Realkredit Danmark A/S – Capital Centre S and Capital Centre T

Mortgage Covered Bonds

Full Rating Report

Ratings/Outlook

Realkredit Capital Centre S Mortgage Covered Bonds	AAA/Stable
Realkredit Capital Centre T Mortgage Covered Bonds	AA+/Positive

Rating Rationale

IDR/outlook	A/Stable
Capital centre S/capital centre T	
IDR uplift	NA/NA
D-Cap	4 (Moderate risk)/ 2 (High risk)
Tested rating on a PD basis	AA+/AA-
Recovery given default uplift (notches)	1/2
Covered bonds rating	AAA/AA+
OC Fitch considers in analysis (%)	8.8/8.7
AAA breakeven OC (%) for capital centre S	7.5
AA+ breakeven OC (%) for capital centre T	8.0

Discontinuity Risk (D-Cap)

Overall assessment	4 (Moderate)/ 2 (High)
Asset segregation	Very low/Very low
Liquidity gap and systemic risk	Moderate/High
Systemic alternative management	Low/Low
Cover pool-specific management	Moderate/Moderate
Privileged derivatives	Very low/Very low

Key Data

	Dec 15
Asset type	Residential and commercial mortgages
Capital Centre S/T	
Cover assets (DKKbn)	226.5/451.6
Reserve OC (DKKbn)	19.9/39.2
Covered bonds (DKKbn)	226.5/451.6
Nominal OC (%)	8.8/8.7
WAL of assets (years)	14.1/14.0
WAL of liabilities (years)	24.4/1.9

Related Research

Covered Bonds Surveillance Snapshot (April 2016)

Global Housing and Mortgage Outlook - 2016 (January 2016)

Covered Bonds Investor Survey Year-End 2015 (January 2016)

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Key Rating Drivers

Issuer IDR: Realkredit Danmark A/S (A/Stable/F1) is a specialised mortgage lender and a fully owned subsidiary of Danske Bank (A/Stable/F1). Realkredit's Issuer Default Rating (IDR) constitutes a floor for the rating of the covered bonds on a probability of default (PD) basis.

No IDR Uplift: The programme is not eligible for an IDR uplift as the bail-in tool is not applicable to Realkredit. The Danish legislation, published on 26 March 2015, specified the non-application of the bail-in tool to specialised mortgage institutions and introduced a 2% debt buffer requirement. This can be met by senior unsecured debt with write-down language, among others, but such debt has not been issued so far.

Capital Centre S D-Cap Moderate: The Discontinuity Cap (D-Cap) for Capital Centre S, driven by the liquidity gap and systemic risk component, was revised from '3' to '4' ("moderate" risk), as the refinancing risk in Capital Centre S has significantly reduced. As of January 2016, bonds with refinancing risk represented 9% of the total. This exposure is split until 2020 and any refinancing risk on a 12-month rolling basis can be covered by the liquid assets in the capital centre.

Capital Centre T Outlook Positive: The positive Outlook on Capital Centre T reflects continued reduction in refinancing risk that could lead to a higher achievable rating on the bonds in one to two years' time. This is due to the legal provision that all bonds issued after April 2014 have a mandatory maturity extension if refinancing fails. As at January 2016, bonds with refinancing risk represented half of the total. This is estimated to be 31% by 2017.

Credit Risk Drives Breakeven OC: The 'AAA' breakeven OC is 7.5% for Capital Centre S, revised from 8.0% last year, and the 'AA+' breakeven OC is unchanged at 8.0% for Capital Centre T. Fitch Ratings did not model a fire sale of the assets in its cash flow analysis In contrast to other covered bond programmes. Instead, it considered the possibility of bond refinancing post insolvency or a maturity extension for bonds with that feature in place. Therefore, the OC is driven by the credit risk of the pool and servicing costs.

Programme Highlights

Two Capital Centres: Realkredit mainly issues covered bonds out of two programmes: capital centres S and T. Capital Centre S was opened in 2008 and contains mainly 30-year pass-through covered bonds. Capital Centre T was set up in 2011 to segregate covered bonds without maturity matching assets (mostly, adjustable rate mortgages (ARMs)), exposed to refinancing risk.

Mixed Asset Cover Pools: In both capital centres, about 54%-66% of cover assets are residential mortgage loans, with the remainder being commercial mortgages. Fitch calculated the expected loss of the cover pool at 8.7% for capital centre S in a 'AAA' scenario and 12.6% for capital centre T in 'AA+' scenario. The cover pool T has a higher expected loss rate than the pool in capital centre S, due to higher credit risk of ARMs.

OC Composition: The OC is funded by equity and senior debt, and is invested predominantly in highly rated Danish covered bonds, including a minority of Realkredit own covered bonds.

Selected Peers for Comparison

Issuer/ Programme	IDR/ outlook	CVB rating
Realkredit Capital Centre S	A/ Stable	AAA/ Stable
Realkredit Capital Centre T	A/ Stable	AA+/ Positive
Danske I	A/ Stable	AAA/ Stable
Danske D	A/ Stable	AAA/ Stable
Danske C	A/ Stable	AAA/ Stable

Source: Fitch

Related Criteria

Covered Bonds Rating Criteria (March 2016)

Fitch Affirms Denmark at 'AAA'; Outlook Stable (February 2016)

Realkredit Danmark A/S Update (February 2016)

Counterparty Criteria for Structured Finance and Covered Bonds: Derivative Addendum (May 2014)

Exposure Draft: Counterparty criteria for Structured Finance and Covered Bonds (April 2016)

Exposure Draft: Counterparty criteria for Structured Finance and Covered Bonds - Derivative Addendum (April 2016)

EMEA RMBS Rating Criteria (May 2016)

Criteria for Interest Rate Stresses in Structure Finance Transactions and Covered Bonds (May 2016)

Covered Bonds Rating Criteria – Mortgage Liquidity & Refinance Stress Addendum (September 2015)

Breaking Down Breakeven Overcollateralisation (July 2014)

'B' Portfolio Loss Rates for Covered Bonds (September 2015)

Peer Comparison

The key rating drivers for the two Realkredit programmes are compared with the three ‘AAA’-rated regulated Danish covered bond programmes issued by Danske Bank. Although all issued out of Danish institutions, the programmes differ markedly as to the type and country of assets, as well as the issuance set-up and asset liability mismatches. The selected peers are listed in the table in the left-hand margin.

Please see the *Covered Bond Surveillance Snapshot* and related Excel file (April 2016), for a detailed comparison of rating drivers across Fitch-rated covered bond programmes.

Peer Comparison: Key Rating Drivers

	Realkredit CC S	Realkredit CC T	Selected peer average	Selected peer range
Mortgage type	Commercial & residential	Commercial & residential	Residential/ commercial/mixed pools	Residential/ commercial/mixed pools
IDR/Outlook	A/Stable	A/Stable	A/Stable	All A/Stable
IDR uplift	n.a.	n.a.	1.2	0 – 2
D-Cap	4	2	3	2 - 4
B portfolio loss rate (%)	1.0	1.1	1.0	0.4 – 1.5
AAA breakeven OC (%)	7.5	8.0[a]	10.2[b]	7.5 – 23.5[b]

[a] AA+ break-even OC for CC T
[b] Excluding Realkredit CC T, rated AA+
Source: Fitch

Sovereign Impact

The covered bond rating does not include any adjustments due to Denmark’s sovereign rating of ‘AAA’/Stable. For countries rated above ‘A+’ Fitch applies its standard liquidity gap analysis, which forms part of the D-Cap, focusing on asset liquidity following an idiosyncratic stress of an issuer, while the banking sector as a whole is expected to remain stable and not suffer from a systemic crisis. Therefore, Fitch’s view on liquidity and systemic risk is unlikely to change unless the Denmark sovereign is downgraded by four notches to ‘A+’ or below.

For Capital Centre S, 99% of cover assets are denominated in Danish kroner and the other 1% is in euros. For Capital Centre T, 92% are in Danish kroner, 5% in euros, 3% in Swedish kronor and less than 1% in Norwegian kroner. As such, all cover assets are in countries with a country ceiling of ‘AAA’, so Fitch does not adjust the ‘AAA’ rating default and recovery rates, which are applied in its covered bond analysis.

Sensitivity Analysis

The ‘AAA’ rating of Capital Centre S would be vulnerable to downgrade if: the issuer’s IDR was downgraded by two notches to ‘BBB+’ or lower; the D-Cap fell by two categories to ‘2’ (High) or worse; or the OC fell below the ‘AAA’ breakeven OC of 7.5%.

The ‘AA+’ rating of Capital Centre T would be vulnerable to downgrade if: the issuer’s IDR was downgraded by one notch to ‘A-’ or lower; the D-Cap fell by one category to ‘1’ or zero.

Issuer

Realkredit is a specialised mortgage lender and is fully owned by Danske Bank. It is the second-largest issuer of covered bonds in Denmark, with a market share of 28%. Its main competitors are Nykredit and Nordea, which have market shares of 38% and 15%, respectively. Realkredit operates in all regions of the country and offers mortgage loans secured by both residential and commercial properties.

Abbreviations

AP: Asset percentage
D-Cap: Discontinuity Cap
IDR: Issuer Default Rating
OC: Overcollateralisation
PD: Probability of default
WAL: Weighted average life
WAFF: Weighted average frequency of foreclosure
WARR: Weighted average recovery rate

Rating Rationale

Realkredit IDR	A/Stable
Capital Centre S/T	
D-Cap	4 (Moderate)/2 (High)
Rating on PD basis	AA+/AA-
D-Cap components	
Asset segregation	Very low/very low
Liquidity gap and systemic risk	Moderate/High
Systemic alternative management	Low/Low
Cover pool-specific alternative management	Moderate/ Moderate
Privileged derivatives	Very low/Very low

Source: Fitch

Counterparties

Issuer	Realkredit
Originator	Realkredit
Servicer	Realkredit
Collection accounts	Danske Bank, Nordea and Jyske
Issuer account	Danish Central Bank, Danske Bank
Swap providers	None

Source: Realkredit

Issuance Template

Structure

Realkredit is subject to the Danish legislation on banking activities, whereby mortgage banks may only grant mortgage loans that meet the cover asset requirements imposed by such legislation (see *Appendix 6* 'Legal Framework' for more details) and may fund their activities through the issuance of covered bonds.

An issuer holds the cover assets on its balance sheet. Bonds and assets are assigned to individual capital centres upon origination. Bonds maturing can be refinanced in another capital centre, in which case the corresponding assets would be transferred as well.

Two Capital Centres

Realkredit mainly issues covered bonds out of two programmes: Capital Centres S and T. Capital Centre S was established in 2008 and contains all three of the above-mentioned bonds. Capital Centre T was established in 2011 to segregate covered bonds with refinancing risk. Covered bonds issued out of both capital centres are Særligt Dækkede Realkreditobligationer (SDROs). Please see *Appendix 6* for more details.

IDR Uplift

The IDR uplift expresses Fitch's judgement regarding the degree of protection in the event of a bank resolution that would be available to prevent the source of covered bonds payments switching from the issuer to the cover pool. It is derived from Fitch's opinion regarding the relative ease and motivations for resolution methods other than liquidation, the importance of covered bonds to the financial markets in a given jurisdiction and the extent of buffer offered by senior unsecured debt.

The importance of the covered bonds market is taken into consideration in the liquidity gap and systemic risk assessment of Realkredit covered bond programmes' D-Cap. According to Fitch's interpretation of the EU Bank Recovery and Resolution Directive (BRRD), specialised mortgage institutions that cannot receive deposits are not subject to the MREL (minimum requirement for own funds and eligible liabilities) as covered bonds issued by those institutions will be resolved according to specific winding-down procedures under which they could bear losses. The Danish legislation specifies that the bail-in tool is not applicable to specialised mortgage institutions and introduced a 2% debt buffer requirement. This can be met by senior unsecured debt with write-down language, among others, but such debt has not been issued so far.

Liquidity Gap and Systemic Risk Drive D-Caps

The potential risk that a covered bond could default if recourse shifts to the cover pool from an issuer is captured via Fitch's D-Caps, which determine the maximum uplift from the IDR (adjusted by any IDR uplift) to the tested rating on a probability of default (PD) basis. It reflects the highest risk assessment of the five components ranging from '8' for minimal discontinuity to '0' for full discontinuity.

Fitch has assigned a D-Cap of four notches (moderate risk) for Capital Centre S and two notches (high risk) for Capital Centre T, respectively. The liquidity gap and systemic risk is the weak link in the analysis of both programmes.

Summary of Fitch's D-Cap Assessment

	Capital Centre S	Capital Centre T
Asset segregation	Very low	Very low
Liquidity gap and systemic risk	Moderate	High
Systemic alternative management	Low	Low
Cover pool-specific alternative management	Moderate	Moderate
Privileged derivatives	Very low	Very low
Overall D-Cap (weakest link)	**Moderate (4)**	**High (2)**

Source: Fitch

The details on the assessment for each D-Cap component can be found in Appendix 2.

Cover Pool

As of 1 January 2016, the balance of the Capital Centre S cover pool was DKK218bn, while the Capital Centre T cover pool balance was DKK464bn, without taking into consideration the OC. For Capital Centre S, 67% of loans in the cover pool are residential mortgage assets (54% for Capital Centre T) and the remainder are commercial assets (including loans secured by agricultural properties, industrial properties, retail stores, offices and multifamily/private rental properties).

Capital Centre S and T Cover Pool Breakdown by Asset Type

	Capital Centre S (DKKm)	Capital Centre T (DKKm)	Capital Centre S (%)	Capital Centre T (%)
Residential	145,950	250,641	67.0	54.1
Agriculture	7,325	38,916	3.4	8.4
Business	24,348	114,900	11.2	24.8
Multifamily/rental residential	40,165	59,214	18.4	12.8
Total	**217,787**	**463,672**	**100.0**	**100.0**

Source: Realkredit

The key difference between the capital centres is the interest rate type distribution of the cover pools. Capital Centre S contains predominantly fixed-rate assets for the life of the loan, while variable rate assets (mainly ARMs) have been gradually refinanced into the Capital Centre T. Capital Centre T contains only variable-rate assets (mostly ARMs).

Capital Centre S and T Cover Pool Breakdown by Interest Rate Type

	Capital Centre S (DKKm)	Capital Centre T (DKKm)	Capital Centre S (%)	Capital Centre T (%)
Fixed	190,343	156	87.4	0.0
ARM	14,704	361,453	6.8	78.0
Other variable	12,740	102,062	5.6	22.0
Total	**217,787**	**463,672**	**100.0**	**100.0**

Source: Realkredit

OC composition

The OC is invested in highly rated securities. A majority of these exposures are rated 'AAA', the remaining being rated 'AA+' or 'AA' (French government bonds).

As of 1 January 2016, the breakdown of these assets was as the table below:

Liquid Assets Breakdown

	Capital Centre S (DKKm)	Capital Centre T (DKKm)	Capital Centre S (% of total bonds)	Capital Centre T (% of total bonds)
Realkredit bonds	4,544	5,779	2.0	1.3
Danish banks bonds[a]	11,883	29,072	5.2	6.4
Danish government bonds	3,102	3,884	1.4	0.9
Other[b]	311	389	0.1	0.1
Total	**19,840**	**39,124**	**8.8**	**8.7**

[a] Mostly with Nykredit
[b] French government bonds
Source: Realkredit

Realkredit used to invest most of the OC into its own covered bonds as allowed per Danish legislation. However, due to the recent application of the Liquidity Coverage Ratio, the investment in its own bonds is now limited. In Fitch's view, investing in its own bonds is not as liquid as investing in other banks' bonds or government bonds. As such, due to the 2015 implementation of the LCR, Fitch has started to give credit to these liquid assets in its analysis.

Cover Pool Credit Analysis

Fitch has analysed the residential cover pools according to its *EMEA RMBS Rating Criteria* and its *Criteria Addendum: Denmark* and the commercial asset pools according to its *Rating Criteria for European Granular Corporate Balance Sheet Securitisations (SME CLOs)*. In addition, Fitch calibrated its base case default and recovery assumptions based on historical performance data provided by Realkredit. The agency performed the cover pool asset analysis using line-by-line data for the cover pool.

In March 2016, Fitch introduced new foreign-exchange (FX) stresses affecting recoveries to account for the currency risk in the case of loans denominated in another currency than the one of the property backing them (see Appendix 8 of the *Covered Bonds Rating Criteria*). This is to reflect the currency mismatch between the currency of the payments due on the loans and the currency of the proceeds coming from the sale of a repossessed property in case of default.

This was applied to about 1% of the current pool balance in Capital Centre S and 5% in Capital Centre T to account for loans denominated in euros backed by properties in Denmark. The Capital Centre T commercial pool also comprised loans backed by properties outside Denmark, namely Sweden and Norway, but denominated in the matching currency, ie Swedish kronor (3% of current pool balance) and Norwegian kroner (less than 1%), so no additional FX stress was applied on the recoveries of these loans.

This risk is residual as all loans and bonds are in matching currencies so this could only materialise upon a default on the loans for which the property is in a country with a different currency.

Danish Mortgage Loss Assumptions Review

The default probability assumptions for residential mortgages are unchanged from last year. Fitch introduced a differentiation in its market value decline (MVD) assumptions for properties located in the Hovedstaden region and the rest of Denmark, with higher MVDs in Hovedstaden to account for the fact that property prices rose more quickly there than in the rest of the country. The overall impact on the expected loss on the assets is limited as the pool showed lower loan-to-value (LTV) ratios than in 2014. There have been no material changes with regards to the analysis of Realkredit's commercial mortgages.

Residential Mortgage Assets

Residential mortgage pools contain mortgage loans secured by residential properties (houses, flats and holiday homes) located in Denmark, mostly in urban areas with some concentration in the Hovedstaden region, which includes Copenhagen. Mortgage loans have an annuity amortisation profile, but can have an interest-only period of up to 10 years. Based on the underwriting criteria, the maximum maturity of loans is 30 years.

Residential Mortgage Asset Cover Pool (January 2016)

	Capital Centre S	Capital Centre T
Capital Centre cover pool amount (DKKm)	217,787	463,672
Residential cover pool		
Total amount of loans (DKKm)	145,950	250,641
% of the Capital Centre, excluding the substitute collateral	67.0	54.1
Number of loans	136,004	222,540
Number of borrowers	127,041	173,886
OLTV (incl. prior and junior lien loans (%)	68.4	68.6
CLTV (incl. prior lien loans (%)	61.8	60.3
WA interest rate (%)	2.6	1.2
Interest-only (%)	29.8	62.5
Holiday houses (%)	3.8	4.3
Hovedstaden region (%)	43.0	48.2
Interest rate type (%)		
Fixed	91.2	0.0
ARMs	5.1	94.1
Other variable rate	3.6	5.9

Source: Fitch

Fitch typically uses the OLTV as a measure of the relative willingness of a borrower to pay its mortgage loan: a higher OLTV implies a higher default risk for the borrower on its mortgage payments. Fitch increased the PD for variable-rate loans compared with fixed-rate loans, based on the historical performance analysis and to reflect the stress a borrower may face following an increase in interest rates at the time of refinancing. Fitch also increased PD on interest-only loans and loans secured by holiday properties (see *Criteria Addendum: Denmark*).

The recovery rates of residential mortgage pools are mainly determined by the current LTV (CLTV) and market value decline (MVD) assumptions. Danish home prices experienced a decline of 20%-30% between 2007 and 2009 (depending on property type and location). However, the trend has reversed since 2013, with an increase of about 10% on average in Denmark over the past two years, mainly driven by the region of Hovedstaden. In 2015, the property-price index in Denmark increased by 6%, which explains the decrease of CLTV of about 6% for residential mortgages in both capital centres over the past year.

The expected loss on the residential mortgage pool is 4.0% for Capital Centre S in a 'AAA' rating scenario, and 4.7% for Capital Centre T in a 'AA+' rating scenario. Although the calculated expected loss in a 'AAA' scenario is below 4% given the low-risk nature and very good performance of 30-year fixed-rate mortgage loans, it has been floored at 4.0% according to the *EMEA RMBS Rating Criteria* report, to reflect idiosyncratic risks. The difference in expected loss rates between the capital centres is driven by the higher concentration of ARMs in Capital Centre T, which are assigned higher default probabilities due to the risk of increased payments at the interest rate reset date.

Fitch Default Model Results – Capital Centre S

(%)	WAFF	WARR	WA MVD	Expected Loss
AAA	7.9	49.6	53.7	4.0
AA+	7.1	51.5	51.8	3.5
AA	6.3	53.5	49.8	2.9
AA-	5.8	54.8	48.4	2.6

WAFF = Weighted Average Frequency of Foreclosure
WARR = Weighted Average Recovery Rates
WA MVD = Weighted Average Market Value Decline
Source: Fitch

Fitch Default Model Results – Capital Centre T

(%)	WAFF	WARR	WA MVD	Expected Loss
AAA	15.4	63.8	54.2	5.6
AA+	13.8	66.2	52.2	4.7
AA	12.3	68.7	50.3	3.8
AA-	11.3	70.2	49.0	3.4

WAFF = Weighted Average Frequency of Foreclosure
WARR = Weighted Average Recovery Rates
WA MVD = Weighted Average Market Value Decline
Source: Fitch

Commercial Mortgage Assets

Commercial mortgage pools contain mortgage loans secured by agricultural, multifamily/rental and business (retail, industry, office) properties located in Denmark. Mortgage loans have annuity amortisation profiles, but can have interest-only periods of up to 10 years. According to the underwriting criteria, the maximum loan maturity is 30 years. Unlike residential assets, a significant amount of commercial loans have variable rates (other than ARMs). Also, commercial loan borrowers pay interest on a quarterly basis, while the residential borrowers pay monthly.

The asset analysis was performed using Fitch's Portfolio Credit Model (PCM). The main drivers of the pool's PD are the long average life of the loans (more than 10 years), the credit quality of the individual borrowers and the relatively high concentration levels for the borrowers' industry.

Commercial Mortgages Characteristics (January 2016)

	Capital Centre S	Capital Centre T
Capital centre cover pool amount (DKKm)	217,787	463,672
Commercial cover pool		
Total amount of loans (DKKm)	72,116	213,030
% of the capital centre, excluding the substitute collateral	33.1	45.9
Number of loans	15,048	41,410
Top 10 borrowers (%)	5.05	12.63
Indexed CLTV (including prior and junior lien loans) (%)	58.7	61.3
Interest-only (%)	16.7	36.9
By property type (%)		
Agriculture	10.2	18.3
Business	33.9	53.9
Multifamily/private rentals	55.9	27.8
Interest rate type (%)		
Fixed	79.6	0.0
ARMs	10.0	78.0
Other variable rate	10.3	22.0

CLTV* is CLTV including junior liens in other capital centre
Source: Realkredit

Portfolio Credit Model Results – Capital Centre S

(%)	RDR	RRR	Expected Loss
AAA	44.2	59.1	18.1
AA+	40.7	63.3	14.9
AA	36.5	65.7	12.5
AA-	32.3	67.0	10.7

RDR = weighted average frequency of foreclosure
RRR = weighted average recovery rates
Source: Fitch

Portfolio Credit Model Results – Capital Centre T

(%)	RDR	RRR	Expected Loss
AAA	53.9	52.9	25.4
AA+	50.6	56.8	21.8
AA	46.2	60.4	18.3
AA-	41.6	62.4	15.6

RDR = weighted average frequency of foreclosure
RRR = weighted average recovery rates
Source: Fitch

The total expected loss, combining residential and commercial assets, has remained unchanged at 8.7% since the last review in March 2015 for Capital Centre S in a 'AAA' rating scenario. For Capital Centre T, the combined expected loss has increased from 10.1% to 12.6% in a 'AA+' rating scenario mainly due to higher expected loss on the commercial assets and a higher proportion of commercial assets in the pool (+1%).

Cash Flow Analysis

Fitch reviewed its cash flow analysis assumptions for Danish covered bonds as part of the annual review of its criteria for analysing mortgages in Denmark. The agency decreased its servicing fees assumptions and revised its prepayment assumptions for commercial asset pools based on the issuer data analysis. For more information regarding Fitch cash flow analysis assumptions, please refer to *Criteria Addendum: Denmark – Residential Mortgage Assumptions* and Appendix 5 for commercial mortgages.

Fitch's cash flow analysis is conducted in a wind-down scenario, assuming the insolvency of the issuer. Fitch's cash flow model tests whether the assets, under the management of a third party, would be sufficient to service interest and principal payments on the notes in a full and timely manner. There is no cross-collateralisation between the capital centres. The OC from one capital centre can be used for payments in the other capital centre only after all covered bonds and senior debt of the capital centre have been repaid in full.

Under Danish legislation, a default of the mortgage bank does not trigger the acceleration of the repayment of the bonds. An administrator can be appointed ahead or upon insolvency by the Danish Financial Supervisory Authority (FSA) with the task of ensuring timely payments on the covered bonds. Notably, to bridge liquidity gaps, the administrator is entitled to issue refinancing bonds. The interest rate on the refinancing bonds will be charged to borrowers.

Fitch gives credit in its analysis to the possibility of refinancing bonds being issued post-insolvency and potential support from the authorities to allow timely payment on the covered bonds post-insolvency. This applies up to a 'AA+' scenario for Capital Centre S and 'AA-' for Capital Centre T, which is the maximum achievable rating of the covered bonds on a PD basis, as per the D-Cap analysis.

Due to the importance of the instrument for the domestic financial system, Fitch deems an intervention by the authorities very likely, if required. As a result, and in contrast to other mortgage covered bond programmes in other jurisdictions, Fitch did not model a fire sale of the assets in its cash flows analysis. For this reason, the main drivers of the OC are the credit risk

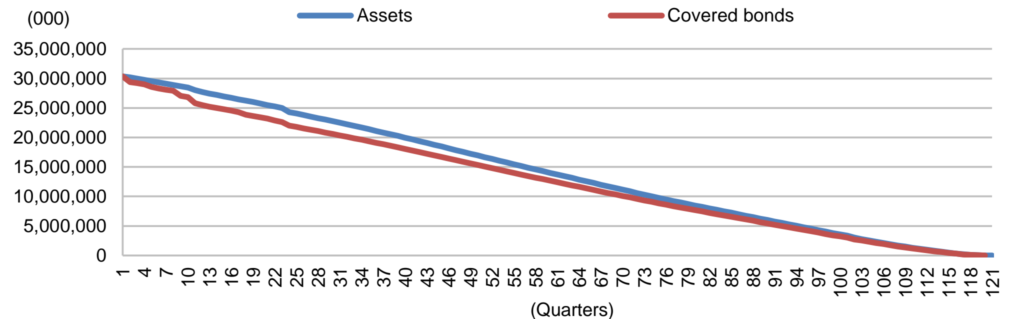
of the pool and the management and servicing costs assumed in the given stress scenario. The expected cash flows from the assets were modified to reflect prepayment, delinquency, default and recovery assumptions in 'AA+' and 'AA-' scenarios.

Should there be a default on the covered bonds in a capital centre, the allocation of proceeds from the cover pool then becomes pro-rata among the covered bonds. This means that following an assumed default on the covered bonds, the longer-dated covered bonds will not be subordinated to the shorter-dated ones, and all will benefit from the same recovery rate. In the recovery rate analysis, it was assumed that the cover pool would be sold below its par value, in line with Fitch criteria.

The 30-year fixed-rate bonds are effectively pass-through securities and are repaid in accordance with the maturities of the fixed-rate assets, while the other bond types have shorter maturities than the cover pool assets.

Amortisation Profiles of Assets and Bonds for Capital Centre S

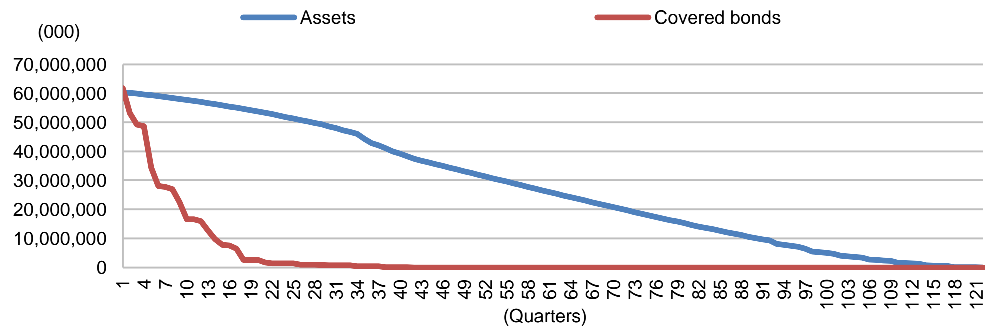
Amortisation profiles



Source: Fitch

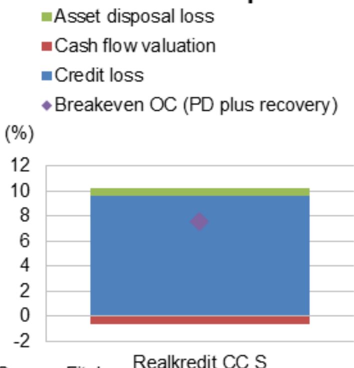
Amortisation Profiles of Assets and Bonds for Capital Centre T

Amortisation profiles



Source: Fitch

Breakeven OC Components



Source: Fitch

Breakeven OC for the Rating

The breakeven OC for Capital Centre S was revised to 7.5% from 8.0% in a 'AAA' rating scenario mainly due to the credit that Fitch gives to the liquid assets that the OC is invested in. Because of the liquidity coverage ratio (LCR), the share of Realkredit's own covered bonds in the total liquid assets is now limited, and as a consequence the majority of the liquid assets is made of other bank's covered bonds or government bonds, rated 'AAA' or 'AA+', that Fitch considers as liquid. The 'AAA' breakeven OC supports 'AA+' stresses on a PD basis in Fitch's cash flow model and enables a one-notch recovery uplift to 'AAA'.

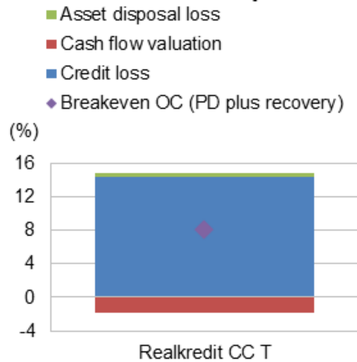
The breakeven OC for Capital Centre T was unchanged at 8.0% in a 'AA+' rating scenario, because of the larger proportion of liquid assets that Fitch gives credit to (outside of the issuer group), despite a higher credit loss component on the mortgage assets. This level supports 'AA-' stresses on a PD basis in Fitch's cash flow model and enables a two-notch recovery uplift to 'AA+'.

The ‘AAA’ breakeven OC for Capital Centre S of 7.5% is mainly driven by the credit loss component (9.6%). The asset disposal loss component equals to 0.6% which is solely coming from negative carry from accumulated cash assumed to be invested at negative rates. The cash flow valuation component lowers the OC by 0.6% (see table below) due to the weighted average life of assets longer than the weighted average life of the bonds and administrative margins charged to borrowers providing excess spread. For more details on the assets margin, refer to Appendix 3: Originator and Servicer Operational Review.

The ‘AAA’ breakeven OC of 8.0% for Capital Centre T is mainly driven by the credit loss component (14.4%). The asset disposal loss component equals to 0.4% and is solely driven by the negative carry from accumulated cash assumed to be invested at negative rates. The cash flow valuation component lowers the OC by 1.8% (see table below) due to the weighted average life of assets longer than the weighted average life of the bonds and administrative margins charged to borrowers providing excess spread.

Fitch's breakeven OC for the covered bond rating will be affected, among other things, by the profile of the cover assets relative to the outstanding covered bonds, which will change over time, particularly due to the refinancing of the variable rate and ARM loans from Capital Centre S into Capital Centre T. Therefore, the breakeven OC cannot be assumed to remain stable.

Breakeven OC Components



Source: Fitch

Drivers of Cash Flow Valuation Component for Realkredit's Breakeven OC

	Capital Centre S		Capital Centre T	
Driver	Assets	Covered bonds	Assets	Covered bonds
WA current interest rate (%)	2.55	2.55	1.66	1.66
WA administrative margin (%)	0.66	n.a.	0.87	n.a.
WA administrative margin on commercial assets (%)	0.71	n.a.	0.88	n.a.
WA administrative margin on residential assets (%)	0.63	n.a.	0.87	n.a.
Worst case prepayment assumption (%)	25	n.a.	25	n.a.
WAL (years) under scheduled amortisation	14.1	0.4	14.0	1.9
WAL (years) including worst case prepayments	3.2		3.3	

Source: Fitch

For the rating that considers an uplift of one notch (Capital Centre S) for recoveries given default, the asset disposal loss component is in line with the ‘AA+’ tested rating on a PD basis, while the credit loss and the cash flow valuation breakeven OC components represent ‘AAA’ stresses. This, plus Fitch testing for at least 51% recoveries, rather than 100% to assign one notch credit for recoveries given default, is why the sum of the breakeven OC drivers is higher than the ‘AAA’ breakeven OC, respectively ‘AA+’.

For the rating that considers an uplift of two notches (Capital Centre T) for recoveries given default, the asset disposal loss component is in line with the ‘AA-’ tested rating on a PD basis, while the credit loss and the cash flow valuation breakeven OC components represent ‘AA+’ stresses. This, plus Fitch testing for at least 91% recoveries, rather than 100% to assign two notches, credit for recoveries given default, is why the sum of the breakeven OC drivers is higher than the ‘AA+’ breakeven OC.

See *Breaking Down Breakeven Overcollateralisation* (July 2014) for Fitch's approach on determining breakeven OC components.

OC Fitch Relies On

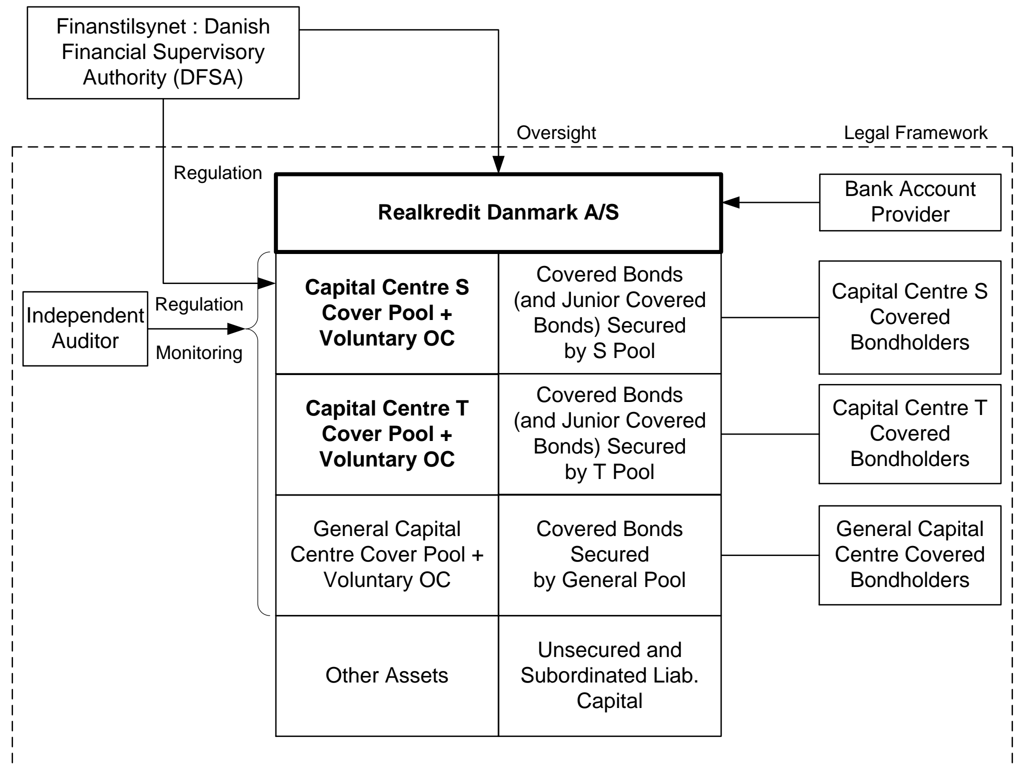
Fitch bases its analysis on the lowest OC over the past 12 months (8.8% for Capital Centre S for Q4 2015 and 8.7% for Capital Centre T for Q4 2015), which is published in the programmes' risk report on a quarterly basis.

Programme Review

Fitch will periodically review the credit quality of the cover pool and perform a cash flow analysis to assess whether the OC taken into account by the agency provides protection against identified risks commensurate with the rating of the covered bonds issued by RD under this programme. Cover pool and covered bonds information will be updated regularly and displayed on Fitch's covered bond surveillance tool (available at www.fitchratings.com) and in the quarterly *Covered Bonds Surveillance Snapshot*.

Appendix 1

Programme Structure Diagram



Source: Fitch

Appendix 2: D-Cap Assessment for Realkredit's Covered Bonds

Asset Segregation: Very Low Risk

Fitch assessed the asset segregation risk for the covered bonds of both capital centres as "Very Low". The agency believes that the legislative features in Denmark ensure the effective segregation of the assets in the cover pool from the claims of other creditors of the issuer, or its parent bank.

Bankruptcy Remoteness

Mortgage banks achieve asset segregation via the registration of bonds, cover assets, and mandatory and voluntary OC, to a specific capital centre. In the event of issuer insolvency, the segregated pools will be separated from the insolvency estate and managed autonomously by a dedicated administrator/trustee for the benefit of the bondholders until they receive payment in full.

The trustee will not meet any claims of other creditors until all payment obligations under the covered bonds of a capital centre have been met in full. Covered bond investors have a primary secured claim on all assets in the capital centre, including mandatory and voluntary OC.

Set-Off Risk

Realkredit is a specialised mortgage lender that cannot take deposits. Consequently, no deposit set-off issues should arise. Even where a borrower has a mortgage loan with Realkredit and a deposit with its parent – Danske Bank – deposit set-off risk is not authorised under Danish covered bonds legislation for mortgages funded by covered bonds. Another mitigant is the fact that Realkredit and Danske are two different legal entities.

Commingling Risk

All borrowers make their mortgage payments into accounts held by Realkredit with Danske Bank, Nordea Bank AB (AA-/Stable/F1+) and Jyske Bank. The funds from Nordea and Jyske Bank are transferred daily to the Danish Central Bank. All received payments in the Danske Bank account (about 95%) and most of the payments kept in the Danish Central Bank are invested immediately in securities, primarily in Danish covered bonds. Bondholders are paid on the first day of the quarter. Due to daily transfer of funds, the exposure to Jyske Bank and Nordea is limited. In case of default of either of those banks, the issuer would have a preferential claim on such amounts.

Danske Bank is the collection account bank and issuer account bank. Fitch did not account for the commingling risk in its analysis as it is rated A/F1, which is the minimum counterparty rating to support 'AAA' ratings in Fitch's counterparty criteria. Should Danske be downgraded below this level, Fitch would deduct the exposure at risk of being lost due to commingling of funds, unless remedial action is taken by Realkredit.

Existence of Other Privileged Creditors

The only claims that would rank ahead of the privileged creditors would be those of certain court fees of the insolvency administrator and costs related to the management, operation, collection and sale of the cover pool, which Fitch has modelled in its cash flow analysis.

Liquidity Gap and Systemic Risk

Fitch classified the liquidity gap and systemic risk component of the discontinuity analysis for the programme as "Moderate" for Capital Centre S and "High" for Capital Centre T. The latter has a higher liquidity risk assessment as it contains only non-callable bullet bonds and variable rate bonds, unlike Capital Centre S, which contains 90% of callable covered bonds.

Liquidity or refinancing risk differs significantly depending on the covered bond type. Callable covered bonds and some variable covered bonds have matching maturity assets and are practically pass-through securities. In contrast, non-callable bullet bonds and most variable rate bonds have significant maturity mismatches with the assets they finance and are therefore exposed to refinancing risk.

Refinancing takes place at auctions three times a year, with the highest proportion at the end of the year, creating a concentration of refinancing needs. At the January 2017 refinancing auction, Realkredit will have to refinance DKK110bn of bonds. Realkredit intends to spread the auctions equally on a quarterly basis by 2021, which would lower but not in itself eliminate the refinancing risk.

The legal framework addresses the possibility of refinancing post-insolvency of the issuer; however, the regulatory environment for mortgage banks post-insolvency has not been tested. Due to the importance of the instrument for the domestic financial system, Fitch deems an intervention by the authorities very likely, in case of need. Denmark's sovereign IDR is 'AAA', and the central bank has a large facility available to the banks that is comparable in size to the end-of year refinancing needs of all mortgage banks.

The current liquidity mitigants in Realkredit's covered bond programmes, in particular with regards to hard-bullet covered bonds, provide limited protection against refinancing risk. The cover pools contain a limited amount of liquid assets. The OC is financed by equity and the issuance of section 15e senior debt, which is issued out of a capital centre but subordinated to the payments of the covered bonds of that capital centre. OC has been invested in Danish government securities and covered bonds in majority, and a minority of Realkredit covered bonds. Following the implementation of the LCR, Realkredit is now limited in investing in its own covered bonds. Fitch gives credit in its analysis to securities that are external to the group.

In March 2014, a new legislation was passed whereby mortgage covered bonds will include mandatory extension provisions, which would reduce liquidity risk associated with concentrated refinancing via bond auctions. The new legislation entered into force on 1 April 2014 for bonds with a maturity of up to 12 months, and on 1 January 2015 for the other bonds. The maturity of the bonds automatically extends by 12 months if one of two triggers fails: the refinancing fails (refinancing trigger) or the interest rate on the new bonds is 5pp higher than the bonds being refinanced (interest rate trigger, only for bonds with up to two-year maturities).

Capital Centre S only had 9% at the beginning of 2016 of non-callable bonds without the refinancing trigger or pass-through feature. Its refinancing risk exposure has significantly reduced since last year and is now mitigated by the liquid assets held in the capital centre (at 8.8% of the bonds outstanding as of 1 January 2016) covering at least bonds maturing in the following 12 months. This is why the Liquidity Gap and Systemic Risk D-cap assessment has been revised from "Moderate High" to "Moderate".

Capital Centre T still had about half of hard-bullet bonds without the refinancing trigger at the beginning of 2016. This is partially mitigated by the liquid assets that the OC is invested in (at 8.7% of the bonds outstanding as of 1 January 2016). With the current level of refinancing risk and given mitigants in place, the Liquidity Gap and Systemic Risk D-Cap assessment is still deemed to be "High". However, since the refinancing risk is expected to reduce significantly in the next few years as maturing bonds are being refinanced into bonds with extendible maturity features, the liquidity risk is expected to decrease so that a lower risk assessment could be

assigned in the next two years. As a result, the outlook for the Capital Centre T covered bonds has been revised to Positive.

Alternative Management

The risk that the transition to an alternative manager does not occur smoothly enough to ensure that all payments are made in the periods directly following the issuer's default could materialise if: the alternative manager were appointed too late; its responsibilities were unclear; or if the IT systems of the issuer made it too difficult for the new manager to isolate the cover pool and covered bonds from the other assets and liabilities of the bank.

Systemic Alternative Management: Low Risk

In Fitch's view, systemic alternative management risk is low, given the strength of the regulatory framework for covered bonds in Denmark and the involvement of the regulator in the appointment of the alternative management.

Cover assets and covered bonds are allocated to the capital centres at the time the covered bonds are issued. As such, no further actions are required to ensure the segregation of assets and bonds within a capital centre.

Under the legal framework, a trustee will be appointed by the regulator to act as alternative manager, which will have the duty to make timely payments on the covered bonds as they become due. A trustee can be appointed prior to the insolvency if the regulator deems it necessary. The trustee will be instructed to meet all obligations under the covered bonds in due time, despite any suspension of payments of the issuer. The trustee may issue bonds to refinance maturing bonds or raise secured loans to obtain liquidity.

Cover Pool-Specific Alternative Management: Moderate Risk

Fitch has assessed the risk level of the cover pool-specific alternative management D-Cap component as "Moderate", reflecting the quality of Realkredit's IT systems and the processes in place to manage its mortgage portfolio.

Fitch deems the data quality satisfactory and the internally developed IT systems, which are fully integrated with its parent company's systems, adequate. Fitch is comfortable that Realkredit's systems can clearly distinguish the cover pool and related covered bonds for each capital centre and could be used by the appointed alternative manager. However, in Fitch's view, internally developed IT systems may lead to a more difficult transition to an alternative manager than market-based systems, in particular for mixed cover pools.

Privileged Derivatives: Very Low Risk

Fitch has assessed the level of risk under privileged derivatives as "Very Low". There are no asset or liability swaps at the programme level and no further adjustment has been made to the D-Cap. Fitch notes that some mortgage loans are denominated in other currencies than the Danish krone (typically the euro and the Swedish krona), but are financed with bonds in matching currencies. In addition, the OC is held in different currencies to match the currency breakdown of the issued bonds.

Appendix 3: Originator and Servicer Operational Review

Origination and Underwriting

Realkredit originates mortgage loans through Realkredit and Danske Bank branches across the country. Origination volumes have increased in 2015, which saw the highest level of lending activity in the past decade, after a period of declines since 2011. The following mortgage products (residential and commercial loans) are offered by Realkredit to all its customers (private individuals or companies).

Mortgage Products

	Fixed Rate	FlexLan (ARM)	FlexGaranti	Floating Rate	Rentedyk or Ratchets	FlexKort
Interest rate type	Fixed	Variable	Floating with cap	Floating	Variable	Variable
Base rate	n.a.	n.a.	6M Cibor	6M Cibor or 3M Euribor	10 -year swap rate	6M Cita rate
Maturity	1-30 years	1-30 years	1-30 years	1-30 years	1-30 years	1-30 years
Repayment	Annuity or IO	Annuity or IO	Annuity or IO	Annuity or IO	Annuity or IO	Annuity or IO
Payment frequency	Monthly or quarterly	Monthly or quarterly	Monthly or quarterly	Monthly or quarterly	Monthly or quarterly	Monthly or quarterly
Prepayment options	Call and delivery	Delivery	Call (105%) and delivery	Delivery	Call (105%) and delivery	TBC
Currency	DKK	DKK or EUR	DKK	DKK or EUR	DKK or EUR	DKK or EUR
Bonds	Matching terms	Maturity mismatch	Maturity mismatch	Maturity mismatch	Matching terms	Maturity mismatch
Introduced	1940	1996	2004	2005	2007	2013

Source: Realkredit

Mortgage loans have an annuity redemption profile. However, borrowers can opt for a 10-year interest-only period which can be exercised at the discretion of the borrower, providing they give several months' notice. Maximum maturity is 30 years.

Realkredit launched new variable loans based on the CITA rate in October 2013. At present, such loans are funded by three year mortgage bonds. The outstanding volume of this type of floating rate loans was expected to increase over time, in order to lower the volume of ARM loans but the CITA loans represent a small part of the portfolio (about 4% at Q4 2015).

Fixed-rate loans have increased over the last year, as well as three-year and five-year FlexLan loans, while the proportion of one-year FlexLan loans decreased in line with the customers' current tendency to opt for longer refinancing intervals. The increase in fixed-rate loans was the main driver of the new lending activity growth in 2015.

Borrowers have two prepayment options;

- a call option allows the borrower to prepay at par or 105% (FlexGaranti and Ratchets) at any time. This option is exercised when a borrower wants to take advantage of lower/falling interest rates; and
- a delivery option can be exercised by purchasing the outstanding bond in the market at any time. This option is exercised if bond prices fall below par.

The underwriting of mortgage loans follows the following steps:

- application scoring, which is driven by borrower behaviour, credit history and affordability tests. There are different scoring models for home owners and companies;
- approval of the loan application by the loan officer;
- property valuation; and
- formal loan approval.

On 11 September 2014, the FSA published a new set of macro-prudential tools addressed to mortgage banks called 'Supervisory Diamond for mortgage banks', completing the already-existing Supervisory Diamond for banks since 2010. It specifically targets mortgage banks' credit risk on lending and access to funding. The five requirements address the following areas with set limits (updated on a quarterly basis): lending growth, concentration risk, interest-only loans, loans with short-term funding and borrower's interest-rate risk. Realkredit has adapted this Supervisory Diamond with internal limits for each of the five requirements stricter than the ones published by the regulator. During 2015, Realkredit focused on reducing the origination of loans with short-term funding and limiting interest-only loans.

LTV Limits

Realkredit offers mortgage loans up to the limits defined by the covered bond regulation. A borrower can take out an additional bank loan above this LTV limit with Danske or any other bank, which will be secured by the same property but which will have only a second claim on any foreclosure proceeds.

Property Valuation

For homeowner properties, only a full valuation conducted within the most recent six-month period, or an automated valuation model (AVM) valuation (for mainstream properties) is accepted.

- Full valuations can be carried out either by a real estate agent or a bank employee (who is independent from the underwriting process).
- Realkredit's AVM models have been developed in-house and reviewed by the Danish FSA. Such models are accepted for mainstream properties, without the need for a further haircut.
- The issuer has to report all new property valuations to the Danish FSA.

As regards other properties, a full valuation by a qualified bank employee independent of the underwriting process is required. Depending on the property type, there are three valuation methods:

- net rentals based on the lowest of the actual rent and market rent, and observable yields on recent sales;
- net income before depreciation and financial costs; and
- market value on recent sale of similar properties.

In line with regulatory requirements, residential properties are revalued using either a full valuation or an AVM every three years, while commercial properties are revalued annually. The revaluation results are reported to the Danish FSA.

LTV Limits and Valuation Methods

Property type	Max LTV (%)	Valuation Methodology
Residential	80	Full valuation or AVM
Residential rental	80	Capitalisation of net rentals
Second or holiday home	60	Full valuation or AVM
Subsidised housing	90+ (exposure exceeding 80% is guaranteed by the municipality)	Capitalisation of net rentals
Industry	60	Capitalisation of net rentals
Agriculture	60	Market value
Business	60	Capitalisation of net income

Source: Realkredit

Affordability Testing

An affordability test is part of the initial borrower assessment process. The affordability check takes into account the minimum disposable income requirements and the ability of the borrower to meet monthly debt payments. Regardless of the redemption profile and the interest rate on the mortgage loan, the borrower should be able to pay their mortgage payment, assuming the mortgage loan is an annuity loan bearing the highest rate charged by the bank at the time of underwriting (30-years fixed interest rate). It is estimated that the maximum loan-to-income ratio is about four times.

Due to interest rate being currently low, underwriting policies have become loser. As such Danish banks, including Realkredit, are required under national law to verify an additional affordability test at origination. The additional affordability test involves a down-payment of 5% of the property price and external costs to be self-financed by the customer, but exceptions apply.

Also, in the current low-interest-rate environment and to limit borrowers' indebtedness, an additional affordability test was put in place in 2015 for customers seeking a mortgage backed by a property in so-called growth areas, which are generally urban areas. It already applies in Copenhagen and the surrounding region and Aarhus. It requires borrower's affordability to be tested assuming a 30-year fixed-rate loan annuity at the higher of the 30-year fixed rate on mortgages that applies at the time of origination plus one percentage point and 4%.

For self-employed borrowers, affordability is assessed based on a one-year annual statement by a specialised underwriting team.

Margins

Margins for residential loans are standardised, depending on the LTV level at origination and the type of mortgage product. For illustration, fixed-rate mortgages are currently offered at a margin on the lower range, whereas interest-only mortgages or ARM products with higher interest reset frequency tend to be offered at a higher margin. This is line with the bank's strategy to encourage demand for loans with lower refinancing needs.

Margins for commercial loans are determined on a case-by-case basis and are not standardised. Historically, agriculture has been the industry with the highest margin due to an elevated level of credit risk (in 2015 oscillating about 110bp-120bp). Margins for subsidised housing are determined by Danish law and have been stable at 27bp, at the lowest level of the commercial assets margins.

As of May 2016, Realkredit has increased its margin on a few of their residential products by up to 25bp.

Credit History

Borrowers with an adverse credit history are not accepted. The following credit checks are in place:

- RKI, centralised credit database owned by Experia, which keeps records of all bad debts. The records are kept for two years after the debt is repaid;
- land registry; and
- credit history with the Danske Group.

Servicing

Primary and special servicing is performed in-house. Mortgage payments are collected with a unique loan identification code, allowing Realkredit to allocate payments directly. If a borrower pays via cash or cheque without reference to the unique loan identification code, or if the payment is insufficient, then all incoming payments will be allocated according to the loan ranking, ie first-lien first, second-lien second.

Overall, the treatment of non-performing mortgage loans is considered efficient. Realkredit's legal counsel is involved after one month of missed payments. Unless a restructuring solution is found, the property is sold within nine-12 months after the first arrears.

Appendix 4: Issuance template

Structure

Realkredit is subject to the Danish legislation on banking activities, whereby mortgage banks may only grant mortgage loans that meet the cover asset requirements imposed by such legislation (see Appendix 6 'Legal Framework' for more details) and may fund their activities through the issuance of covered bonds.

The cover assets are held on the issuer's balance sheet. Bonds and assets are assigned to individual capital centres upon origination and can be transferred between capital centres at the time of refinancing.

Covered bonds issued via programmes set up by specialised mortgage lenders are usually referred to as traditional Danish covered bonds. For these bonds, the issuer acts mostly as an intermediary between a borrower and an investor and does not set the rate on the mortgage loans. The rate on the mortgage loans equals the interest rate on the bonds plus a margin, and thus the interest rate on the mortgage loans is effectively set by the investor at the time of issuance and/or the refinancing auction. According to the mortgage loan terms, borrowers make principal and interest payments to the mortgage bank, which transfers the payments to the investors. The issuer is therefore not directly affected by any changes in the interest rates, other than through the increased risk of borrower's default when interest rates increase.

Mortgage banks charge the borrower a margin to cover daily operating costs and any losses. The margin is not fixed and can change over the term of a loan, depending on the bank's strategy, regulatory requirements and market conditions.

Matched Funding

Traditionally, there has been an alignment of funding between mortgage assets and bonds, in terms of the interest rate, maturity and amount. For instance, if a borrower took out a fixed-rate loan for 30 years, it would be funded by a fixed-rate 30-year bond.

In the 1980 and 1990s, new mortgage products, such as ARMs and other variable rate loans, were introduced and now represent about 37% of the market. These mortgage products usually offer lower interest rates than fixed-rate loans, as they are funded by the issuance of bonds with shorter maturities than the loan terms, thus creating a refinancing need when they mature. The interest rate on the loans is refixed at the time of refinancing.

In the case of Realkredit, the matched funding principle applies to the interest period between refinancing, which is mostly between one and five years. At the time of refinancing, a new interest rate is set when a new covered bond is issued. In the past, refinancing took place at the end of the year, but more recently, issuers have been spreading refinancing auctions throughout the year. Realkredit carries out four refinancing auctions a year.

Covered Bond Types

Realkredit Covered Bond Types

Characteristics	Traditional - Callable Bond	Non-callable Bullet Bond	Variable Rate Bonds
Interest rate type	Fixed	Fixed	Variable
Interest payments frequency	Quarterly	Annual	Quarterly
Repayment	Annuity or IO	Bullet	Annuity or IO
Maturity	10-30 years	1-11 years	5-30 years

Source: Realkredit

Callable bonds: the oldest Danish covered bond and practically a pass-through security. Callable bonds feature matching maturities in terms of the underlying assets and there is no refinancing risk. Such bonds have a fixed rate and a quarterly payment frequency.

Non-callable bullet bonds: the largest segment of the covered bonds market. These bonds bear a fixed rate but do not feature maturity matching assets. Such bonds are secured by long-term mortgage loans and ARMs, and hence can be exposed to refinancing risk. Interest on the bonds is paid annually.

A new type of variable rate bond was launched in the past 10 years. These covered bonds represent a smaller part of the covered bond market (6% in Capital Centre S and 22% in Capital Centre T) and are targeted at corporates. They are secured by floating-to-fixed and capped floating mortgage loans, ARMs featuring ratchet coupons, floating rate mortgage loans and other loan types. Most of these bonds are exposed to refinancing risk.

In order to reduce the refinancing risk with this type of bonds, the legislation was amended in April 2014. It applies to bullet bonds and floating-rate bonds where the term of the loans is longer than the maturity of the funding bond. This amendment introduced a soft-bullet mechanism with two triggers: a refinancing failure and an interest-rate increase of more than 5pp at the refinancing auction (for bonds with an initial maturity of up to two years). If one of the two triggers occurs the bonds are extended for a further 12 months with an interest rate equal to the interest rate on the bonds before the refinancing plus 5pp.

Appendix 5: Commercial Mortgage Loss and Cash Flow Assumptions

In its analysis of commercial mortgage loan portfolios, which include agriculture, business, private rental and multifamily mortgage loans, Fitch relied on its *Criteria for the Analysis of Commercial Real Estate Loans Securing Covered Bonds* (December 2015) and *Rating Criteria for European Granular Corporate Balance Sheet Securitisations (SME CLOs),* dated May 2016. The asset analysis was performed using the PCM.

Fitch derived the expected default rate for the commercial pool, taking into consideration default and loss data provided by Realkredit and the macroeconomic developments in the country. The expected one-year default rate for a performing commercial mortgage portfolio is 1.75%, which is at the lower end of the assumptions used for commercial mortgage portfolios in other European jurisdictions (in the 1.75%-6.5% range).

Fitch used Realkredit's credit scoring to distribute the assets' one-year PD around the benchmark, applying a 0.5% floor to the default probabilities. The one-year PDs were then combined with Fitch's long-term PD curves and with the maturities of the assets to derive long-term PD assumptions for each of the commercial assets in the pool.

With respect to recovery rates, Fitch derived a stressed property market value, applying MVD assumptions based on Realkredit repossession data and stressed property price decline.

MVD Assumptions for Commercial Properties

(%)	AAA	AA	A	BBB	BB	B
Agricultural	65	60	55	50	40	35
Business	75	70	65	60	50	45
Multifamily/rentals	65	60	55	50	40	35
Subsidised housing	70	65	60	55	45	40

Source: Fitch

Subsidised Housing

Mortgage loans to subsidised housing represent about 10% of the Capital Centre S cover pool balance and about 5% of the Capital Centre T cover pool balance. Most of them benefit from a guarantee from local municipalities or the Danish state. The state contributes to the borrower's payment and the municipality provides a loss guarantee to Realkredit.

The guarantee can differ according to the disbursement of the loan. Mortgage loans granted prior to 2007 have a loss guarantee of up to 28.5% of the principal. Mortgage loans disbursed after 2007 have guarantees that cover the part of the loan that exceeds 60%. Furthermore, a 100% guarantee is granted from the municipality for renovation works. This results in an average guarantee of about 40%.

The guarantee payments mean that very few subsidised housing loans become delinquent and this explains the limited number of losses in this segment. In the past three years, Realkredit has only called guarantees three times, with a total value of DKK6m.

Fitch did not give full credit to guarantees provided by municipalities on subsidised housing loans in a stressed scenario; rather, it conservatively assumed a 50% credit to these partial guarantees in a 'AAA' scenario.

Cash Flow Assumptions

Transaction and Servicing Costs

Servicing fee assumptions are applied in Fitch's cash flow modelling to take account of the transaction expenses and the costs of engaging a replacement servicer in the event of a servicer default in a stressed environment.

Transaction and Servicing Costs Assumptions

	AAA	AA	A	BBB	BB	B
Servicing costs (%)	0.40	0.30	0.25	0.20	0.20	0.20

Note: The fees are applied to the outstanding portfolio balance, including performing, delinquent and defaulted loans
Source: Fitch

Prepayment Rates

In its cash flow model, Fitch applies prepayment rate (ie voluntary early repayment) assumptions to the portfolio's performing principal balance to determine the lifetime volume and periodic percentage of excess spread.

Fitch prepayment assumptions are based on the analysis of the data sample provided by Realkredit. Fitch maintained its low prepayment assumption for commercial mortgages at 3.0% and the high prepayment assumption at 30.0%.

Voluntary Prepayment Assumptions (%)

Commercial mortgages	
High prepayment assumption	30.0
Low prepayment assumption	3.0

Source: Fitch

Appendix 6: Legal Framework

Main Characteristics of Danish Covered Bonds

The Danish Covered bond legislation 2007 (1 July 2007)

Type of Danish covered bonds	There are three types of Danish covered bonds • Realkreditobligationer (RO): oldest type of bond, issued by mortgage banks only, UCITS-compliant , but not CRD-compliant if issued after 31 December 2007 • Særligt Dækkede Realkreditobligationer (SDRO): issued by mortgage banks only, both UCITS- and CRD-compliant, a minimum OC of 8% of risk-weighted assets applies. • Særligt Dækkede Obligationer (SDO): implemented in 2007 following changes in legislation, can be issued by both commercial banks and mortgage banks, both UCITS- and CRD-compliant; a minimum OC of 8% of risk-weighted assets applies (only to mortgage bank issuers).
Issuers	• Specialised mortgage institutions. They can issue all types of Danish covered bonds (RO, SDRO and SDO). • Ship financing institutions for loans backed by ships. • Since 2007, commercial banks. They can only issue SDO.
Supervision	Danish Financial Supervisory Authority. Roles: • License mortgage banks, commercial banks and ship financing institutions to issue covered bonds; • Operates the general banking supervision; • Issuers have to report to the Danish FSA on a quarterly basis: o for mortgage banks, they must communicate data for each individual loan offer, all property valuations associated with new lending o for commercial banks ,they must report the registered assets and make the registered assets statement verified by an external auditor • May operate random checks such as on-site inspections or checks of the internal valuation reports; • Issuers must send to the Danish FSA on a quarterly basis a comprehensive report with regard to the Assets Liabilities Management. In case of balance principle breaches, the FSA must be notified without delay; • Issuers must report to the FSA on its capital adequacy. If the requirements are not met, the FSA must be notified without delay; • May issue an order to which the issuer must comply; • May declare a mortgage bank bankrupt. In that case, a trustee in charge of looking after the interests of the estate of the capital centre must be appointed; • May revoke the operating license in case of breaches of Danish law or severe orders.
Balance principle or match-funding	It is meant to ensure a close connection between the cash flow received from the borrowers and the cash flow due to the bondholders.
General versus specific balance principle	It is at the discretion of the issuer to comply with either the general balance principal (European-style ALM requirements for covered bonds) or the specific balance principle. The general balance principle was introduced in legislation in 2007.
Tap Issuance	For mortgage banks, mortgage bonds issuance is the only funding source of mortgages. Issuances take place daily by the way of tap issuance. Each loan originated in a day is matched in terms of cash flow of interest (and principal for the 30-year fixed-rate bonds) with the mortgage bonds issued that day. This ensures that the balance principle is maintained on a daily basis.
Dual recourse	1) To the assets of the capital centre, including OC in the case of mortgage banks. 2) To the issuer and, post insolvency, to the insolvent estate of the issuer, before other creditors for specialised mortgage banks or pari passu with other senior creditors for commercial banks.
Minimum overcollateralisation	Danish legislation does not specify an absolute nominal OC requirement. However, capital requirements have to be fulfilled at the capital centre level and at the institution level for mortgage banks and translate into a mandatory OC level of at least 8% of risk-weighted assets. For commercial banks there is no minimum mandatory OC. The OC can be funded by equity and senior debt. In practice, it is mostly invested in securities.

Main Characteristics of Danish Covered Bonds (Cont.)

The Danish Covered bond legislation 2007 (1 July 2007)

Asset segregation principle	Assets used to cover the bonds have to be segregated into independent cover pools referred to as capital centres for mortgage banks and cover registers for commercial banks.
Cover register	In order to be used as cover assets, mortgages have to be entered in the Danish Land Register. Since 2012, the register is digital.
Eligible assets (including substitute assets)	• Loans granted against mortgages on real property; • Exposure to public authorities: ○ bonds and debt issued by or guaranteed by central government, central banks, public entities, and regional and local authorities in the EU/EEA; ○ bonds and debt issued by or guaranteed by multilateral development banks or international organisations if risk-weighted 0% (or risk-weighted 20%, provided they do not exceed 15% of the outstanding covered bonds). • Bonds and debt issued by credit institutions if risk-weighted 20%, provided they do not exceed 15% of the outstanding covered bonds; • Mortgages on ships (only for commercial banks; a register may not include assets secured on both real estate and ships); • Other assets eligible for covered bonds financing according to the CRD, if allowed by the Danish FSA; • In practice, supplementary collateral is made of exposure to public authorities and covered bonds.
Property valuation	• Based on the open market value of the property; • Performed at an on-site inspection, as part of the processing of each loan application to assess the compliance with regulatory LTV requirements; • Must be performed by a valuation officer of the issuer; The initial valuation must be a physical valuation or, if an exemption is granted by the FSA, a valuation from a valuation model; • May be outsourced if specific conditions are met; • AVMs have been approved in 2005 by the FSA as a valid valuation method for residential properties and second or holiday homes; • Residential properties must be re-valued once every three years, while commercial properties must be re-valued annually.
Loan-to-value limits for mortgage loans	• ≤ 80% for residential real-estate loans with up to 30 years' maturity and 10 years' interest-only period; • ≤ 75% for residential real-estate loans with up to 30-year interest-only period; • ≤ 60% for commercial, agricultural and holiday real-estate loans. In some cases, the LTV requirement can be increased to 70% if the bank adds additional collateral. These limits are to be complied with at the individual loan level, both at loans' origination and during the loans' lifespan (for SDROs and SDOs only). The part of mortgage loans above the limit is excluded from the calculation of the over-collateralisation (for SDROs and SDOs only). If house prices decline and LTVs increase above this threshold, the issuer must add supplementary collateral in the respective capital centre.
Possibility to issue junior covered bonds	• Junior covered bonds can be issued to obtain funding for supplementary security to ensure compliance with the LTV requirements or to increase the overcollateralisation of a capital centre; • Their payment is subordinated to the one of covered bonds but also benefit from dual recourse to both the assets of the cover pool and the insolvent estate of the issuer; • Carry a risk weight of 20%; • Are repo-eligible with the Danish Central Bank.
Treatment of swap counterparties	Derivative counterparties rank pari passu with covered bondholders when derivative contracts were concluded with the purpose of hedging cash flows between assets and liabilities. Payments cannot be accelerated and terminations are not allowed in case of bankruptcy of the issuer.

Main Characteristics of Danish Covered Bonds (Cont.)

The Danish Covered bond legislation 2007 (1 July 2007)

Trustee for capital centres & alternative manager for registers	**Mortgage banks** • If the issuer is declared bankrupt, a trustee in bankruptcy is appointed; • The trustee is in charge of looking after the interest of the existing bondholders and borrowers. **Commercial banks** • Upon bankruptcy of the issuer, the FSA will decide whether appointing an administrator in charge of the assets of the register is necessary.
Resolution	Resolution is aiming for minimum changes for both bond investors and borrowers. It means the position of covered bond holders and borrowers has to remain essentially as if the capital centre was still a going concern. No acceleration of payments. Trustee may not issue new loans or expand business if the issuer's licence has been withdrawn. However, it may issue bonds to refinance maturing bonds if there are insufficient funds to satisfy the claim of creditors. **Implementation of the BRRD into the Danish legislation** • It introduces a debt buffer requirement of 2% of unweighted loans, to be fulfilled by 2020; • Resolution powers split between two entities: the Danish FSA and the resolution authority (Finansiel Stabilitet A/S, a subsidiary of the Kingdom of Denmark). The Danish FSA can intervene at an earlier stage than before in order to increase the chance of recovery. Finansiel Stabilitet intervenes later on to set up a resolution scheme and has four main resolution tools and associated powers to apply them; • In case of resolution, the debt buffer can be used by the resolution authority to recapitalise the mortgage banks when using BRRD resolution tools, only on the principle of "no investor worse off". • Four new BRRD resolution tools: o Sale of business: possibility to transfer the shares/assets/liabilities/rights of an institution to a third party; o The bridge institution: possibility to transfer the shares/assets/liabilities/rights of an institution to a subsidiary of Finansiel Stabilitet, the bridge institution; o Asset separation: possibility to transfer portfolios of assets/rights/liabilities of an institution / bridge institution to an asset management vehicle; o Bail-in tool (only for commercial banks): possibility to reduce the principal amount of liabilities/convert liabilities into equity.
CRR & UCITS compliance	• ROs are compliant with the covered bonds definition in the Undertakings for Collective Investment in Transferable Securities (UCITS) Directive but not with the Capital Requirements Regulation (CRR); • SDOs and SDROs are compliant with the CRR and the UCITS Directive.
Right to early repayment at anytime	Borrowers have the right to prepay their loans by buying back the underlying bond. The price is determined by the market (current interest rate), subject to a cap at the par value for callable bonds.

Source: Danish Covered Bond legislation

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