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# The covered bond market[1]

*The covered bond market offers investors an alternative to developed country government securities. The valuation of covered bonds is complex. While there is some evidence of differences in the pricing of these bonds by nationality of issuer, these appear to be only weakly related to differences in the respective legislative frameworks. Recent cases show the pricing of covered bonds to be robust to idiosyncratic shocks to issuer credit risk as well as more systemic shocks to the value of cover pools.*

*JEL classification: G11, G12, G15.*

Over the past decade covered bonds, or securities issued by financial institutions that are secured by dedicated collateral, have become one of the largest asset classes in the European bond market and an important source of finance for mortgage lending. The collateral, or "cover pool", is usually put together so as to obtain the highest possible triple-A credit rating. As a consequence, covered bonds offer an alternative to developed country government securities for bond investors interested in only the most highly rated securities.

Drawing on the BIS international debt securities statistics and other data sources, this feature analyses the recent evolution of the covered bond market. Exploring the main issues involved in assessing the risk of covered bonds, the feature also documents significant divergences among the major rating agencies. An examination of the determinants of covered bond prices suggests that, while the nationality of the issuer matters, the related differences are generally small. At the same time, event study analysis of selected cases finds that the valuation of covered bonds in recent years has been rather robust to shocks to both issuer creditworthiness and the value of the underlying collateral.

## What are covered bonds?

Dual nature of protection …

The defining feature of covered bonds is the dual nature of protection offered to investors. Covered bonds are issued by financial institutions, mostly banks,

[1] The views expressed in this article are those of the authors and do not necessarily reflect those of the BIS.

## Structured covered bonds

In recent years, mortgage lenders have increasingly turned to arrangements from structured finance to replicate features of traditional covered bonds. In many cases, this was motivated by the wish to issue covered bonds in countries lacking special legislation, such as the United Kingdom (where legislation was introduced earlier this year but had not been implemented at the time of writing), the Netherlands and the United States. In other cases, issuers resident in countries with covered bond legislation have issued outside the legal framework in order to obtain more flexibility, eg in terms of the assets entering the cover pools.

Like conventional covered bonds, structured issues offer investors recourse on the bond's issuer as well as on a special collateral pool. However, they achieve this through contractual arrangements involving a special purpose vehicle rather than through legislation. Rating agencies, in particular, play an important role in monitoring whether the contracted requirements are met.

There are two models of structured covered bonds. In the first model, used by UK and Dutch banks, the assets are held by a special purpose vehicle, which guarantees the bond issued by the originating bank. A slightly different model has been adopted by banks in the United States as well as by the French bank BNP Paribas. In this model, the bond is not issued by the bank that originated the mortgages but by a subsidiary, which then lends the funds to the parent. This loan is guaranteed by the cover assets, which remain on the parent's balance sheet. In case of insolvency of the parent, the issuer takes possession of the cover assets and continues to serve the bond.

which are liable for their repayment. They are also backed by a special pool of collateral – mostly high-grade mortgages or loans to the public sector – on which investors have a priority claim (see below). In the European Union, covered bonds are further defined by the Capital Requirements Directive (CRD), which limits the range of accepted collateral to debts of (highly rated) public entities, residential, commercial and ship mortgage loans with a maximum loan-to-value ratio of 80% (residential) or 60% (commercial), and bank debt or mortgage-backed securities (MBSs). While the CRD only recognises securities issued under special legislation as covered bonds, market participants tend to work with a more general definition that also includes bonds issued under private contractual arrangements using elements from structured finance. There have been a number of such "structured covered bonds" (see box), primarily in countries without covered bond legislation (eg the United Kingdom, the Netherlands and the United States).

… distinguishes covered bonds from other instruments

The dual nature of protection offered by covered bonds sets them apart from both senior unsecured debt and asset-backed securities (ABSs). The fact that they are secured by a collateral pool in addition to the issuer's creditworthiness results in a higher rating than "plain vanilla" bank bonds. In contrast to ABSs, the cover pool serves mainly as credit enhancement and not as a means to obtain exposure to the underlying assets. Cover pools tend to be dynamic in the sense that issuers are allowed to replace assets that have either lost some quality or have been repaid early. Unlike ABSs, which tend to have floating rates and where defaults and early repayments are usually fully passed through to investors, covered bonds generally pay fixed rates and have bullet maturities (Table 1).

Covered bonds, in particular the very large issues known as jumbos, also differ from ABSs in that they often trade in a liquid secondary market. Jumbos are issued on a regular basis and their liquidity is ensured by strict market-

| Main characteristics of covered bonds and asset-backed securities | | |
|---|---|---|
| | Covered bonds | Asset-backed securities |
| Motivation of issuer | Refinancing | Risk reduction, regulatory arbitrage, refinancing |
| Who issues | Generally originator of loans | Special entity |
| Recourse on originator | Yes | Generally no |
| Structure | Assets generally remain on balance sheet, but are identified as belonging to cover pool | Assets are transferred to special entity |
| Impact on issuer's capital requirements | None | Reduction |
| Legal restrictions on issuer or eligible collateral | Yes (if issued under covered bond legislation) | Generally none |
| Management of asset pool | Generally dynamic | Predominantly static |
| Transparency of asset pool to investors | Limited (but quality regularly controlled by trustees or rating agencies) | Generally high |
| Prepayment of assets | No pass-through as assets are replaced | Generally full pass-through |
| Tranching | None | Common |
| Coupon | Predominantly fixed | Predominantly floating |

Table 1

making requirements. All these features suggest that covered bonds are seen not so much as an instrument to obtain exposure to credit risk, but rather as a higher-yielding alternative to government securities. In this respect, they are perhaps more comparable to the bonds issued by state-owned development banks such as KfW Bankengruppe or multilateral institutions such as the European Investment Bank.

## Market profile

Rapid growth in market size …

Both the issuance and amounts outstanding of covered bonds have grown considerably since the mid-1990s. Announced issuance of covered bonds has increased from less than €100 billion in the mid-1990s to over €350 billion in 2006 (Graph 1). In mid-2007, the outstanding amount of covered bonds reached €1.7 trillion.

… as more countries introduce covered bond legislation

The geographical scope of covered bond issuance has broadened considerably over the past 10 years. For a long time, covered bonds were issued primarily in Germany (Pfandbriefe) and Denmark (realkreditobligationer). Pfandbriefe were also issued in Switzerland and Austria, albeit in much smaller amounts than in Germany. It was not until the mid-1990s that covered bond legislation was introduced in other countries, thus opening the way to the internationalisation of the market. At the time of writing, more than 20 European countries had enacted covered bond laws or were planning to do so in the immediate future.

In several of these countries, the enactment of legislation was followed by sizeable issuance. Although German institutions remained the primary issuers

of covered bonds in the first half of 2007 (€86 billion on an annualised basis), substantial issuance also took place in several other countries. For example, Spanish banks issued covered bonds to the value of €64 billion, while French issuance amounted to €53 billion (Graph 1). As a consequence, the share of German Pfandbriefe in total amounts outstanding fell from 80% in 2001 to less than one half in mid-2007.

Decline in German issuance

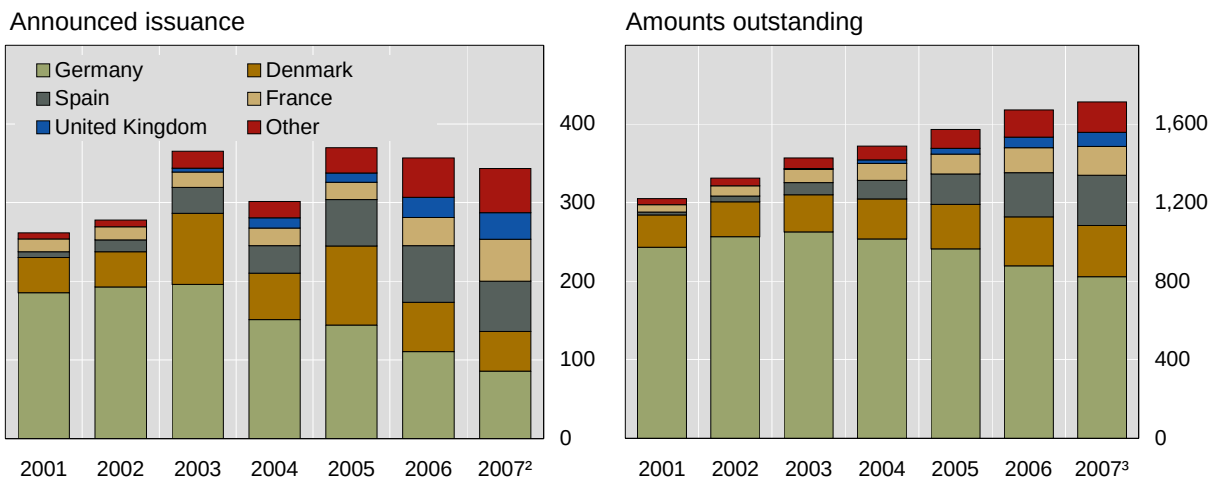
Contrasting with the rapid growth in other countries, issuance in Germany has fallen considerably after peaking at €200 billion in 2003. In part, this might be due to public entities increasingly raising funds in the bond market directly, thus bypassing Pfandbrief banks. In addition, the gradual withdrawal of public guarantees to public banks since 2005 has also reduced the volume of eligible collateral, since debt by these banks had constituted an important part of the cover pool of public Pfandbriefe.

Investor base

The structural differences between covered bonds and ABSs are reflected in distinct investor bases. Banks are the main investors in covered bonds, absorbing just under one half of all issuance in the primary market,[2] whereas almost one half of total ABS issuance is picked up by conduits and structured investment vehicles, with banks taking up less than one quarter (Graph 2). Accessing a different investor base is certainly one of the motivations for banks to issue covered bonds, in particular in countries where the alternative of issuing MBSs is readily available.

## Issuance of covered bonds[1]

By residence of borrowers, in billions of euros



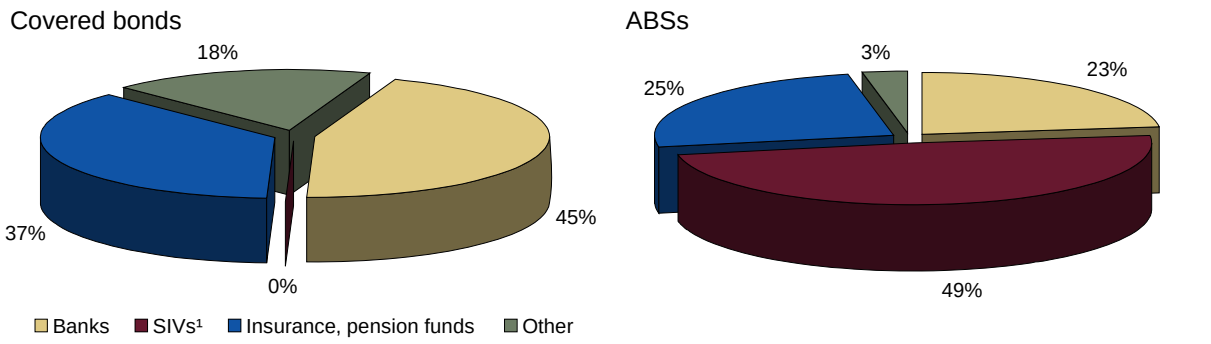

[1] As reported by Dealogic and Realkreditrådet. [2] Annualised, based on issuance up to end-June 2007. [3] As of end-June 2007.Sources: Dealogic; Realkreditraadet; BIS.

Graph 1

[2] In part, this may also be due to the favourable regulatory treatment of covered bonds. Under Basel I, triple-A rated covered bonds have a 10% risk weight in most countries, compared to 50% for residential MBS tranches with the same rating. This difference is expected to narrow under Basel II. See Fitch Ratings (2006b), Barclays (2007) and Deutsche Bank (2007).

## Investors in covered bonds and ABSs

Purchases in the primary market by investor type, in per cent




¹ Structured investment vehicles.

Source: Barclays (2007). Graph 2

## Issues in the risk assessment of covered bonds

Difficulties in assessing ...

Assessing the risk of covered bonds is not straightforward. In principle, the price of a covered bond should be higher than that of unsecured debt of the same issuer due to the presence of the cover pool. Similarly, it should also be higher than that paid on an ABS with the same underlying collateral given the recourse on the issuer, the absence of prepayment risk and the replacement of non-performing loans from the cover pool. The difference between the prices of covered bonds and other instruments of the same issuer should be higher if the defaults of the borrower and the value of the cover pool are little correlated, and lower if they are perfectly correlated.

The key question when valuing covered bonds is whether or not the cover pool will retain its value in the event of the bankruptcy of the originator. In principle, the insolvency of the originator could endanger the creditworthiness of covered bonds through two channels. First, the credit quality of the assets in the cover pool could deteriorate. Second, even if the cover assets retain their value, creditors of the originator could attempt to seize these assets in order to satisfy their claims. The covered bond legislation and contractual arrangements in place attempt to deal with both threats to the viability of the cover pool by imposing minimum standards for asset quality and by ensuring the bankruptcy remoteness of the cover pool.

Legislative frameworks tend to apply limits on the loan-to-value ratio (LTV) of mortgage loans as well as geographical and, in some cases, rating restrictions for public entities to ensure a high quality of the cover assets.[3] These are sometimes complemented by mandatory stress tests. Such tests are also used by rating agencies to ensure the creditworthiness of the cover pool of bonds issued both inside and outside a legislative framework.

[3] Covered bond legislation generally imposes an 80% cap on LTVs of mortgages on residential and 60% on commercial property, although some countries have tighter standards (Table 2). In most jurisdictions, larger loans might be granted, but the proportion in excess of the maximum LTV does not count as part of the cover pool. Public sector exposures are usually limited to highly rated industrial countries.

## Legislative frameworks in selected jurisdictions

| | France | Germany | Ireland | Italy | Luxem-bourg | Portugal | Spain |
|---|---|---|---|---|---|---|---|
| Name of instrument | Obligations foncières | Hypotheken-pfandbrief (HP)/Öffentli-cher Pfand-brief (ÖP) | Asset-covered securities | Obbligazioni bancarie garantite | Lettres de gage hypo-thécaire (LGH) ou publique (LGP) | Obrigações hipotecárias (OH) sobre o sector público (OP) | Cédulas hipotecarias (CH)/Cédulas territoriales (CT) |
| Specialist bank principle | Yes | No | Yes | No | Yes | No | No |
| Cover asssets[1] | m/p | HP: m<br>ÖP: p | m/p | m/p | LGH: m<br>LGP: p | OH: m<br>OP: p | CH: m<br>CT: p |
| Structure of cover assets | Registered, remain on balance sheet | Registered, remain on balance sheet | Registered, remain on balance sheet | Transferred to special entity | Registered, remain on balance sheet | Registered, remain on balance sheet | No desig-nated cover pool, all eligible assets serve as cover |
| Issuer | Specialised bank | Originator | Specialised bank | Originator (guaranteed by special entity) | Originator | Originator | Originator |
| Max LTV[2] | 80%/60% | 60%/60% | 75%/60% | 80%/60% | 60%/60% | 80%/60% | 80%/70% |
| Min collateral | 100% | 102% | 103%[3] | 110% | 100% | 105% | 111%[4] |
| Hedge protection[5] | Yes | Up to 12% of cover | Yes | Yes | Yes | Yes | No |
| Indepen-dent monitor of cover pool | Trustee appointed by regulator | Trustee appointed by regulator | Trustee appointed by issuer and approved by regulator | Special supervision by Bank of Italy | Trustee appointed by issuer and approved by regulator | Auditor appointed by issuer and registered at regulator | No |
| Bankruptcy remote-ness of cover pool | Cover assets segregated in case of insolvency | Cover assets segregated in case of insolvency | Cover assets segregated in case of insolvency | Special entity remote from insolvency of parent | Cover assets segregated in case of insolvency | Cover assets segregated in case of insolvency | No, but priority to all eligible assets on balance sheet |

[1] Main component of cover pool; m = mortgages, p = loans to the public sector. [2] Residential/commercial mortgages. [3] After proposed amendment. [4] Public assets: 142%. [5] Protection of hedging instruments in case of bankruptcy of originator.

Sources: Barclays (2007); Deutsche Bank (2007). Table 2

... the legal framework ...

Provisions aimed at ensuring the "bankruptcy remoteness" of the cover pool – ie its separation from any insolvency proceedings of the issuer – are an important part of covered bond legislation in any country (Table 2), as well as of the private arrangements underlying structured covered bonds. Under most legislative frameworks, the cover assets remain on the balance sheet of the

bank issuing the bond,[4] but are clearly identified as belonging to the cover pool. In the event of bankruptcy of the issuer, the cover assets are segregated from the remaining assets on the balance sheet and administered until the covered bonds become due.

There are two main exceptions to this general model: Spanish cédulas and Italian obbligazioni bancarie garantite. In Spain, cover assets remain on the balance sheet of the issuer but are not registered. In the event of bankruptcy, the bondholders have a preferential claim on all eligible assets on the issuer's balance sheet. In contrast to covered bonds issued in other jurisdictions, cédulas are accelerated, ie they are repaid early upon the insolvency of the issuer. However, the difference between Spanish legislation and that of other countries is likely to narrow: in late 2006 the Spanish ministry of finance presented a draft amendment to the legislation providing for the establishment of a cover registry, bringing the Spanish model more in line with those of other countries. The arrangements underlying Italian obbligazioni bancarie garantite (a different type of covered bonds is issued by Cassa Depositi e Prestiti) are close to those of the structured covered bonds issued by UK and Dutch banks in that assets are transferred to a special entity that guarantees the bond issued by the parent.

Beyond this broad framework, a series of finer points have to be addressed in order to ensure that the cover pool is effectively bankruptcy remote. For example, it has to be ensured that assets in the cover pool cannot be offset against any other claims that investors might have against the issuer.[5] Likewise, derivatives used to hedge interest rate risk arising from differences in duration between the bond and the cover assets have to remain in place even if the issuer has become insolvent.

### *Credit ratings and differences of opinion*

… reflected in different approaches by rating agencies

The bankruptcy remoteness of a cover pool has never been tested in court, for the simple reason that there appears to have been no failure of an issuer of covered bonds since the early 20th century.[6] The difficulty in assessing the risk of covered bonds is exemplified by the differences in rating methodologies and ratings of the three major international rating agencies.

Moody's "joint default" approach

Moody's Investors Service targets the expected loss on covered bonds using a "joint default" approach, whereby the risk of a covered bond is viewed fundamentally as a function of the probability of the default of the issuer and the losses (if any) on the cover pool in the event of issuer default (Moody's

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[4] The issuer might, but need not, be the originator of the assets. For example, French sociétés de crédit foncier or Irish designated credit institutions tend to belong to large bank groups and may purchase assets from their parent bank in order to refinance them with covered bonds.

[5] For this reason, exposures to borrowers in jurisdictions which do not recognise offsetting restrictions are usually limited either by legislation or by private contractual arrangements.

[6] In 1900, only one year after the seminal German Mortgage Law that unified and improved Pfandbrief legislation, three issuers incurred heavy losses following fraudulent trades by board members. One of the banks went bankrupt, while two others survived after Pfandbrief holders agreed to swap part of their bonds into equity (Born (1976), p 197).

Investors Service (2005)). One interesting aspect of the approach is that the estimated asset correlation of the issuer and cover pool can emerge as an important risk factor.

S&P's conditions for "delinking" ratings

Standard & Poor's approach focuses on conditions for "delinking" the covered bond rating from the senior unsecured issuer rating. In cases where the legal and regulatory framework ensures the servicing of covered bond obligations even after issuer default, and the issuer is capable of and committed to sufficient overcollateralisation levels, the covered bond rating can be effectively "delinked" from the issuer rating (Standard & Poor's (2004)).

Fitch's "discontinuity factor"

The Fitch Ratings methodology is also distinctive. It multiplies its estimates of the issuer default probability with a discontinuity factor, which depends on the perceived bankruptcy remoteness of the cover pool and other factors which could affect its value in the event of issuer default.[7] In subsequent steps, the rating is then adjusted depending on the result of a cash flow model-based stress test of the cover pool and on the estimated recovery value reflecting security features.

Different approaches result in differences of opinion

While publicly stated methodologies can mask common aspects and need not result in differences in ratings, there do in fact appear to be rather frequent differences among the agencies in the outcome of the rating process for covered bonds (Table 3). Despite the fact that many structured bonds have often been explicitly designed to obtain the highest possible triple-A rating, in around one quarter of the cases in which another opinion has been proffered, a lower rating has resulted. To be sure, differences of opinion are to some extent inevitable and healthy since they bring additional information and perspectives to the marketplace. An even greater frequency of disagreement has been documented for initial issue ratings of US corporate bonds with at least one triple-A rating (Cantor et al (1997)).

## Covered bond ratings

| | Number rated | % of (1) rated triple-A | % of (1) with multiple ratings | % of (3) with split ratings | % of (4) with issuer rating split in same direction |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| France | 520 | 100 | 73 | 1 | 75 |
| Germany | 8,872 | 96 | 54 | 26 | 12 |
| Ireland | 52 | 100 | 85 | 16 | 29 |
| Luxembourg | 145 | 99 | 30 | 2 | 100 |
| Spain | 147 | 85 | 63 | 12 | 55 |
| Other | 411 | 85 | 54 | 8 | 44 |
| Total | 10,147 | 95 | 55 | 23 | 13 |

Note: Only the ratings by Moody's Investors Service, Standard & Poor's and Fitch Ratings are used in the analysis.

Sources: Dealogic; BIS. Table 3

[7] In this context, Fitch takes into account the degree of asset segregation, liquidity gaps, the availability of alternative management and the covered bonds' oversight (Fitch Ratings (2006a)).

Disagreements over the creditworthiness of covered bonds appear to result primarily from differences of opinion concerning the protection offered by the cover and its structure rather than from different assessments of the risk associated with the issuer's default. Some researchers have documented a greater frequency of split ratings for banks than other issuers, attributing the result to the opacity of financial institution balance sheets (Morgan (2002)). Even so, only 13% of covered bonds with split ratings in our sample have split ratings of the original issuer (bank) in the same direction (Table 3).

The rapid growth of covered bonds in new and untested regional frameworks does not appear to have increased the tendency towards split ratings. In fact, ratings disagreements appear to be less frequent in the more recently emerging (and innovative) segments of structured bond issuance: the faster-growing markets of Spain and France, for instance, have relatively fewer split ratings (Table 3). By contrast, the largest share by far of split ratings is to be found in the most established covered bond market, that for German Pfandbriefe, which is also the market with the lowest average issuer rating.

## Evidence from spreads on covered bonds

Spreads on covered bonds ...

Due to their additional protection, covered bonds trade at significantly lower yields than senior, unsecured bonds of the same issuer. Matching the daily yields of more than 4,000 covered bonds with the Merrill Lynch Financial Institution Bond indices of the same rating class as the covered bond issuer, we find that the yields on covered bonds are lower by an average of 14, 42 and 91 basis points for issuers in the broad rating categories of AA (Aa), A and BBB (Baa), respectively.[8]

### *Cross-country differences*

The estimates presented above refer to sample means and do not take into account the notable differences that exist between the legislative frameworks of different countries (Table 2). Some preliminary evidence on whether cross-country differences in regulation (and other factors) affect the pricing of covered bonds can be obtained from a regression of covered bonds on country dummies as well as a set of control variables. The results of this exercise are shown in Graph 3.

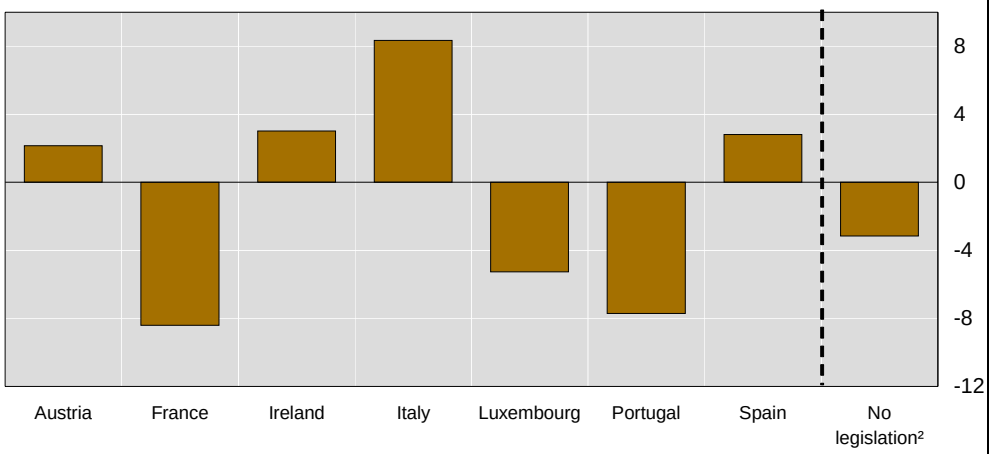
... driven by instrument characteristics ...

Many of the control variables are significant and for the most part have the expected sign. Spreads tend to rise with the maturity of the bond, as might be expected with an upwardly sloping curve for credit risk, although the effect diminishes for very large issues. Spreads decline with increases in amounts

[8] The value of the cover pool could be more precisely estimated by comparing the yield on covered bonds with that on senior unsecured bonds of the same issuer. In practice, however, this approach is not generally applicable as most covered bond issuers do not have any other bonds outstanding. It should also be noted that the above results do not imply that there is always a net benefit to firms in issuing covered bonds. As assets are dedicated to an issued bond, there is an effective increase in leverage since assets are effectively removed from the balance sheet. Because there are fewer assets on which existing (and future) debt and equity holders would have a claim in the event of bankruptcy, the total cost of capital might in some cases increase.

## Cross-country effects[1]

Spreads relative to German issues, in basis points




[1] The columns refer to the estimated coefficients of country dummy variables in a regression of daily spreads on hypothesised explanatory variables. The sample consists of covered bonds in the Dealogic database from January 2003 to June 2006. The coefficients on the country dummies represent differences relative to the German benchmark (all estimates are significant at the 1% level). The dependent variable is the spread of the covered bond yield over the euro Libor swap rate with the matching maturity. The estimated intercept is 1.3 basis points. Apart from the country dummies, the other explanatory variables are: the maturity (and maturity squared) of the bond, the issue amount outstanding, a dummy for whether or not the bond is a jumbo (denotes an issue with over €1 billion outstanding), dummies for the bond's credit rating, the difference between the issuer's rating and the bond rating, and a dummy for whether any of the ratings of the major rating agencies disagree. In order to abstract from exchange rate effects, only euro-denominated bonds are considered. [2] Covered bonds from the Netherlands, the United Kingdom and BNP Paribas. There is no legislation that directly applies to the issuance of these securities.

Sources: Dealogic; BIS. Graph 3

outstanding, consistent with higher liquidity for large issues. As expected, lower-rated issues trade at wider spreads than triple-A bonds. Somewhat surprisingly, disagreement between rating agencies appears to coincide with lower spreads, but at less than 1 basis point the estimated difference is not economically significant.

… more than differences in legal frameworks

While the regression results document differences in spreads according to the country of issuer, they appear to be only weakly related to the broad structure of the legislative framework on which the bonds are based. For instance, estimated country effects for countries where covered bonds can only be issued by specialist lenders are often very different from each other. While spreads on French obligations foncières are among the lowest, those on Irish asset-covered securities are slightly higher than those in most other countries. Another country whose bonds trade at somewhat higher spreads is Spain, perhaps because the legal framework does not ensure the same degree of bankruptcy remoteness of the cover pool. It will be interesting to see how spreads are affected if the recently proposed amendment to the Spanish legislation, in particular the establishment of a register for cover assets, is enacted.[9]

The results also suggest that it might be possible to substitute private contractual arrangements for the legal framework for covered bonds. Indeed,

[9] The low spreads for Portuguese bonds might be explained by a scarcity premium resulting from the small size of the market.

covered bonds structured so as to compensate for the lack of special legislation tend to trade at spreads that are lower than those of any country bar France and Portugal, although this might also be related to the fact that the issuers of such bonds tend to be large and well-known financial institutions.

*Recent case studies*

Covered bond prices robust to …

As covered bonds typically have the highest ratings, it is only natural that there have been relatively few instances in which the creditworthiness of covered bonds has been seriously challenged. However, at certain moments some bonds could conceivably have been at much greater risk of default, either from a sharp decline in issuer credit quality or from a deterioration in the value of the cover pool. By examining the changes in market yields around specific episodes, it can be determined whether investors indeed perceived a significant change in the credit quality of the relevant covered bonds.

… issuer downgrades …

In 2005, the credit standing of Allgemeine Hypothekenbank Rheinboden AG (AHBR), a German issuer of covered bonds with more than $55 billion of these bonds outstanding and once Germany's largest mortgage bank, fell sharply. On 17 March 2005, Moody's announced both a two-notch downgrade of the bank's long-term bank deposit rating to Baa3 and a downgrade of the financial strength rating (which reflects the issuer's credit quality without taking into account potential outside support) from C– to D–. On 25 October 2005, Moody's cut the bank's financial strength rating to E, indicating that outside assistance would probably be required to save it.

In order to examine the extent to which these announcements resulted in abnormal changes in yield (ie changes that are not due to broader market movements), we estimate a linear model that relates the daily yield of each of AHBR's covered bonds from 1 July 2004 to a period a few weeks before the downgrade date to changes in the yield of Merrill Lynch's AAA Bond Index, and the maturity and maturity-squared of each bond. With this model, yields are predicted for each bond surrounding the downgrade dates. These predicted yields are compared to the yields that actually unfolded over the time period.

These results suggest that the credit quality of covered bonds can be robust even to very pronounced declines in issuer creditworthiness. Around the 17 March 2005 announcement of multiple downgrades, no abnormal change in yields can be detected. And despite the further decline in the financial health of AHBR announced in late October 2005, the most that the covered bond spreads widened during the period was by about 14 basis points (Graph 4, left-hand panel).

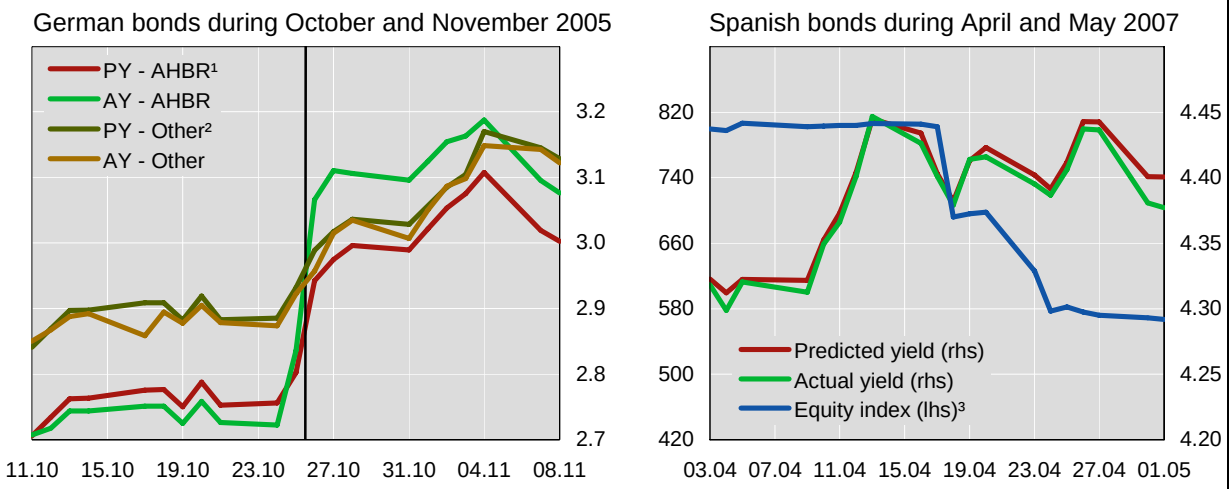
… and deterioration of the collateral pool

The same methodology can be applied when significant changes in the quality of the cover pool for covered bonds are perceived to have occurred. As mentioned previously, Spanish banks are frequent issuers of covered bonds. Since these bonds are usually covered by mortgages, any signs of stress in the Spanish real estate market might conceivably have led to a decline in the credit quality of the corresponding covered bonds.

In fact, following the same event study methodology described above, we find no evidence of significant abnormal changes in the yield of Spanish covered bonds around periods of stress in the Spanish real estate market. On

## Shocks to covered bond valuations

Yield in per cent




The vertical line in the left-hand panel marks the date of the AHBR downgrade.

¹ PY = predicted yield of AHBR; AY = actual yield. ² Predicted yield of other German covered bonds. ³ Dow Jones Spanish Real Estate Equity Index.

Sources: Bloomberg; Datastream; Dealogic; BIS. Graph 4

18 April 2007, the Dow Jones Spanish Real Estate Equity index fell by nearly 15%, reflecting investors' concerns about the outlook for the Spanish housing market. Equity prices continued to fall over the next week, and by 25 April 2007 the cumulative decline had reached almost 30%. But despite this significant decline, spreads on Spanish cédulas hipotecarias were not greatly affected (Graph 4, right-hand panel). This could be due to the creditworthiness of the issue, to the large degree of overcollateralisation of most bonds, or to investors' belief that the LTV ceilings on mortgage loans would protect them from a limited decline in housing prices.

## Conclusions

Covered bonds have developed from a national instrument to an important segment of the European bond market, competing with other highly rated securities such as sovereigns and sub-sovereigns. In 2006, covered bond issuance crossed the Atlantic when Washington Mutual sold the first US issue. What makes covered bonds special is the dual nature of protection that combines an obligation of the issuer with the added protection of dedicated collateral. However, assessing the value added by the cover pool is not straightforward. While both covered bond legislation and the contractual arrangements underlying structured issues contain numerous provisions to ensure that the cover assets retain their value in the event of the issuer's bankruptcy, few if any of these provisions have been tested in court.

An issue that has so far received only limited attention is how the availability of an instrument that allows banks to issue highly rated debt affects mortgage finance (CGFS (2006)). Covered bonds are long-term, fixed rate instruments and are therefore particularly suited to refinance fixed rate

mortgage loans. This is acknowledged, for example, by the UK Treasury, which motivated its recent draft covered bond legislation precisely with the need for instruments to refinance such loans.

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