**E-mail:** marketing.dbr@db.com  
**Fax:** +49 69 910-31877

**Managing Director**

Norbert Walter



## Introduction

### **EU wants to integrate mortgage credit markets**

The mortgage credit markets in Europe are to become better integrated. The European Commission has declared this as one of the key objectives of its financial market policy between 2005 and 2010. As many EU citizens as possible are to gain affordable access to a broad range of mortgage loans and complementary services; the cross-border distribution of mortgage products – by banks and other financial services companies – is to be enabled. At present this is still precluded by the fragmentation of the European mortgage credit markets along national lines. The result is that financial service providers forgo the benefits of economies of scale and scope, (potential) borrowers are denied access to a broader range of products and the European economy as a whole fails to experience better capital allocation and thus higher rates of growth.

### **White Paper to be published in 2007**

In order to improve this situation a white paper containing the planned regulatory measures is to be published in 2007. The form that these measures should take is still a bone of contention among those involved – mortgage lenders, national governments, consumer protection advocates, the European Commission and the European Parliament. The Commission itself divided its Green Paper of June 2005 into four sections – consumer protection, legal issues, collateral and refinancing. The section on refinancing was the shortest while the longest was on consumer protection.

### **Early redeemability of fixed-rate mortgages one of the issues**

In the consumer protection section the Commission addressed among other areas Europe's varied rules regarding the early redemption of fixed-rate mortgages. Whether these are to become the subject of legal regulation or freedom of contract is one question the Commission plans to answer at the start of the year along with the question of whether the banks are allowed to charge early repayment fees – possibly up to a statutory maximum amount.

### **Early repayment fees help banks manage interest rate risk**

By levying early repayment fees banks can protect themselves against reinvestment losses. These arise when the current interest rate for a new fixed-rate mortgage is lower than the contractually agreed interest rate of the old fixed-rate mortgage just redeemed. If in the case of matched-maturity funding of the original mortgage the bank did not charge an early repayment fee it would be saddled with a lower or negative margin on the new mortgage for the remainder of the fixed-rate period. In order to minimise this risk, expectations regarding the future behaviour of customers and future changes in the market would have to be factored into the refinancing. Such considerations make it more difficult for the bank to manage its interest rate risk. Early repayment fees, however, cover a potential loss on the new loan and enable the banks to close their interest risk position via matched-maturity refinancing.

Against that background this paper examines what consequences such regulatory measures would have for mortgage lending in Germany.

## **The European systems of real estate financing in brief**

### **The European market is fragmented along national lines**

**Supply-side and demand-side factors hampering European integration**

Mortgage lending in Europe has largely been conducted within national boundaries up until now. There is a variety of reasons for this:

Purchasing a property – and thus taking out a mortgage – represents the biggest and longest-lasting financial commitment that many households make. Customer confidence in the lender is therefore particularly important in the mortgage business.

Additionally, it is vital for lenders that they have good knowledge of the relevant regional property market and are highly skilled at analysing the ability of borrowers to repay their mortgages.

Finally, differing national traditions in the finance sector influence real estate financing and above all the refinancing of mortgage loans. Contributory factors include, for example, the specific development of the Anglo-American financial system and the history of the Pfandbrief in Germany that stretches back more than 200 years. This brings with it highly divergent legal provisions in some cases.

### **Contractual arrangements and the legal framework differ from country to country**

The national peculiarities of property financing can be divided into two categories: the prevailing contractual arrangements and the legal framework. It should be noted that there is a variety of reciprocal influences between the former and the latter. Both cover numerous individual issues – ranging from loan-to-value-ratios and collateral right through to the process of property valuation, to name just a few.

### ***The lender and the borrower agree the length of the fixed-rate period***

**There are three types of interest rate arrangement**

The most important component of a mortgage contract, apart from the interest rate, is the length of the fixed-rate period. Essentially the choices open to the lender and the borrower are to agree on an interest rate that is either variable (also referred to as adjustable) or fixed for a given period, such as five or ten years. In turn there are two different types of fixed-rate mortgage: either with or without the option of early redeemability. Notwithstanding this, the contracting parties can agree special repayment options – for example, of up to a particular percentage of the mortgage amount per year. This option will be addressed only briefly below. Instead we shall focus on the dichotomy between redeemable and irredeemable loans.

### ***Early redeemability is subject to regulatory guidelines***

**Propensity to risk and rate change expectations determine preference for fixed or variable interest rates**

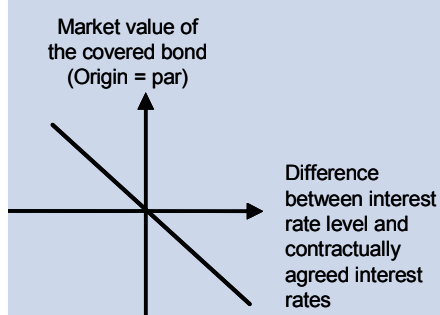
The first-level decision, i.e. between adjustable and fixed rates, is the product of the willingness to assume risk and the rate change expectations of the two contracting parties. The macroeconomic environment, including the level of inflation and above all its variability, is an important factor in the decision-making process. By contrast, regulatory provisions and the characteristics of the respective financial markets are the primary determinants of the availability of fixed-rate mortgages that can be redeemed early

### Mortgage loan refinancing in Denmark

Denmark's standard form of mortgage loan refinancing is unique. Every single mortgage loan is placed on the capital market as a collateralised bond. The mortgage loan and the bond have the same structure in terms of remaining time to maturity and interest rate. There are two types of bond: redeemable and irredeemable. In neither case is the early repayment risk retained by the lender.

In the first case the mortgage borrower (and bond debtor) has the right to make early redemption of the bond and pay back the nominal value. For this right, however, the borrower has to pay a yield premium which compensates the bond creditor for assuming the entire early redemption risk. The yield premium has amounted to between 20 and 80 basis points in the past and is currently around 30 basis points (see Danske Bank, 2006).

In the second case (see chart below) the borrowers can effectively redeem their mortgage by repurchasing the corresponding bond at its market price. This can be done at absolutely any time. The market price of the bonds is negatively linked to the interest rate level. When rates fall it rises and when rates rise it falls. The Danish system thus includes a quasi-automatic early repayment facility that can entail costs, that is for the borrower. If the borrower repurchases the bond as rates decline, he does have to pay a price that is higher than the nominal value, but he can then take out an alternative loan at lower rates. If he repurchases the bond while interest rates are rising, he can book a price gain, but he might then have to take out an alternative mortgage at a higher interest rate.



without incurring an early repayment fee. The size of the early repayment fees is also subject to regulatory and economic factors.

Table 1 on the following page gives a representative summary of the differing property financing systems in Europe and the US. The countries in which fixed-rate mortgages (F) predominate include Belgium, Denmark, Germany, France, the Netherlands and the US. In Greece, Spain, Italy, Finland and the UK, variable-rate mortgages (V) are more popular. For our purposes fixed-rate mortgages must have an interest rate that is fixed for a period of at least five years. Mortgages with a shorter fixed-rate period are regarded as having adjustable rates.

In all the countries surveyed borrowers have the opportunity to make early – i.e. before the fixed-rate period ends – repayment of some or all of the remaining mortgage. The size of the early repayment fee they have to pay, however, depends on the one hand on the regulatory guidelines and, on the other, the type of refinancing of the specific mortgage.

#### ***Differing restrictions apply to early repayment fees***

Government institutions structure their regulatory guidelines in differing ways in order to guide the charging of early repayment fees in the political direction they desire. Some of these rules are also based on voluntary self-regulation by the banks or on guidelines issued by ministries that are formally non-binding but which are largely observed. The main types of regulatory measure are:

- Setting of an upper limit (defined as a percentage of the outstanding mortgage amount or as a specific number of monthly interest payments).
- Laying down the cases in which early repayment fees cannot be charged, for instance in special cases (death, unemployment, change of residence), where repayment is made up to a certain limit (for example up to 10% of the mortgage amount) or when a particular time period has ended (for example the first ten years of the fixed-rate period).
- Definition of the loss for which a fee can be charged as well as of the method of calculating the loss. Guidelines like these exist in all countries where banks charge early repayment fees.

#### ***Refinancing makes the US and Denmark special cases***

The US and Denmark represent special cases inasmuch as they are not among the countries with more or less comprehensive regulation of the early redemption of fixed-rate mortgages. In the US and Denmark, fixed-rate mortgages can be redeemed early without state intervention being required. The reason is the way that mortgage loans are refinanced in these countries.

Banks in the US package a large proportion of their mortgage loans as residential mortgage backed securities (RMBS), thereby transferring the credit risk capital market investors. Under certain conditions (see “Mortgage loan refinancing in the US” box on p. 10) the latter can also acquire early repayment risk. By contrast, the Danish approach to refinancing property loans cannot be found anywhere else in the world. A detailed explanation can be found in the box “Mortgage loan refinancing in Denmark”. In both countries the main form of refinancing explains why the banks can offer fixed-rate mortgages that are redeemable at any time without charging early repayment fees.

Conversely, the economic rationale behind early repayment fees lies in the refinancing structures in those countries where they are charged.

Country	F/V	Early redeemability provision
Belgium	F	Early repayment fee may not exceed three months' interest payments.
Denmark	F	Implicit early repayment fee is the product of the market value of the bond that has to be repurchased.
Germany	F	Early repayment fee can only be charged during the first ten years of a fixed-rate mortgage. In addition there is case law (Federal Court of Justice rulings, German Civil Code reform) that limits early repayment fees or lays down how it is calculated.
Spain	V	Informal sector agreement limits early repayment fee to 2.5% of the mortgage amount. Central bank has set a ceiling of 4%.
France	F	A maximum of six months' interest payments or 3% of the outstanding mortgage amount. Early repayment fees cannot be charged if the early redemption is made due to death, involuntary redundancy or job-related relocation.
Italy	V	Informal agreement within the banking sector that early repayments should not exceed 5% of the principal.
Netherlands	F	A maximum of 10% of the mortgage amount can be repaid each year without an early repayment penalty. No early repayment fee is charged in cases of relocation or hardship as a sign of goodwill.
Finland	V	Lender can demand as compensation the difference in interest payments between the original contract rate and the current rate for new mortgages, applied to the remaining life of the mortgage. Individual agreements regarding early repayment are common.
UK	V	No definitive statutory limits, instead legal and regulatory case-by-case rulings.
US	F	No restrictions
		Explanation: V – majority of mortgage loans are variable rate (fixed rates for less than 5 years) / F – majority of mortgage loans are fixed rate (fixed rate period of at least 5 years)

Sources: ECB (2003): Structural Factors in the EU housing markets, Mercer Oliver Wyman (2003): Study on the Financial Integration of European Mortgage Markets, Köndgen (2006): Early Repayment of Long-Term Fixed-Rate Mortgages in Europe

1

**Lender has the right to insist on adherence to terms of loan agreement**

**The early redeemability of fixed-rate mortgages in Germany**

German law provides borrowers of fixed-rate mortgages with an ordinary right to terminate the agreement at the end of the fixed-rate period that can be agreed freely between the lender and borrower. Accordingly, the contracting parties can rule out early redeemability for the duration of the fixed-rate period, but for ten years at the longest. During this period the lender has the right to continuous observance of the terms of the mortgage agreement. If the borrower has a justified interest, however, early redemption is possible in accordance with Section 490(2) of the German Civil Code. A “justified interest” exists if the borrower wishes to sell the mortgaged property.

**The early repayment fee is a form of compensation**

Early termination does not however imply an end to the contractual obligations but means that the borrower makes early repayment of the contractually owed debt.

This forms the economic rationale for the early repayment fee: the borrower has to put the lender in the same position as he would have been if the mortgage had remained in force for the originally agreed period and interest had been paid on it. Early repayment fees in Germany are therefore not fines and nor are they fixed processing charges, but an economically based compensation payment.

After all, the bank can only invest the capital repaid by the debtor at the current market rate, but as a rule it has to continue servicing fixed-rate refinancing securities. Since early repayment only makes sense for the borrower when interest rates are falling, the rate achievable for new loans is closer to the refinancing rate or is even lower. The result is a narrowing of the margin and in the worst case a loss whose size depends on the difference between the interest rates and the length of the remaining contractual period. The early repayment fee compensates for this loss.

## Early redeemability and mortgage refinancing: The economic rationale behind early repayment fees

### Most households prefer fixed-rate mortgages

#### Fixed-rate mortgages are very popular

Fixed-rate mortgages are the rule in Germany. Traditionally they account for well over 50% of all mortgages. This does not mean, however, that adjustable-rate mortgages are uncommon or unavailable. Rather, consumers can weigh up the pros and cons of both types of mortgage and then select the best option for themselves. When interest rates are low, for example, an adjustable rate suits those households that expect their incomes to rise. The low interest rate level when the contract is signed allows them to take on relatively large commitments. Their strategy pays off if their interest payments do not increase faster than household income during periods of rising interest rates. Low and medium-income households in particular run the risk, however, that their incomes cannot keep pace with the rising interest payment burden.

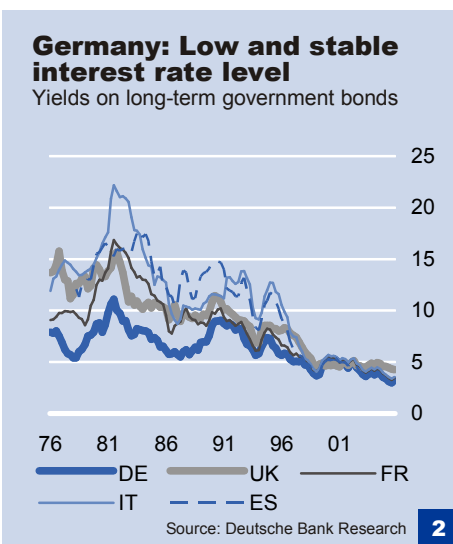
#### Adjustable-rate mortgages entail rate-change risk

The following simple example points out the general risk of adjustable-rate mortgages: when interest rates rise the cost of making interest payments and repaying the principal can become intolerable. Besides the development in income the other key determinant is the debt level. For many households, whose property financing represents their biggest ever economic decision, this is one major downside of adjustable-rate mortgages.

This is why the majority of mortgages taken out in Germany are of the fixed-rate variety, which offer medium and long-term predictability of monthly interest and principal repayments – as will be seen – on very good terms. The major role of fixed-rate mortgages also reflects Germany’s decades-long unusually low inflation rate, which has also fluctuated only slightly. The result has been low nominal rates that have varied relatively little. This made (and makes) fixed-rate mortgages equally attractive to borrowers and lenders. Against this background the high fixed-rate share in Germany should be regarded as an exception. In traditionally less stability-oriented countries adjustable-rate mortgages have tended to dominate. Since the euro introduction helped several of these countries to import stability and thus low inflation rates as well as interest rates, the interest in fixed-rate mortgages is also increasing there.

### Early redeemability of fixed-rate mortgages is an option

If after weighing up the pros and cons a borrower decides on a fixed-rate mortgage, early redeemability is an option – from an economic standpoint – which will be exercised as long as the option value is positive. On the one hand it allows the borrower to finance the property more cheaply when interest rates are falling, and on the



other, to reduce or completely pay off the debt should unforeseen extraneous events occur (invalidity, unemployment etc.). Since the exercising of the option generates a loss for the option writer, namely the lender, an option premium is charged. Depending on the refinancing method for the mortgage loan this option premium is written into the contract on an individual basis – as in most continental European countries – or it is determined by market forces – as in the US and Denmark.

**The calculation of early repayment fees in Germany**

**Specimen calculation of early repayment fee**

(Interest rate 4.25%, fixed-rate period 01/01/2001-31/12/2010, unscheduled repayment or redemption on 01/01/2005)

Interest rate	Unscheduled repayment or redemption									
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
4.25% (Contractually agreed interest rate)	Risk provisioning				Risk provisioning ceases from 2005					
	Administrative costs				Administrative costs cease from 2005					
	Bank interest margin				Interest margin damage					
3.50%					Reinvestment loss					
3.00%	Cost of funds									
2.50%	(Pfandbriefe,				Reinvestment rate from 2005 (3%)					
2.00%	bonds, etc.)				(Pfandbrief yields)					
1.50%										
1.00%										
0.50%										

Sources: Ellwanger&Geiger (2005), Finanzierungsnews, September 2005

3

**Interest margin damage and reinvestment loss**

To calculate the early repayment fee the loss accruing to the bank from the early redemption is split into its interest margin damage and reinvestment loss components. The latter is the difference between the bank's (fixed) refinancing costs (referred to as the cost of funds in the chart) and the current reinvestment rate, such as the current Pfandbrief yield. Interest margin damage is the net income forgone by the bank as a result of the early redemption of the mortgage. The net income is the difference between the gross income (agreed mortgage rate minus refinancing rate) and the risk and administrative costs saved. All figures for the remainder of the fixed-rate period are calculated and discounted to the date of the early redemption in order to calculate the early repayment fee.

Apart from this kind of fixed-rate mortgage – in which the lender has the right to payment of the contractually agreed amount – the freedom of contract of course allows the lender and borrower to agree mortgage contracts that allow for early redemption. The lender must, however, expect a higher interest rate as the banks have to factor the higher risk into their margin calculations. In practice such contracts usually do not include the right to make early redemption of the whole mortgage; it is more common that the borrower is granted a special repayment option – for example 10% of the loan principal per year.

### Refinancing options for fixed-rate mortgages

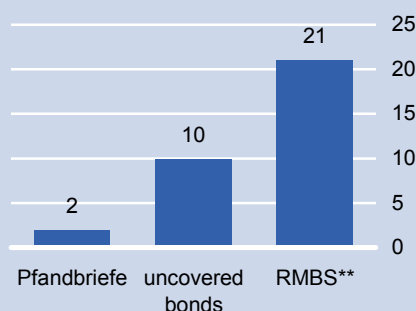
There are essentially three different ways of refinancing mortgage loans: deposit refinancing, via covered bonds – such as Pfandbriefe – as well as securitisation in the form of residential mortgage backed securities (RMBS).

We shall not go into deposit funding in any greater detail. Maturity and the type of interest repayment make the refunding of fixed-rate mortgages via deposit-taking complicated and therefore only attractive for a limited proportion of mortgage lending business. The placement of (covered) bonds is just as straightforward as the securitisation of mortgage loans. Both (covered) bonds and RMBS can be structured according to the maturity of the mortgages by which they are backed. If the maturities on the liabilities side of the bank's balance sheet cannot be fully matched with those on the asset side then derivatives are used to hedge the interest risk positions.

The chart provides a comparison of the asset swap spreads (ASW spreads) of Pfandbriefe, unsecured bonds issued by (AAA-rated) European financial institutions as well as German RMBS (also AAA rated). The low default risk makes Pfandbriefe the best capital market refinancing instrument from a macro-economic point of view. This macroeconomic statement does not however rule out the possibility that – depending on the framework conditions under which a bank operates – uncovered bonds in individual cases can be issued on more favourable terms than Pfandbriefe.

### Pfandbriefe are a very inexpensive refinancing instrument

(ASW Spreads\* in basis points)



\*The ASW (asset swap) spread stands for the isolated default risk of a capital market.

\*\*So far, the banks in Germany have mainly worked with synthetic RMBS, with the credit risk being transferred to the capital market but the loans not being taken off the balance sheet. Thus, RMBS of this type are not a refinancing instrument.

Source: Dt. Bundesbank, Monatsbericht März 2006

4

## Consequences of limiting or banning early repayment fees

### Banks will find it harder to manage interest rate risk

#### *Interest rate risk positions will have to be closed*

Regardless of how banks handle the early redeemability of fixed-rate mortgages, the general aim of interest rate risk management is to close risk positions. Ideally, a bank is able to match the maturity structure on the asset side of its balance sheet with the structure on the liability side. This is referred to as funding at matching maturities. Funding at matching maturities facilitates closing the interest risk positions. Any deviating from this policy creates interest risk positions which can jeopardise a bank's very existence if there are seriously adverse rate movements in the market.

The funding of mortgage loans at matching maturities is to be discussed in the following using Pfandbriefe (mortgage bonds) as an example. This type of funding is predicated on the possibility of transferring early repayment risk to the borrower by contractual agreement. Otherwise, there are two possible alternatives: first, the banks could fully transfer the option premium to all borrowers by raising interest rates accordingly. At present, depending on the method of estimation used, a rate increase of between 20 and 40 basis points would be likely. In the past the option premium has run to as high as 70 to 80 basis points.<sup>1</sup> Second, if the banks are unable to fully push through higher interest rates, their margins shrink and they become more vulnerable to crisis. Both variants will be discussed in greater detail in the following.

### The Pfandbrief segment would come under pressure

#### *Pfandbriefe guarantee low mortgage interest rates*

German banks refinance about one-fifth of their real estate lending business by issuing Pfandbriefe. The high credit rating of the latter is attributable to a host of legal specifications: Pfandbriefe are covered by appropriate loans for residential or commercial property, which in turn are backed by first-ranking mortgages as collateral. The covering assets are earmarked exclusively for duly servicing the Pfandbriefe, and in case the Pfandbrief bank becomes insolvent they are carved out of the bank's other assets. Moreover, as a rule the maximum loan-to-value (LTV) ratio of 60% represents a substantial over-collateralisation of the loans, which entails an over-coverage of the Pfandbriefe. This and numerous other rules are aimed at reducing the investment risk faced by Pfandbrief creditors to the greatest degree possible. The rating of the Pfandbrief is decoupled from that of the issuing bank. As a result the probability of default on a Pfandbrief is much lower than that on uncovered bonds. At the same time, the Pfandbrief segment is very liquid. This means the Pfandbrief issuers only have to concede their creditors a comparatively low risk and liquidity premium. The banks can pass on this refinancing advantage to borrowers. Therefore, mortgage loans refinanced with Pfandbriefe are very reasonable in price.

<sup>1</sup> See Dübel, A. (2005). Fixed-rate Mortgages and Prepayment in Europe. Berlin. [www.finpolconsult.de](http://www.finpolconsult.de) See also Dübel, A. & M. Lea (1997). Micro- and Macroeconomic Consequences of Residential Mortgage Prepayment. Schriftenreihe des Verbandes der Pfandbriefbanken. Band 8. Berlin and Danske Bank (2006). The Cost of the Prepayment Option. EMF Seminar on Fixed-Rate-Mortgages. [www.hypo.org](http://www.hypo.org).

## The Pfandbrief is only one of several refinancing instruments

### Mortgage loan refinancing in the US

Just like in Denmark, the most common type of homeowner loan in the US is the fixed-rate mortgage that can be redeemed at any time with no early repayment fee. Up until the 1970s the banks largely used deposits to refinance their mortgage loans, whose contractual life lasts 25 to 30 years as a rule. Since then, however, securitisation has become the predominant refinancing instrument.

In its simplest form, the securitisation of real estate loans means that a bank bundles its mortgage loans into one portfolio, converts this portfolio into marketable securities (residential mortgage backed securities, RMBS), and sells the latter to investors via a special-purpose vehicle. In this way, the loans are taken off the bank's balance sheet and the risks are transferred to capital market investors.

The securitisation process in the US actually has two further main characteristics: the predominant position of "government-sponsored enterprises" (GSE) and the splitting of RMBS into tranches according to the time of their repayment.

Most mortgage loans in the US are not securitised by the banks themselves, but by "Fannie Mae" (Federal National Mortgage Association) or "Freddie Mac" (Federal Home Loan Mortgage Corporation) after these institutions have purchased the mortgages from the banks.

The second major characteristic of real estate mortgage securitisation in the US is the splitting of RMBS into tranches according to the time of their repayment. The minimum number of tranches is two (e.g. "slow-paying" and "fast-paying"), with each having different repayment periods and different coupon rates accordingly. The issuer of the MBS makes payments in line with the repayments of interest and principal, first to the short-running tranche and then to the next longer tranche in the sequence. In this way, capital market investors fully assume the early repayment risk too.

## The Pfandbrief market would have to change

Early repayment fees are the prerequisite for Pfandbrief-based funding of fixed-rate mortgage loans at matching maturities. However, this does not mean that a cap on early repayment fees would make it impossible to continue this economically sensible way of refinancing mortgage loans – but it would change the conditions significantly.

Banks in Germany already fund only a limited portion of their real estate loans in Germany with Pfandbriefe. Other means of refinancing include deposits, the issuance of uncovered bonds and securitisation in the form of mortgage-backed securities (MBS). While Pfandbriefe are a very inexpensive refinancing instrument for fixed-rate mortgages, the strict legal regulations governing them confine their use to the financing of first-class mortgage loans with a low loan-to-value ratio. If the legal design of Pfandbriefe were modified, they could be used to finance first-class fixed-rate mortgages even if the early redemption fee were abolished. So legal limitations on early repayment fees would not sound the death knell for the mortgage-backed Pfandbrief, but would substantially alter this type of refinancing for real estate loans.

### (Re-)Introduction of redeemable Pfandbriefe?

A preliminary approach to handling the early repayment risk could be the introduction of redeemable Pfandbriefe, which used to be available in Germany until the 1970s. In this case, the banks pass through the early repayment risk to the capital market. To the extent that the borrowers serve notice to repay their fixed-rate mortgages when interest rates fall, the banks can also redeem the Pfandbriefe issued to refinance the loans. This eliminates the reinvestment risk.

### Should Pfandbriefe be split into tranches reflecting the risk of early repayment?

A further way of limiting or digesting the complete elimination of early repayment fees is to split up Pfandbriefe in tranches to reflect the respective risks of early repayment. This would bring the design of the Pfandbrief more in line with that of MBS. Issuing MBS is the main way of refinancing fixed-rate mortgages in the US (see box).

If the Pfandbriefe were issued in tranches they would have to be split into at least two classes (tranches). The Pfandbriefe of the first tranche would be paid back first (i.e. before the end of their maximum tenor), in keeping with the pace at which the fixed-rate mortgages are redeemed early. Not until all the Pfandbriefe of the first tranche had been paid back would further credit redemptions compel the bank to initiate advanced repayment of Pfandbriefe from the second tranche too. It is also possible to construct a further tranche which is not redeemable early so the risk of a change in the interest rate remains with the issuer. Investors can select the tranche desired depending on their investment horizon and their interest rate expectations. The early repayment risk would be transferred to the capital market – or more specifically, to the Pfandbrief creditors.

By doing this, one of the current differences between Pfandbriefe and MBS would be eradicated: MBS papers are usually collateralised by a set pool of claims on assets whose cash flow is used exclusively for debt service on MBS. By contrast, Pfandbriefe are covered by a dynamic pool, with new loans flowing in continually. Individual claims are not matched up with the Pfandbriefe and there is no direct relation between the cash flows of the loans covering



and those of the Pfandbriefe. This feature currently stands in the way of splitting Pfandbriefe into tranches according to loan redemption structures.

### ***The Pfandbrief segment would come under pressure as a popular asset class***

Such adjustments to the refinancing of Pfandbriefe would not, however, be able to keep the Pfandbrief segment from coming under pressure if restrictions were imposed on the right to demand early repayment fees. Pfandbriefe are a popular asset class not only in Germany. They are continuing to gain popularity in many other countries of Europe too. Institutional investors in particular like this form of bond where high liquidity is coupled with low risk. No matter how the Pfandbrief universe is broken up into different classes, this would invariably imply lower liquidity for each of these classes than enjoyed today by the homogeneous Pfandbrief universe – a fact which would be reflected in higher liquidity premia for the new instruments. Besides the strict legal requirements governing the cover pool the basis for investors' trust is the Pfandbrief's track record, which can be traced back for centuries, and the – related – well-developed infrastructure of this market (e.g. in the form of research capacities). Limitations on Pfandbrief refinancing would thus deprive capital market investors of an investment vehicle which obviously is very much in line with their risk-reward profiles.

### **Fixed-rate mortgages would grow less attractive**

Even if it were possible to refinance fixed-rate mortgages in Germany in such a way that this type of credit were to remain attractive despite restrictions or a complete ban on early repayment fees, it would make the funding of fixed-rate mortgages at matching maturities and thus the banks' management of interest rate risk a considerably more difficult task. The banks would have to undertake additional efforts to close their interest rate risk positions. As a consequence they would be compelled to pass on this refinancing disadvantage to their customers in the form of higher interest rates. The relative attractiveness of fixed-rate mortgages would thus decline. This means that the large proportion of fixed-rate mortgages in all real estate financing in Germany would decrease.

### **Product variety would decline**

Many borrowers seek long-term predictability in their interest and loan redemption payments (which, of course, they also want to keep to a minimum). As shown, however, the combination of low interest rates and fixed rate schedules is not possible without early repayment fees. If charging such fees were limited by law, the banks could no longer offer these customers a product that satisfies their preferences. The product range would be cut back. This means the European Commission would miss one of its central targets – increasing product variety in the national mortgage lending markets.

### **Adequate pricing of early repayment risk would scarcely be possible**

As discussed above, the early redeemability of fixed-rate mortgages is an option for which a price, an option premium, has to be paid. If the banks can only charge limited early repayment fees, or none at all, it becomes impossible to charge the option premium (whether entirely or in part) to those who exercise the option. Instead, the banks have to factor the costs of early repayment into the general pricing structure of real estate loans. At the end of the day, all

**Complicated interest rate risk management raises the price of fixed-rate mortgages**

**Popular product in jeopardy**

**All consumers would have to pay for the wishes of a few**

borrowers will have to pay for an option which only a few would like to use. As discussed above, the interest rates for mortgage loans would have to rise by 20 to 80 basis points. The upshot is that consumer policy action focused on achieving the early redeemability of fixed-rate mortgages would have a severely harmful impact on most consumers.

### **Large share of fixed-rate mortgages has stabilising effect on economic activity**

#### ***Large share of fixed-rate mortgages damps fluctuations in income...***

**Adjustable-rate mortgages step up correlation between interest rate level and disposable income**

A comparatively large share of fixed-rate mortgages in all mortgage lending damps fluctuations in economic activity. Fixed-rate mortgages ensure that short and medium-term fluctuations in interest rates do not spill over and cause fluctuations in interest payments and thus disposable income. Hence, spending on private consumption is not as subject to fluctuations as it would be if a larger proportion of mortgage loans had adjustable rates.

**Equity withdrawals reinforce this mechanism**

If adjustable-rate mortgages are allowed, the effect of interest rate fluctuations increases in cases where people also have the option of equity withdrawals. Equity withdrawals enable households to raise their mortgage and use the resultant extra credit for consumption expenditures. This option can be exploited in times of falling interest rates if the monthly interest burden falls and households are therefore able to afford an increase in the size of their mortgage. When fixed-rate mortgages cannot be paid back early without penalty this option is not possible, because in this case the interest burden cannot be lowered during the fixed-rate period.

**Correlation between interest burden and house prices**

#### ***... as well as house prices...***

If most mortgage loans are based on adjustable rates, not only disposable incomes but also house prices will fluctuate more strongly in tandem with the interest rate level. When interest rates decline, households with a given income can at least temporarily afford to take up more credit – as long as interest rates stay at a low level or in fact decline further. The solvency of those in the market to buy real estate rises, and demand rises in turn. Since real estate supply cannot adapt in the short term, the rise in demand results in higher house prices. Just the opposite is true when interest rates fall: households' interest burden increases. Some households who have already arranged real estate financing may no longer be able to service their debt and may have to sell their property. The supply of real estate on the market rises. At the same time, households entering the market can afford only relatively small loans. This weighs on demand. In the light of this combination, rising interest rates lead to falling house prices. In other words, when mortgages are mainly based on adjustable rates, house prices fall more quickly when interest rates rise, and rise more quickly when interest rates fall.

#### ***... and thus facilitates the work of the central bank***

It is very difficult for central banks to extend their reach beyond consumer prices and also influence asset prices. Via the so-called wealth effect, asset price fluctuations can change consumer demand, so indirectly they can also affect consumer prices. Since real estate is one of the most important asset classes, there is a strong correlation between house prices and consumer prices. A large share of fixed-rate mortgages in real estate financing – and

**Spain: Low interest rates feed house price boom**

thus smaller fluctuations in house prices – reduces this correlation and makes it easier for the central bank to concentrate on the development of consumer prices.<sup>2</sup>

An example of this problem can be seen in the Spanish real estate market. As part of the Maastricht process Spain imported falling interest rates from the mid-1990s; eventually, nominal rates hit historic lows when the country acceded to the euro area in 1999. Spanish consumers reacted partly by rushing into residential building loans and refinancing them at constantly more favourable conditions. This drove the economic upswing in Spain through the channels described above, but at the same time it has nourished doubts about the sustainability of house price and economic developments there. Many indicators point to overheating and thus instability in the real estate market.<sup>3</sup> The key question now is how orderly the transition to an environment of rising interest rates will be. If households cut back their spending during a period of rising interest rates and falling or at least stagnating house prices to the same degree as they boosted spending hitherto, the Spanish real estate market and economy stand to suffer substantial setbacks. The British property crises in the early 1980s and early 1990s (see box) can serve as a warning.

**But there are two sides to this coin**

So far, the positive effects of the preponderance of fixed-rate mortgages alone were the focus of our deliberations. While they help prevent overly strong fluctuations in disposable income and house prices and thus instability, they also make it difficult for private consumption to gain breadth during a recession – when interest rates are low – because the stimulating effect of low rates and – given the equity withdrawal option – higher mortgages can only feed through marginally to disposable income.

So, ultimately, assessments of the effect of fixed-rate mortgages on the economy hinge on the fundamental attitude towards economic fluctuations. A more or less stability-oriented approach that attaches priority to constancy has to accept a damping of stimulating effects in times of recession or stagnation. A less modest perspective which holds the expansionary effects of adjustable-rate mortgages in high esteem has to tolerate an overshooting of disposable income and house prices to the upside and to the downside.

**Positive effects on financial stability**

Reasons of financial stability make a major case for stressing the damping effect of fixed-rate mortgages on economic activity:

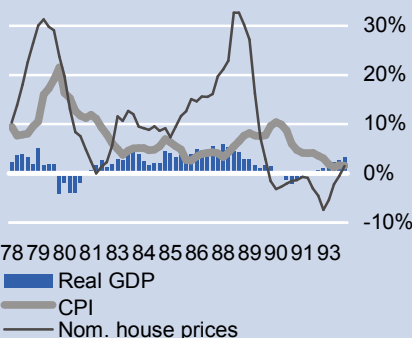
If fixed-rate mortgages were less attractive because of the option premium, many low-income households could be tempted to take out adjustable-rate mortgages at times when interest rates are low. Rising interest rates would harbour the risk that many of these households could start to have payment difficulties. An increasing share of adjustable-rate mortgages means that the overall level of credit risk will tend to rise. At the same time, though, early repayment risk will decrease. When real estate is largely financed with fixed-rate instruments the opposite is true: credit risk is comparative-

**House price crises in the UK in the early 1980s and 1990s**

During periods of falling interest rates in the second half of the 1970s and 1980s, respectively, the UK experienced house price bubbles that burst in each of the subsequent decades as interest rates leapt skyward. In both cases, the increases in house prices were followed within a few quarters by increases in consumer prices. Similarly, the bursting of the bubble was followed by a recession.

**UK: Recession follows house price inflation**

(% yoy, real GDP, nom. house prices, CPI)



Source: Deutsche Bank Research **5**

<sup>2</sup> See Bean, Ch. (2003). Asset prices, financial imbalances and monetary policy - are inflation targets enough? BIS Working Paper 140. September 2003. See also Zhu, H. (2003). The importance of property markets for monetary policy and financial stability. BIS Papers 21. December 2003.  
<sup>3</sup> See Deutsche Bank Global Markets Research (2005). Spain – ready for the housing adjustment.

**Banks: without early repayment fees, margins could be squeezed**

ly low, whereas early repayment risk is high – at least as long as early redemption is not excluded by contractual arrangements or may be recouped by charging an early repayment fee.

If the banks are no longer permitted to charge a fee for early repayment, or only with tight limitations, and the early repayment risk cannot be passed on fully to capital market investors, they will have to raise the rates of all fixed-rate mortgage loans, as discussed above. However, they will not necessarily be able to push them through in the face of strong competitive pressures. In this case the margins would not be risk adequate. This would weigh heavily on bank earnings, particularly in times of falling interest rates and as a result of increases in early redemptions. The stability of the financial sector would suffer.

## Summary and outlook

In its efforts to integrate the European mortgage credit markets the European Commission runs the risk of setting the wrong tone. Therefore, the measures discussed in its Green Paper of 2005 – with a clear emphasis on consumer protection – should, in their current form, not become part of the White Paper announced for next year.

This is particularly true for arrangements pertaining to the early redeemability of fixed-rate mortgages. The system currently applicable in Germany is based on the principle of freedom of contract; there is minimal scope for legal intervention. Consumers may select from a broad assortment of loans with differing fixed-rate periods and differing early repayment rights. If they should like to repay a loan partially or fully before the fixed-rate period is over, the banks charge an early repayment fee with which they cover their reinvestment loss. If legal regulations prevent them from doing so, the banks will face much greater difficulties in managing their interest rate risk. They will have to pass on the related costs to their customers. This report has illustrated the problem in a discussion of funding at matching maturities based on Pfandbriefe.

Regulatory intervention aimed at limiting the right of banks to charge early repayment fees would not mean the end of the fixed-rate mortgage as such. Nevertheless, it would entail far-reaching changes for the refinancing of banks and for mortgage lending in Germany. The share of new refinancing instruments such as RMBS would have to be expanded, and Pfandbrief refinancing would have to be adapted by introducing adjustable-rate Pfandbriefe or Pfandbriefe issued in tranches according to early repayment risk. The liquidity of the Pfandbrief market, which was successfully increased just recently by the introduction of the jumbo Pfandbrief, would be cut back. Even if the necessary changes in the Pfandbrief market were crowned with success, fixed-rate mortgages would become more expensive in any event and thus less attractive. There would be no way to maintain the combination popular with consumers of long-term predictability of their interest burden and relatively low interest rates. The European Commission would thus miss one of its key objectives: to broaden the product spectrum in mortgage loan business. In fact it would – involuntarily – limit the options available to borrowers. At the end of the day all consumers would have to pay for an option (early redeemability of their fixed-rate mortgages) which only a small fraction of consumers would like to have.

Furthermore, a large share of fixed-rate mortgages entails a string of other economic advantages – from an increase in GDP growth and the damping of cyclical fluctuations through to the securing of financial stability. Here, too, a limitation of early repayment fees would have negative consequences.

Especially in an area such as real estate financing, “well meant” is not exactly or necessarily the same as “well executed”. Consumer-policy-motivated action may turn out to have the most severe impact on consumers themselves. So instead of intervening directly in the product range, the Commission would be better advised to create the prerequisites for an evolutionary integration of mortgage lending in Europe that is driven by market forces. To do so, it should first and foremost make it easier to refinance real estate loans on a European scale and, to give just one example, foster the development of an European RMBS market.

Stefan Schäfer (+49 69 910-31832, [stefan-a.schaefer@db.com](mailto:stefan-a.schaefer@db.com))

EU asset management – Towards the creation of a single market in Europe Financial Market Special, No. 37 .....	June 8, 2006
Early repayment of fixed-rate mortgages: There is no free lunch Financial Market Special, No. 36 .....	July 7, 2006
EU retail banking – Drivers for the emergence of cross-border business Financial Market Special, No. 34 .....	April 7, 2006
Foreign earnings of European banks: Unity in diversity Financial Market Special, No. 31 .....	January 30, 2006
Transatlantic financial market integration: Ambition needed Financial Market Special, No. 29 .....	November 29, 2005
Payments in Europe: Getting it right Financial Market Special, No. 27 .....	August 29, 2005
EU Savings Tax Directive is close to the finish line Financial Market Special, No. 25 .....	May 19, 2005
Post-FSAP agenda: Window of opportunity to complete financial market integration Financial Market Special, No. 24 .....	May 6, 2005

All our publications can be accessed, free of charge, on our website [www.dbresearch.com](http://www.dbresearch.com)  
You can also register there to receive our publications regularly by e-mail.

#### Ordering address for the print version:

Deutsche Bank Research  
Marketing  
60262 Frankfurt am Main  
Fax: +49 69 910-31877  
E-mail: [marketing.dbr@db.com](mailto:marketing.dbr@db.com)

© Copyright 2006. Deutsche Bank AG, DB Research, D-60262 Frankfurt am Main, Germany. All rights reserved. When quoting please cite "Deutsche Bank Research".

The above information does not constitute the provision of investment advice. Any views expressed reflect the current views of the author, which do not necessarily correspond to the opinions of Deutsche Bank AG or its affiliates. Opinions expressed may change without notice. Opinions expressed may differ from views set out in other documents, including research, published by Deutsche Bank. The above information is provided for informational purposes only and without any obligation, whether contractual or otherwise. No warranty or representation is made as to the correctness, completeness and accuracy of the information given or the assessments made.

In the United States this information is approved and/or distributed by Deutsche Bank Securities Inc., a member of the NYSE, the NASD, NFA and SIPC. In Germany this information is approved and/or communicated by Deutsche Bank AG Frankfurt, authorised by Bundesanstalt für Finanzdienstleistungsaufsicht. In the United Kingdom this information is approved and/or communicated by Deutsche Bank AG London, a member of the London Stock Exchange regulated by the Financial Services Authority for the conduct of investment business in the UK. This information is distributed in Hong Kong by Deutsche Bank AG, Hong Kong Branch, in Korea by Deutsche Securities Korea Co. and in Singapore by Deutsche Bank AG, Singapore Branch. In Japan this information is approved and/or distributed by Deutsche Securities Limited, Tokyo Branch. In Australia, retail clients should obtain a copy of a Product Disclosure Statement (PDS) relating to any financial product referred to in this report and consider the PDS before making any decision about whether to acquire the product.

Printed by: Druck- und Verlagshaus Zarbock GmbH und Co. KG