
On the use of covered bonds as an alternative mortgage funding model for US banks

Received (in revised form): 15th July, 2009

Rita Biswas

is an associate professor in the Department of Finance at the University at Albany, State University of New York, USA. She received her PhD degree in finance from Texas A&M University. Rita's research interests are primarily in the area of international financial markets and banking. Her work has been published in various academic journals, including *Global Finance Journal*, *Journal of Financial Services Research*, *Review of Futures Markets*. She also serves as an associate editor for the *Journal of Business Research*.

David A. Buzen

is the Chief Financial Officer and Chief Operating Officer of CIFG Group, a monoline financial guaranty company. Prior to CIFG, David served as CFO of Churchill Financial Holding, an asset manager that originated senior and mezzanine loans funding through securitisation issuance. He also worked at DEPPA Bank, a major issuer utilising covered bonds for public sector collateral as a financing source. David began his career at AMBAC, after graduating from the University of Albany, and holds an MBA from New York University Stern School of Business.

Hany A. Shawky*

is Professor of Finance and Economics at the University at Albany, State University of New York, USA. He received his PhD degree in finance from the Ohio State University. Hany specialises in investment management and portfolio performance evaluation, and is widely published in academic and applied journals on issues dealing with asset pricing, stock market behaviour, international financial markets and electricity markets. He was recently listed among the 'Most Prolific Authors in the Finance Literature: 1959-2008'.

*Center for Institutional Investment Management, School of Business, University at Albany, Albany, NY 12222, USA
Tel: +1 518 4424921; E-mail: h.shawky@albany.edu

Abstract This paper highlights the salient features of covered bonds in relation to mortgage-backed securities, and argues for their introduction to the US market accompanied with the appropriate regulatory structure and oversight. The covered bond market has the potential to add significant stability to the banking system while becoming an important source of long-term funding for residential and commercial mortgage loans in the USA.

Keywords: covered bonds, mortgage funding, US banks

JEL Classification: G11, G12, G15, C63

INTRODUCTION

Discussions on the causes of the recent financial crisis have focused on mortgage funding. Massive credit expansion, particularly in the area of subprime

mortgages, played a significant role in prolonging the real estate bubble. From mid-2007, the value of financial products backed by subprime mortgages declined substantially, leading to heavy losses on

the part of banks and investors. Following the severe problems encountered with these financial products, it is critical for the industry to re-examine the future of mortgage funding. (A more detailed description and analysis of the recent financial crisis is beyond the scope of the present paper but can be found elsewhere.¹)

This paper examines covered bonds and contrasts their characteristics with mortgage-backed securities (MBS) and other structured securitised products. Common among these alternatives is the fact that they all facilitate the process of financing mortgages. However, these funding alternatives differ substantially with respect to risk transfer. While the credit risk remains with the bank refinancing via covered bonds, it is passed on to the investor in the case of MBS and structured securitised products. In mid-2007, serious problems with structured products backed by subprime mortgages put an abrupt stop to the boom in securitisation. False incentives, inadequate control mechanisms, shortcomings in the rating system and insufficient personal responsibility on the part of investors were the main criticisms aimed at securitisation practices. This paper argues that, if properly introduced to the US market, accompanied with the appropriate regulatory structure and oversight, covered bonds could become an important source of long-term funding for residential, commercial and public sector loans, and in the process, add a significant measure of stability and resilience to the banking sector.

Covered bonds have existed in Europe for centuries and are an important component of the global capital markets. Both the issuance and amounts outstanding of covered bonds have grown

considerably since the mid-1990s. The issuance of covered bonds has increased from less than €100bn in the mid-1990s to over €350bn in 2006. In mid-2007, the outstanding amount of covered bonds in Continental Europe reached €1.7trn. In short, the market for covered bonds is large, well established, and an important conduit used by banks to fund their loans. By pooling together a large number of smaller loans to back a larger bond, a covered bond is large enough and liquid enough to generate interest from large investment funds. In Europe, public sector covered bonds are commonly used in infrastructure finance and are an important investment vehicle for global investment funds and central banks.

Of course, the covered bond market has also been affected by the recent financial crisis. On 12th March, 2009, Bloomberg reported that covered bond sales had declined to their lowest level in more than a decade as government-guaranteed bank bonds had come into favour with investors.² It would seem that covered bonds have fallen victim to a crowding-out effect triggered by government-guaranteed issues designed to unfreeze credit markets. Investors' flight to safety has caused a significant widening of the yield spreads between covered bonds and government notes.

While municipal bond markets have been fairly successful in channelling private capital into financing public infrastructure, they have not been able to take advantage of the world's largest pools of capital that are available for infrastructure financing. By contrast, investors in Europe's public sector covered bonds come from a universe of roughly \$30trn held by central banks, sovereign funds and global pension funds.

European banks have been successful in incorporating infrastructure financing as a core part of their general banking activities. Notably, the loans for public–private partnership infrastructure projects like the Chicago Skyway, the Indiana Toll Road, the San Diego Toll Road and the Pocahontas Parkway in Virginia all came from European rather than US banks.

This paper proposes funding commercial and residential mortgages through the use of covered bonds as an alternative to the recently weakened MBS market. Moreover, as suggested by White, the current financial system has a natural element of ‘procyclicality’ and calls for the design of a new financial system which includes countercyclical elements to moderate the overall business cycle effects.³ To the extent that the structure of covered bonds inhibits banks from transferring risks and reduces their incentive for excessive risk-taking, it may contribute to moderating procyclicality in the banking industry.

From an institutional viewpoint, Fannie Mae and Freddie Mac carried the burden of financing the US mortgage market for over half a century. Backed by the full faith and credit of the US Government, these agencies were responsible for enhancing the liquidity of the mortgage sector by buying and securitising qualified mortgage loans originated by financial institutions. However, recent events have shown that the mortgage market has been severely stressed and must be redesigned. The use of covered bonds is likely to ease some of the burden borne by government agencies, and help restore confidence and stability to the US mortgage market.

This paper is organised in five sections. The next section introduces the

important features of covered bonds and contrasts them with MBS. The paper goes on to describe the recent US legislation introduced to promote use of the covered bond market in the USA, before providing a comparative analysis of alternative mortgage funding models and their potential impact on the stability and resilience of financial institutions and markets. The final section provides a brief summary and concluding remarks.

THE COVERED BOND MARKET DESIGN

Paker, Stever and Upper provide a detailed introduction to the covered bond market, which is used as the basis for this section.⁴

Covered bonds are securities issued by depository institutions that are backed by a special pool of collateral. The most distinguishing feature of covered bonds is the dual protection offered to investors. Investors buying covered bonds first have recourse to the cover pool and then have claims to the assets of the issuing bank. The cover pool serves mainly as a credit enhancement feature for the covered bond. The cover pools are mandated to be dynamically managed and issuers are required to replace assets that have either declined in quality or have been repaid early.

The liquidity of covered bonds is ensured by strict market-structured covered bonds legislation. In recent years, mortgage lenders have increasingly turned to special arrangements used in structured finance to replicate features of traditional covered bonds. In many cases, this was motivated by the desire to issue covered bonds in countries lacking special legislation, such as the UK (where legislation was introduced in early 2008), the Netherlands and the USA (where a

Table 1: Weighted average geographical distribution of cover assets

	Country total (%)	PS pools (%)	MO pools (%)
Germany	34.9	59.9	17.2
UK	17.8	1.1	29.6
Spain	14.4	4.0	21.9
France	10.1	9.2	10.8
Italy	4.3	7.2	2.3
USA	3.0	3.4	2.7
Netherlands	2.6	0.8	3.9
Norway	1.7	0.0	2.9
Portugal	1.6	0.8	2.2
Canada	1.5	0.9	1.9
Austria	1.2	2.8	0.1
Ireland	1.2	0.2	2.0
Switzerland	1.1	2.2	0.2
Greece	1.4	1.7	1.1
Other	3.2	6.0	1.2

Source: Fitch Ratings (2009) 'Comparative Study of Covered Bonds 2008/09'

policy statement was issued in July 2008). Table 1 shows the weighted average distribution of covered assets around the world. While Germany dominates the public sector pools (59.9 per cent), the UK has the largest percentage (29.6 per cent) of all outstanding mortgage pools.

Like conventional covered bonds, structured issues offer investors recourse on the bond 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. There are two models of structured covered bonds. In the first model, used by British and Dutch banks, the assets are held by a special purpose vehicle, which guarantees the bond issued by the originating bank. A somewhat different model has been adopted by banks in the USA and France. 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. The

loan is guaranteed by the cover assets, which remain on the parent's balance sheet.

Assessing the risk of covered bonds is not straightforward. In principle, the risk of a covered bond should be lower than that of unsecured debt of the same issuer due to the presence of the cover pool. Similarly, the risk should also be lower than that of an asset-backed security (ABS) with the same underlying collateral given the recourse on the issuer, the absence of prepayment risk and the replacement of non-performing loans in the cover pool. The difference between the risk of covered bonds and other instruments of the same issuer should be low if the defaults of the borrower and the value of the cover pool are weakly correlated, and lower if they are highly correlated. Overcollateralisation between cover assets and covered bonds acts as an additional buffer in protecting investors from asset credit risk and asset and liability mismatches in the event of a default of the issuer.

An important issue in the valuation of covered bonds is whether the cover pool will retain its value in the event of insolvency. The insolvency of the bank could endanger the creditworthiness of covered bonds in two ways. First, the credit quality of the assets in the cover pool could deteriorate. Secondly, even if the cover assets retain their value, creditors of the bank could attempt to seize these assets in order to satisfy their claims. Covered bond legislation and other contractual arrangements are designed to protect the viability of the cover pool by imposing minimum standards for asset quality and by ensuring the 'bankruptcy remoteness' of the cover pool (this refers to the separation of the cover pool assets from any insolvency proceedings of the issuer).

The bankruptcy remoteness of the cover pool has never been tested in court, as there has not been an incident of failure of an issuer of covered bonds since the early 20th century. However, the difficulty in assessing the risk of covered bonds is exemplified by the differences in rating methodologies used by the three major international rating agencies. Moody's Investors Service targets the expected loss on covered bonds using a 'joint default' approach, where 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. The Standard & Poor's approach focuses on conditions for 'delinking' the covered bond rating from the senior unsecured issuer rating.⁵ In cases where the legal and regulatory framework ensures the servicing of covered bond obligations even after issuer default, the covered bond rating can be effectively 'delinked' from the issuer rating. The Fitch Ratings methodology is also different.⁶ Fitch multiplies its estimates of the issuer default probability with an estimated discontinuity factor that depends on the perceived bankruptcy remoteness of the cover pool. The product of these two factors is the main determinant of the covered bond ratings.

While differences in publicly stated methodologies need not result in differences in ratings, there do appear to be frequent differences among the agencies in the outcome of the rating process for covered bonds. Despite the fact that many such bonds have been explicitly designed to obtain the highest possible AAA-rating, in many cases when another opinion has been offered, a lower rating has resulted. Differences of

opinion are to some extent inevitable and useful as they invariably bring additional information and perspectives to the marketplace. An even greater incidence of disagreement has been documented for initial issue ratings of US corporate bonds.⁷

Disagreements over the creditworthiness of covered bonds appear to result primarily from differences of opinion concerning the protection offered by the cover pool 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.⁸

COVERED BONDS LEGISLATION IN THE USA

On 15th July, 2008 the Federal Deposit Insurance Corporation issued its 'Final Covered Bond Policy Statement' accompanied by a Best Practices Guide prepared by the Department of the Treasury in order to encourage the growth of the covered bond market in the USA.⁹ The Treasury believes that covered bonds represent a potential additional source of financing that could reduce borrowing costs for homeowners, improve liquidity in the residential mortgage market, and help depository institutions strengthen their balance sheets by diversifying their funding sources. As of this date, however, no dedicated covered bonds legislation has been passed in the USA, and there is no statutory or regulatory framework in place for the issuance of covered bonds by US banks. In contrast, in virtually all European countries where covered bonds have flourished, federal legislation and

the design of the appropriate legal structure preceded the growth of the market.

The 'Best Practices' guide issued by the US Treasury Department to accompany the 'Covered-Bond Policy Statement' provides the following comparison between covered bonds and MBS:¹⁰

- Mortgages that secure a covered bond remain on the issuer's balance sheet, unlike MBS where mortgages are packaged and sold to investors. The cash flow from the mortgages and credit enhancements in MBS are generally the only source of principal and interest payments to the MBS investors. In a covered bond, principal and interest are paid by the issuer's cash flows, while the mortgages in the cover pool serve only as collateral for investors.
- The collateral underlying covered bonds is dynamic and nonperforming (or prepaying) assets within the cover pool must be substituted with performing mortgages. Mortgages underlying MBS are static and remain in each MBS until maturity.
- In the case of an issuer default, covered bonds are structured to avoid prepayment prior to the date of maturity. This is accomplished through swap agreements and deposit agreements (eg guaranteed investment contracts). MBS investors, in contrast, are exposed to prepayment risk in the case of a mortgage default or prepayment.
- In the event that the covered bonds do accelerate and repay investors at an amount less than the principal and accrued interest, investors retain an unsecured claim on the issuer. MBS investors generally do not retain any claim on the issuer in the event of

repayment at an amount less than the principal and interest owed.

In essence, the dual protection offered by covered bonds makes them uniquely different from both senior unsecured debt and asset-backed securities. In contrast to ABS, the cover pool associated with covered bonds is not a means to obtain exposure to the underlying assets but rather for credit enhancement. Moreover, unlike ABS, which tend to have floating rates and where defaults and early repayments are usually fully passed through to investors, covered bonds are fixed-rate instruments with specific maturities. In addition, covered bonds also differ from ABS in that they usually trade in liquid secondary markets.

Covered bonds offer several important benefits to the issuing financial institution, such as:

- *Higher credit ratings:* The strict regulatory framework for covered bonds and the high quality of the underlying loans create high credit ratings for covered bonds. In many cases, covered bonds carry ratings higher than those of the issuers.
- *Lower cost of funding:* The high credit ratings can result in lower interest payments to investors, which reduce the cost of funding for the originator. Covered bonds also enjoy a second advantage — the market for them is far more liquid than it is for products like ABS.
- *Diversification of refinancing sources:* Because an issuer's covered bonds usually receive higher credit ratings than its senior unsecured debt, covered bonds attract a different group of investors, which helps to broaden the issuers' funding sources.

Although the European covered bond market has been severely affected by the recent economic turmoil, it has expanded in terms of number of issuers and covered bonds have become an asset of choice for refinancing operations with central banks. While the number of public sector pools has decreased due to mergers, they are showing improved asset quality and relatively lower credit risk. On the mortgages side, new issuers have resulted in an increase in the volume of mortgage covered bonds, bringing the total outstanding covered bonds to €1.5trn.

ANALYSIS OF COVERED BONDS RELATIVE TO OTHER MORTGAGE FUNDING MODELS

Moral hazard and self-governance

According to Merton, different types of financial institutions intermediate various levels of asymmetric information.¹¹ Commercial banks intermediate financial securities with relatively high asymmetric information while capital markets intermediate financial instruments with relatively low asymmetric information. The essential difference between banks and markets as intermediaries is that investors and firms know one another in markets, whereas bank investors rarely know in which firms their money is invested (the asymmetric information framework was pioneered by the work of Akerlof¹²).

Mason argues that banks cater to naïve investors who need the services of a delegated monitor, while markets cater to sophisticated investors who can monitor firm performance on their own.¹³ Moreover, bank investors usually have some type of insurance backing their

claims requiring regulation to prevent conditions of moral hazard, whereas market investors face the harsh discipline of investment losses. As a result, bank regulations are typically specific in nature, while regulation in financial markets merely ensures transparency.

The 'originate and sell' feature of MBS enticed banks to lower their lending standards and increase their leverage. In the event of default, investors holding MBS have no recourse either to any specific collateral or to the originator's assets or future cash flows. By contrast, covered bonds remain on the banks' balance sheet, thereby providing banks with a strong incentive to adhere to good lending principles as well as to monitor themselves and avoid excessive risk taking. In the event of default, holders of covered bonds have claims on the cover pool as well as the originator's assets and cash flows.

The inherent self-governance mechanisms embodied in the legislative framework of covered bonds can have a strong impact on the risk-taking behaviour of banks and a stabilising effect on markets. For instance, monitoring the quality of the cover pool is essential for the financial institution to keep its AAA-rating, which will in turn allow the bank to issue future covered bonds with a reasonably small spread over government securities. Such behaviour is likely to keep interest costs low, which is essential for bank profitability.

Market liquidity

Banks create liquidity by issuing liquid deposit claims against illiquid loans. Diamond and Dybvig formalised this role of banks in a model in which the superiority of bank financing over financial market funding is attributed to

the superior risk sharing provided by banks.¹⁴ In the process of creating liquidity, however, banks end up mismatching their balance sheets as they finance illiquid long-maturity assets with liquid short-maturity liabilities. This inherent mismatch leads to a maturity and a duration gap which is a source of interest rate risk.

Ramakrishnan and Thakor were among the first to formalise the idea that a significant economic function served by financial intermediaries is to screen potential borrowers to generate signals about their creditworthiness.¹⁵ Boyd and Prescott exploited the screening role of banks to show how these institutions could enhance aggregate investment in socially beneficial projects, thus providing the link between real and financial sectors.¹⁶ Moreover, Boot and Thakor show how the design of financial systems could significantly impact real activity and economic development.¹⁷

The current financial crisis affected the maturity profiles of bank liabilities worldwide. As investors prefer shorter-term securities, the average residual life of covered bonds has decreased across all jurisdictions. The residual life of cover assets has also shortened, keeping the average maturity gap at four years (1.3 years for public sector bonds and 7.1 years for mortgage pools). Table 2 shows the weighted average residual maturities for covered

bonds and the cover assets for the years 2007 and 2008. While the maturity gap for mortgage loans is significantly higher than for public sector loans, the gap has remained fairly stable over the years.

Covered bonds offer several advantages with respect to liquidity. First, as covered bonds are, by design, issued with very high quality and are structured to be AAA-rated, they are much-needed securities in today's market in which liquidity and high quality are critical. Secondly, the original reasons for the creation of Fannie Mae and Freddie Mac of providing liquidity to the mortgage market and promoting home ownership are still needed. Restoring liquidity to the market is proving difficult because of weak credit conditions and the lack of confidence in the financial system. Covered bonds, with their multiple layers of security measures, may be exactly what is needed now to restore liquidity and confidence to the US banking sector.

Transparency and valuation uncertainty

Asset-backed structured products are difficult to value for many reasons. First is the complex nature of the products and how this affects both pricing and risk assessment. While investors have used credit ratings as a sufficient metric for risk assessment, the rating agencies have been unclear as to the precise meaning of a rating for a structured product and the robustness of their methodologies for such products. Second is the lack of transparency with respect to the valuation of illiquid assets which causes serious concerns about the reliability of posted prices in assessing the credit worthiness of counterparties. Third is the lack of detailed information on the type

Table 2: Weighted average residual maturities

Pool type	2008		2007	
	Assets	Liabilities	Assets	Liabilities
Total	8.3	4.1	9.4	5.1
PS, total	5.0	3.7	6.9	5.0
MO, total	11.8	4.7	11.8	5.2

Source: Fitch Ratings (2009) 'Comparative Study of Covered Bonds 2008/09'

of assets within a structured product. In general, as the MBS market evolved into a vast array of complex derivatives, it became less transparent, making it more difficult for risk-based pricing and appropriate valuation. Fourthly, investors are not informed about the total magnitude of the off-balance sheet commitments that may be given by a financial institution, such as lines of credit or loan commitments to private equity buyouts. Fulfilling such commitments could have a serious impact on an institution's liquidity. Finally, money market funds provide a safe haven for investors to park their money. In order to retain their AAA-rating, they are generally restricted from investing in low credit-grade securities.

The use of covered bonds to fund mortgages is likely to alleviate concerns with respect to both transparency and valuation in the banking sector and in credit markets. Covered bonds are issued and valued like regular bonds and are affected by interest rate movements like any fixed-income instrument. The issues of transparency and valuation, however, pertain to the cover pool, which under the typical covered bond legislation, is carefully monitored and dynamically managed to maintain its value and quality. The simplicity in the design of covered bonds and the market's legislative structure allow for straightforward valuation and enhanced transparency for investors.

Rating agencies

Rating agencies have also been at the centre of the current credit crisis. Generally, investors relied on their ratings for many diverse products such as mortgage bonds, asset-backed commercial paper, derivative product companies and bond insurance

companies. Investors in complex credit products had considerably less information to enable them to assess the underlying credit quality of the assets they held in their portfolios. Investors normally assumed these ratings to be timely, accurate and relatively stable.

Legislative frameworks for covered bonds tend to apply limits on the loan-to-value (LTV) ratio of mortgage loans as well as geographical concentration limits and, in some cases, rating restrictions for public entities to ensure a high quality of the cover assets. Covered bond legislation generally imposes an 80 per cent cap on LTVs of residential mortgages and 60 per cent on commercial property. Provisions aimed at ensuring the 'bankruptcy remoteness' of the cover pool are an important part of covered bond legislation in any country.

Capital adequacy and regulation

In a recent paper, Krainer proposes a model of shared management of a bank between shareholders and regulators and argues that 'stock markets are not the only source of financial instability' and that banking is also a source of instability in financial markets.¹⁸ He further points out that the source of banking-related instability can be attributed to both regulatory and non-regulatory factors. Among the regulatory factors, bank capital adequacy is a significant factor. Estrella argues that banks face an inherent tradeoff between shareholder wealth maximisation and the regulatory constraint of capital adequacy.¹⁹

Several features in the design of covered bonds lower their default risk exposure. First, the cover assets remain on the balance sheet of the bank issuing the covered bonds and are subject to the

same credit risk and capital adequacy requirements as the rest of the bank's assets. Secondly, the interest payments are paid out of the general cash flows of the issuing bank, rather than the specific cash flows of the mortgage pool. Thirdly, non-performing pool assets are required to be substituted within a specified time period. Fourthly, in the event of default by the issuing bank, holders of covered bonds have senior claims to the cover pool, and if that proves inadequate, they also have primary recourse to the general assets and cash flows of the issuing bank. All these regulatory measures combine to make covered bonds a much safer instrument for providing liquidity and stability to the mortgage market.

To illustrate the potential benefits of covered bonds on bank capital adequacy, Table 3 presents a simple example of two bank balance sheets; one with and one without covered bonds. Bank 1 is a typical US bank without covered bonds. A risk weight of 1 is assigned to regular bank loans and of 0.1 to reserves, leading to risk-weighted assets of 91.9 with a risk-weighted capital ratio of 10.88 per cent.

Bank 2 is identical to Bank 1 in all respects, except it has covered bonds with its accompanying cover pool on its balance sheet as part of its loan portfolio. If one assigns a conservative risk weight of 0.5 to the cover pool assets, Bank 2's risk-weighted assets add up to 76.9, leading to a risk-weighted capital ratio of 13 per cent. The significant difference between the two banks is that, in a market downturn, the equity of Bank 1 can decline by 26.48 per cent while the equity value of Bank 2 can afford a much larger decline and still maintain the 8 per cent minimum required capital.

Systemic risk and universal banking

Systemic risk arises if events in one market affect other markets. The recent crisis highlights the potential contagion between markets. For example, the deterioration in the MBS market caused money market funds to abandon the asset-backed commercial paper (ABCP) market and flee to the treasury bill market, causing a major increase in prices and lowering of yields. The ABCP market relies heavily on the quality of the collateral to minimise the risk of non-performance by borrowers and lenders.

Boot and Thakor show that a financial system with a concentrated universal banking industry exhibits stochastically lower innovation than a functionally separated financial system in which commercial and investment banking are kept distinct by regulatory design; this explains the greater rate of financial innovation in the USA relative to Europe.²⁰ On the other hand, Allen and Gale argue that bank-dominated economies have greater ability to smooth asset returns over time than market-dominated economies.²¹ The USA is moving towards universal banking and the use of covered bonds is particularly suited for such an environment where banks can underwrite the amounts of covered bonds needed to fund the mortgage loans in the cover pool.

Cociuba argues that, while bank capital adequacy requirements as specified in Basel II may be sufficient on a micro level, these are inadequate at the system level.²² Moreover, during economic downturn, even at the individual financial institution level, these

Table 3: Capital adequacy and covered bonds

Bank 1						Bank 2 (with covered bonds)							
Assets		RW	RWA	Liabilities		Assets		RW	RWA	Liabilities			
Loans	90	1	90	Deposits	88	Loans	60	1	60	Deposits	58		
Other loans	1	1	1	Other Debt	2	Other loans	1	1	1	Other debt	2		
Reserves	9	0.1	0.9			Reserves	9	0.1	0.9				
						Cover pool	30	0.5	15	Covered bonds	30		
RWA			91.9			RWA			76.9				
				Equity	10					Equity	10		
Total	100			Total	100	Total	100			Total	100		
Initial RWA capital ratio = Capital requirement ratio (CRR)					10.88% 8%	Initial RWA capital ratio = Capital requirement ratio (CRR)					13.00% 8%		
Maximum permissible decline in equity (\$)					\$7.35	Maximum permissible decline in equity (\$)					\$6.15		
					in (%)	26.48%						in (%)	38.48%

RW, risk weights; RWA, risk-weighted assets; CRR, capital requirement ratio

measures have proved to be inadequate. Regulators are currently of the opinion that some complementary measures are needed to preserve system-wide stability. The use of covered bonds can effectively serve this purpose as their cover assets are dynamically managed and supervised to maintain value even in market downturns.

Covered bonds have the potential of reducing systemic risk in several other ways. First, the significant increase of AAA-rated securities in the market will have a positive effect on credit markets. Secondly, keeping high-quality mortgage pools on banks' balance sheets is likely to strengthen the financial condition of participating institutions. Thirdly, there is an added advantage to the fact that covered bonds remain on the banks' balance sheets. The covered bonds and the cover pool are subject to routine bank regulatory requirements including capital adequacy. These built-in safety mechanisms are likely to inhibit excessive risk-taking by individual financial

institutions and should lead to lower system-wide risk.

CONCLUSIONS

This paper has advanced the argument that, if properly introduced to the US market along with the appropriate legislative structure and oversight, covered bonds will add significant institutional resilience to financial markets, and have the potential of becoming an important source of long-term funding for residential and commercial mortgages as well as for infrastructure financing in the USA.

To moderate the inherent elements of 'procyclicality' in the financial system, the paper suggests that covered bonds, given their stable dual protection structure, inhibit banks from transferring risks and contribute to increased stability to the banking industry. With covered bonds as their mortgage funding source, banks are not able to transfer credit and interest rate risks to investors as in the case of MBS. As a consequence, banks

may once again have an incentive to efficiently and prudently manage these risks, thus leading to lower systemic risk.

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. 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. Covered bond legislation and the contractual arrangements underlying structured issues must contain the necessary provisions to ensure that the cover assets retain their value in the event of the issuer's bankruptcy.

While the paper has emphasised the benefits of covered bonds in the funding of residential and commercial mortgages, one should also note that it is important for the US Treasury Department to include the public sector in its newly proposed covered bond framework. Creating covered bond legislation that incorporates public sector debt as well as mortgages is an effective way to help bolster the mortgage market and open new channels for attracting infrastructure investment through the global capital markets.

Overall, the covered bond market continued to grow in 2008, with cover pool characteristics remaining mostly stable. The observed changes in credit quality and spreads are still being adequately covered by the available overcollateralisation between the cover assets and the covered bonds. However, to assure the continued quality and creditworthiness of covered bonds, market-induced changes such as the German shift towards higher proportions

of commercial mortgage lending or the increased maturity mismatches must be carefully monitored in the future.

References

- 1 Crouhy, M. G., Jarrow, R. A. and Turnbull, S. M. (2008) 'The subprime credit crisis of '07', *Journal of Derivatives*, Vol. 16, No. 1, pp. 81–110.
- 2 Bloomberg (2009) 'Colleges flunk economics test as Harvard model destroys budgets', available at: http://www.bloomberg.com/apps/news?pid=email_en&sid=aogIHAXZffTI (accessed 22nd January, 2010).
- 3 White, W. R. (2008) 'Past financial crisis, the current financial turmoil, and the need for a new macrofinancial stability framework', *Journal of Financial Stability*, Vol. 4, No. 4, pp. 307–312.
- 4 Paker, F., Stever, R. and Upper, C. (2007) 'The covered bond market', *BIS Quarterly Review*, September, pp. 43–55.
- 5 Standard & Poor's (2009) 'Covered bonds rating methodology', available at: www.standardandpoors.com/ratingsdirect (accessed 4th February, 2009).
- 6 Fitch Ratings (2008) 'Fitch Ratings' covered bonds rating methodology', available at: www.fitchratings.com (accessed 6th May, 2009).
- 7 Cantor, R., Packer, F. and Cole, K. (1997) 'Split ratings and the pricing of credit risk', *Journal of Fixed Income*, December, Vol. 7, No. 3, pp. 72–82.
- 8 Morgan, D. (2002) 'Rating banks: risk and uncertainty in an opaque industry', *American Economic Review*, September, Vol. 92, No. 3, pp. 874–888.
- 9 Federal Deposit Insurance Corporation (2008) 'Final Covered Bond Policy Statement', US Treasury Department, Washington, DC.
- 10 Department of the Treasury (2008) 'Best Practices for Residential Covered Bonds', Government Printer, Washington, DC.
- 11 Merton, R. C. (1995) 'A functional perspective of intermediation',

- Financial Management*, Vol. 24, No. 2, pp. 23–41.
- 12 Akerlof, G. (1970) 'The market for lemons: Quality uncertainty and the market mechanism', *The Quarterly Journal of Economics*, Vol. 84, No. 3, pp. 488–500.
- 13 Mason, J. R. (2008) 'The summer of '07 and the shortcomings of financial innovation', *Journal of Applied Finance*, Vol. 18, No. 1, pp. 8–15.
- 14 Diamond, D. W. and Dybvig, P. H. (1983) 'Bank runs, deposit insurance, and liquidity', *Journal of Political Economy*, Vol. 91, No. 3, pp. 401–419.
- 15 Ramakrishnan, R. T. S. and Thakor, A. V. (1984) 'Information reliability and a theory of financial intermediation', *Review of Economic Studies*, Vol. 51, No. 3, pp. 415–432.
- 16 Boyd, J. H. and Prescott, E. C. (1986) 'Financial intermediary-coalitions', *Journal of Economic Theory*, Vol. 38, No. 2, pp. 211–232.
- 17 Boot, A. W. and Thakor, A. V. (1996) 'Financial system architecture', Working Paper, Indiana University.
- 18 Krainer, R. (2009) 'Portfolio and financing adjustments for US banks: Some empirical evidence', *Journal of Financial Stability*, Vol. 5, No. 5, pp. 1–24.
- 19 Estrella, A. (2004) 'The cyclical behavior of optimal bank capital', *Journal of Banking and Finance*, Vol. 28, No. 6, pp. 1469–1498.
- 20 Boot, A. W. and Thakor, A. V. (1995) 'Banking scope, financial innovation, and the evolution of the financial system', Working Paper, Indiana University.
- 21 Allen, F. and Gale, D. (1995) 'Financial markets, intermediaries, and intertemporal smoothing', Rodney, L. White Center for Financial Research, Wharton School Working Paper 5-95.
- 22 Cociuba, S. E. (2009) 'Seeking stability: What's next for banking regulation?', *Economic Letter*, Federal Reserve Bank of Dallas, Vol. 4, No. 3, pp. 1–8.

Copyright of Journal of Risk Management in Financial Institutions is the property of Henry Stewart Publications LLP and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.