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

Full Rating Report

Ratings

Realkredit Capital Centre S mortgage covered bonds	AAA/Stable
Realkredit Capital Centre T mortgage covered bonds	AA+/Stable

Key Data

Key Data	Nov 13
Country	Denmark
Asset type	Residential and commercial mortgage loans
Framework	Legislative
Capital Centre S	
Cover assets (DKKbn)	233.2
Reserve (OC) (DKKbn)	22.7
Covered bonds (DKKbn)	233.2
'AAA' breakeven OC (%)	11.0
Current OC (%)	11.0
Capital Centre T	
Cover assets (DKKbn)	378.8
Reserve (OC)	43.9
Covered bonds (DKKbn)	378.8
'AA+' breakeven OC (%)	11.5
Current OC (%)	11.6

Key Rating Drivers

Two Capital Centres: Realkredit Danmark A/S (Realkredit) mainly issues covered bonds out of two programmes: capital centres S and T. Capital centre S was established in 2008 and contains both covered bonds with matching maturity assets and covered bonds without maturity matching assets (mostly, adjustable rate mortgages (ARMs)); hence, it is exposed to refinancing risk. Capital centre T was established in 2011 in order to segregate those covered bonds with refinancing risk.

Refinancing risk is the key driver of Fitch Ratings' Discontinuity Cap (D-Cap) assessment. Refinancing risk explains the difference in the D-Cap and the breakeven over-collateralisation (OC) for the two capital centres.

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

Refinancing Risk Determines D-Cap: Capital centre S has a D-Cap of 3 (Moderate High), while capital centre T has a D-Cap of 2 (High). The liquidity gap and systemic risk component is the weakest of the D-Cap components for both programmes, both of which have limited protection against refinancing risk. Refinancing risk is higher in capital centre T, as it contains solely covered bonds without maturity matching assets.

Credit Risk Drives Breakeven OC: The 'AAA' breakeven OC is 11.0% for capital centre S. The 'AA+' breakeven OC is 11.5% for capital centre T. In contrast to other covered bond programmes, Fitch did not model a fire sale of the assets in its cash flow analysis; instead, it considered the possibility of bond refinancing post insolvency. Therefore, the OC is driven by the credit risk of the pool and servicing costs. However, in the recovery rate analysis, it was assumed that the cover pool would be sold below its par value, in line with Fitch's criteria.

Programme Highlights

Established Mortgage Lender: Realkredit is the second-largest specialised mortgage lender in Denmark, with a 29% market share in residential and commercial mortgage lending.

Mixed Asset Cover Pools: In both capital centres, 55%-65% of loans in the cover pool are residential mortgage assets, the remainder being commercial assets. Fitch calculated the expected loss of the cover pool at 8.1% for capital centre S in a 'AA' rating scenario and 8.9% for capital centre T in a 'AA−' rating scenario. The cover pool in capital centre T has a higher expected loss rate than the pool in capital centre S, due to higher credit risk of ARMs.

OC Composition: Currently, the OC is funded by equity and senior debt, and is invested predominantly in highly rated covered bonds, including Realkredit mortgage covered bonds.

Rating Sensitivity: The current rating for both programmes 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 or more; or the OC fell below the breakeven OC for the rating.

It should also be noted that Realkredit's IDR is correlated with its parent's IDR, and a downgrade of Danske Bank's IDR might lead to a downgrade of Realkredit's IDR.

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Issuer

Realkredit is a specialised mortgage lender in Denmark, fully owned by Danske Bank. Realkredit is the second largest mortgage lender in Denmark, with a market share of 29%. Its main competitors are Nykredit and Nordea, with market shares of 43% and 13% respectively. Realkredit operates in all regions of the country and offers mortgage loans secured by both residential and commercial properties.

Issuance Template

Structure

Realkredit is subject to the banking principles of Danish legislation, whereby mortgage banks may only grant mortgage loans that meet the cover asset requirements imposed by such legislation (see *Eligibility Criteria* below) 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 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 loan rates, unless an increase triggers the borrower's default.

Mortgage banks charge the borrower a margin to cover daily operating costs and any losses. The margin is a percentage of the debt outstanding and is added to the funding interest rate. 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 1980-90s, new mortgage products such as ARMs and other variable rate loans were introduced, and now represent a considerable share of the market (about 60%). 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 re-fixed at the time of refinancing.

In the case of Realkredit, the matched funding principle applies to the interest period between refinancing, which is usually one year. 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. At present, Realkredit carries out three refinancing auctions a year and intends to add a fourth.

Figure 1

Rating Rationale

Realkredit IDR	A/Stable
Capital centre S/T	
D-Cap	3 (Moderate high)/2 (High)
Rating on PD basis	AA/AA−
D-Cap components	
Asset segregation	Very low/Very low
Liquidity gap and systemic risk	Moderate high/High
Systemic alternative management	Low/Low
Cover pool-specific alternative management	Moderate/ Moderate
Privileged derivatives	Very low/Very low

Source: Fitch

Figure 2

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

Related Criteria

Covered Bonds Rating Criteria (September 2013)

EMEA Residential Mortgage Loss Criteria (June 2013)

Fitch Affirms Denmark at 'AAA'; Outlook Stable (September 2013)

Fitch affirms Danske and Realkredit Danmark (November 2013)

Counterparty Criteria for Structured Finance and Covered Bonds: Derivative Addendum (May 2013)

Covered Bond Rating Criteria – Mortgage Liquidity and Refinance Stress Addendum (June 2013)

Covered Bond Types

Figure 3
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 have refinancing risk. Interest on the bonds is paid annually.

A new type of variable rate bond was launched in the last 10 years. These covered bonds represent a smaller part of the covered bond market (6% in capital centre S and 11% 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.

Two Capital Centres

Realkredit mainly issues covered bonds via 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 5* for details.

Eligibility Criteria

As per Danish regulation, the issuer may only grant mortgage loans that meet the following criteria.

- Loans secured by real estate property and exposures to public authorities.
- 80% LTV for a loan secured by residential properties, providing the loan is issued with up to 30 year maturity and with a 10-year interest-only period. 75% LTV for loans with unlimited maturities and interest-only periods. Realkredit only offers mortgage loans with up to 30 year maturities.
- 60% LTV for a loan secured by holiday, agricultural and commercial properties.

Under Danish legislation, exposure to public authorities may include:

- 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); and
- bonds and debt issued by credit institutions if risk-weighted 20%, provided they do not exceed 15% of the outstanding covered bonds.

Overcollateralisation (OC)

Danish legislation does not specify an absolute nominal OC requirement. However, capital requirements have to be fulfilled at the capital centre level for mortgage banks and translate into a mandatory OC level. Capital requirements are at least 8% of risk-weighted assets, which translates into about 2%-3% OC for specialised mortgage lenders like Realkredit.

Covered bonds issued by Realkredit are SDROs and are CRD compliant, which means that eligible assets in the cover pool comply with LTV thresholds, both at origination and during the loan's term. If house prices declined and LTVs increased above this threshold, the issuer must add supplementary collateral to the OC in the respective capital centre.

In traditional Danish covered bond programmes, OC is often referred to as a "Reserve". The OC can be funded by equity and senior debt, and mostly invested in different types of securities.

Discontinuity Analysis

Fitch's covered bond methodology analyses five components to assess discontinuity risk in a covered bond programme: asset segregation; liquidity gap and systemic risk; systemic alternative management; cover pool-specific alternative management; and privileged derivatives. The agency takes into account in its analysis both the Danish covered bond legislation and the specific features of the issuer's covered bond programmes.

Fitch has assessed the discontinuity risk components for capital centres S and T, as summarised in Figure 4.

Figure 4

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	High
Systemic alternative management	Low	Low
Cover pool-specific alternative management	Moderate	Moderate
Privileged derivatives	Very low	Very low
Overall D-Cap	**Moderate high (3)**	**High (2)**

Source: Fitch

Capital centre S has been assigned a D-Cap of 3, reflecting moderate high discontinuity risk. This means that the bonds can be rated up to three notches above the issuer's IDR on a PD basis, with the possibility of achieving a further two-notch uplift, based on a stressed recovery calculation. Capital centre T has been assigned a D-Cap of 2, reflecting high discontinuity risk.

The main driver of the discontinuity analysis for both capital centres is the liquidity gap and systemic risk component, which is higher for capital centre T due to the presence of higher refinancing risk.

Asset Segregation

Fitch assessed the asset segregation risk for the covered bonds of both capital centres as "Low". The agency believes that the legislative features of the programme 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 on an on-going basis. 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 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 which offers its borrowers only mortgage products and 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 unlikely, as Realkredit and Danske are two different legal entities.

Commingling Risk

At present, all borrowers pay their mortgage payments into accounts held by Realkredit with Danske Bank, Nordea and Jyske Bank. The funds from Nordea and Jyske Bank are transferred daily to 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. Due to daily transfer of funds, the exposure to Jyske Bank and Nordea is limited. In case of default, the issuer would have a preferential claim on such amounts.

Due to the statutory limitations on the issuer's activities and the capital centre registration (bonds and assets are assigned to individual capital centres upon origination), Fitch believes there is little risk of the issuer's cover pool assets being commingled with its other assets.

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.

At present, none of the capital centres has swap agreements at the programme level. If this changes, the swap counterparties of the issuer would rank pari passu with the bondholders in the priority of payments.

Liquidity Gaps and Systemic Risk

Fitch classified the liquidity gap and systemic risk component of the discontinuity analysis for the programme as "Moderate High" for capital centre S and "High" for capital centre T.

Liquidity or refinancing risk significantly differs 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 and are 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 end of 2013, Realkredit refinanced DKK169bn of bonds via auctions, and the refinancing auctions for all mortgage banks in Denmark amounted to approximately DKK697bn (DKK585bn and EUR17bn), or 39% of Danish GDP.

Capital centre T has a higher liquidity risk assessment as it contains only non-callable bullet bonds and variable rate bonds, unlike capital centre S which contains 45% of callable covered bonds.

The current liquidity mitigants in Realkredit's covered bond programmes, in particular with regards to covered bonds with refinancing risk, 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, but primarily in Realkredit covered bonds.

Although Danish covered bonds can be seen as liquid securities, in a stressed environment, it may not be possible to sell them quickly on the market. Hence, Fitch assumes in its analysis that the OC exclusively comprises non-liquid assets. It is likely however that the supporting OC will be invested in other liquid assets external to the group, following the implementation of new liquidity rules.

Realkredit intends to spread the auctions equally on a quarterly basis by 2021, which would lower but not eliminate the refinancing risk. In addition, in order to lower refinancing risk and improve long-term funding, Realkredit launched a new mortgage product referencing six-month CITA and funded by three-year covered bonds (potentially up to 10 years) in October 2013.

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 currently '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.

For this reason, Fitch gives credit to the possibility of refinancing bonds being issued post-insolvency, up to a two-notch uplift on a PD basis in a 'AA–' scenario for capital centre T.

The Danish government is currently reviewing a proposal that mortgage covered bonds should include mandatory extension provisions, which would reduce liquidity risk associated with concentrated refinancings via bond auctions, as of 1 April 2014. The proposal could reduce the refinancing risk created by Denmark's large mortgage bond market (equivalent to around 140% of GDP) with a relatively large proportion of short-maturity bonds. The proposal's details and implementation steps are being discussed in Parliament and are expected to come into law in Q114.

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

In Fitch view, systemic alternative management risk is low, given the strength of the regulatory framework 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

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 in place, which are fully integrated with its parent company IT 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 might lead to a more difficult transition to an alternative manager than market-based systems, in particular for mixed cover pools.

Privileged Derivatives

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-Factor. Fitch notes that some mortgage loans are denominated in other currencies than the Danish kroner (typically euro and 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.

Cover Pool Credit Analysis

At end-3Q13, the balance of the capital centre S cover pool was DKK233bn, and the capital centre T cover pool balance was DKK378bn, without taking into consideration the OC. For both capital centres, about 55%-65% of loans in the cover pool are residential mortgage assets and the remainder are commercial assets (including loans secured by agricultural, business and multifamily/private rental properties).

The key difference between the capital centres is that the capital centre S cover pool contains predominantly fixed rate assets and variable rate assets (mainly ARMs), which will be gradually refinanced into the capital centre T, while capital centre T contains only variable rate assets (mostly ARMs).

Figure 5

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	153,830	208,546	66.0	55.1
Agriculture	7,206	39,530	3.1	10.4
Business	24,717	80,156	10.6	21.2
Multifamily/rental residential	47,468	50,535	20.4	13.3
Total	**233,221**	**378,767**	**100.0**	**100.0**

Source: Realkredit

Figure 6

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	127,696	-	54.8	0.0
ARM	90,588	338,536	38.8	89.4
Other variable	14,937	40,231	6.4	10.6
Total	**233,221**	**378,767**	**100.0**	**100.0**

Source: Realkredit

Credit Analysis

Fitch has analysed the residential cover pools according to its *EMEA Residential Mortgage Loss Criteria* 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 whole cover pool.

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 cannot exceed 30 years.

Key Characteristics

Figure 7

Residential Mortgage Asset Cover Pool (3Q13)

	Capital centre S	Capital centre T
Capital centre cover pool amount (DKKm)	233,221	378,768
Residential cover pool		
Total amount (DKKm)	153,830	208,546
% of the capital centre	65.96	55.06
Number of loans	144,049	186,150
OLTV (%)	68.7	68.6
CLTV (%)	72.6	71.6
WA interest rate (%)	3.1	2.2
Interest-only (%)	45.5	65.75
Holiday houses (%)	4.0	5.6
Hovedstaden region (%)	38.23	43.31
Interest rate type (%)		
Fixed	60.29	0.00
ARMs	35.69	99.95
Other variable rate	4.01	0.05

Source: Fitch

According to Fitch's approach, the PD for this residential mortgage pool is driven by the borrower and loan characteristics: mainly LTV at origination (OLTV) and interest rate type. In contrast to other covered bond programmes in other European jurisdictions, Fitch did not differentiate default rates by affordability levels, due to a lack of data.

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 to 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 houses (see *Appendix 3*).

The recovery rates of residential mortgage pools are mainly determined by the current LTV (CLTV) and market value decline (MVDs) assumptions. Danish house prices have experienced a 20%-30% decline since 2009 (depending on property type and location). This explains the average increase in CLTVs by 10%-15% at the cover pool-level since that time. House prices have remained relatively flat over the last two years.

The expected loss on the residential mortgage pool is 4.2% for capital centre S in a 'AA' rating scenario and 4.8% for capital centre T in a 'AA−' rating scenario. The difference in expected loss rates between the capital centres is driven by the higher concentration of ARMs in capital centre T.

Figure 8
Fitch Default Model Results – Capital Centre S

(%)	WAFF	WARR	WA MVD	Expected loss
AAA	12.9	58.8	46.6	5.3
AA+	11.9	60.3	45.3	4.8
AA	10.9	61.9	44.0	4.2
AA−	10.3	62.9	43.1	3.8

WAFF = weighted average frequency of foreclosure
WARR = weighted average recovery rates
WA MVD = weighted average market value decline
Source: Fitch

Figure 9
Fitch Default Model Results – Capital Centre T

(%)	WAFF	WARR	WA MVD	Expected loss
AAA	16.7	59.9	46.5	6.7
AA+	15.4	61.4	45.2	6.0
AA	14.1	63.0	43.9	5.2
AA−	13.3	64.0	43.1	4.8

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 cannot exceed 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.

Figure 10
Commercial Portfolio (3Q13)

	Capital centre S	Capital centre T
Capital centre cover pool amount (DKKm)	233,221	378,768
Commercial cover pool		
Total amount (DKKm)	79,391	170,221
% of the capital centre	34.0	44.9
Number of loans	15,409	34,444
Top 10 borrowers (%)	7.89	15.21
CLTV (%)	65.5	62.2
Interest-only (%)	35.7	61.7
Property type (%)		
Agriculture	9.1	23.2
Business	31.1	47.1
Multifamily/private rentals	59.8	29.7
Interest rate type (%)		
Fixed	44.0	0.0
ARMs	44.9	76.4
Other variable rate	11.0	23.6

Source: Realkredit

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 of the pools.

The recovery rates are driven mainly by the CLTV of the loans and the assumed MVDs for each property type. According to Danish Statistics data, real estate prices have experienced a 25%-35% decline since 2009 (depending on property type and location). This has led to an average increase in CLTVs by about 10%-15% at the cover pool level since that time. Real estate prices remain volatile but are gradually stabilising.

The expected loss on the commercial pool is 15.7% for capital centre S in a 'AA' rating scenario and 14.1% for capital centre T in a 'AA−' rating scenario.

Figure 11
Portfolio Credit Model Results – Capital Centre S

(%)	RDR	RRR	Expected loss
AAA	43.9	47.1	23.2
AA+	39.8	51.6	19.4
AA	35.7	56.1	15.7
AA−	33.3	58.3	13.9

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

Figure 12
Portfolio Credit Model Results – Capital Centre T

(%)	RDR	RRR	Expected loss
AAA	46.7	49.4	23.6
AA+	42.9	54.2	19.8
AA	39.0	58.3	16.0
AA−	36.3	61.6	14.1

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

The total expected loss, combining residential and commercial assets, is 8.1% for capital centre S in a 'AA' rating scenario and 8.9% for capital centre T in 'AA−' rating scenario.

Cash Flow Analysis

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 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 FSA with the task of ensuring timely payments on the covered bonds. Notably, in order to bridge liquidity gaps, the administrator is entitled to issue refinancing bonds. A new interest rate on the refinancing bonds will be charged to borrowers.

In its analysis, Fitch gives credit 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. The weighted average life (WAL) of the assets and bonds is 15 years and nine years respectively for capital centre S and 15 years and 1.5 years respectively for the assets and bonds in capital centre T.

Breakeven OC

The breakeven OC for capital centre S is 11.0% in a 'AAA' rating scenario. This level supports 'AA' stresses on a PD basis in Fitch's cash flow model and enables a two-notch recovery uplift to 'AAA'. The breakeven OC for capital centre T is 11.5% in a 'AA+' rating scenario. The key driver of the breakeven OC is the credit risk, as per the cash flow analysis.

The supplementary collateral, which is mainly covering for the amount of the loans above the LTV thresholds, currently represents about 7% of the covered bond balance in each capital centre. As the issuer's IDR is 'A'/'F1', the agency relies on the public non-contractual statement of the issuer (11.0% for capital centre S and 11.5% for capital centre T).

The composition and credit quality of the cover pool will change over time, owing to the refinancing of the variable rate and ARM loans from capital centre S into capital centre T, and also due to the addition of newly originated loans and the repayment of outstanding loans. 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. Therefore, the breakeven OC cannot be assumed to remain stable over time.

Rating Outlook

The Stable Outlook on the covered bond ratings mirrors the agency's Stable Outlook for both the cover assets and the issuer's IDR.

Rating Sensitivity

Capital Centre S Rating Sensitivity: the 'AAA' rating 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 '2' (High) or worse; or the OC fell below the 'AAA' breakeven OC of 11.0%.

Capital Centre T Rating Sensitivity: the 'AA+' rating 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' (Very High); or the OC fell below the 'AA+' breakeven OC of 11.5%.

It should also be noted that Realkredit's IDR is strongly correlated with its parent's IDR, and the downgrade of Danske might lead to the downgrade of Realkredit.

Appendix 1: Origination and Servicing

Fitch visited Realkredit in September 2013 and met with senior staff to perform a review of the origination, underwriting and servicing processes.

Origination and Underwriting

Realkredit originates mortgage loans through Realkredit and Danske Bank branches across the country. Origination volumes have been decreasing since 2011 in line with the market. The following mortgage products (residential and commercial loans) are offered by Realkredit to all its customers (private individuals or companies).

Figure 13
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	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.

Borrowers have two prepayment options;

- a call option allows the borrower to prepay at par or 105% (FlexGaranti and Ratchets) at any point in 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.

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. A bank loan is a lower ranking loan and thus bears a significantly higher interest rate than a mortgage loan.

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.
- 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: i) the lowest of the actual rent and market rent; and ii) 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 re-valued using either a full valuation or an AVM every three years, while commercial properties are re-valued annually. The re-valuation results are reported to the Danish FSA.

Figure 14
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
Social 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.

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

Credit History

Borrowers with 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 efficient. Realkredit's legal counsel is involved after one-month of missed payments. Unless a restructuring solution is found, the property is sold within 9-12 months after the first arrears.

Appendix 2: Residential Mortgage Loss Assumptions

In its analysis of the residential mortgage loan portfolio, Fitch relied on is criteria *EMEA Residential Mortgage Loss Criteria*, dated June 2013 and calibrated its PD and loss severity assumptions based on performance data provided by Realkredit.

Base Foreclosure Frequency

Realkredit provided cumulative default data, defined as arrears greater than 90 days, by year of origination, OLTV level, collateral type and interest rate type from 2002 - 2012.

Fitch assumed a fixed rate mortgage loan secured by a house as the base case. The base FF matrix attributes PD rates based on OLTV but it does not differentiate between different affordability levels (debt-to-income, DTI), as the income data was not available due to operational limitations.

The ‘AAA’ base FF has been recalculated in line with the provisions of Fitch’s *EMEA Residential Mortgage Loss Criteria*, such that the FFs represent approximately seven times the long-term average FF.

Figure 15

Base Foreclosure Frequency Matrix ('B' Scenario)

LTV (%)	FF level (%)
0.0	0.4
50.0	0.9
60.0	1.4
70.0	1.9
80.0	2.4
>90.0	2.8

Source: Fitch

Figure 16

Scenario Multipliers of ‘B’ Foreclosure Frequency Matrix

AAA	4.5
AA	3.8
A	3.1
BBB	2.4
BB	1.7
B	1.0

Source: Fitch

Adjustments to Base Frequency of Foreclosure

Fitch adjusted the base FF at each rating category on a loan-by-loan basis to account for individual borrower, loan, interest rate and property characteristics.

Adjustable Rate Mortgage Loans (ARMs)

ARMs are mortgage loans for which the interest rates are reset predominantly on an annual basis. The agency increased the foreclosure frequency on ARMs compared to fixed rate loans in the range of 1.8x-2.2x, depending on year of loan origination and length of the interest rate reset time. Fitch applied higher FF for these 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. The agency used higher FF adjustments for mortgage loans which were originated in lower interest rate environment and which have less than a five year reset period.

According to the underwriting policy of the issuer, all borrowers have to complete an affordability stress test upon origination, which implies that borrowers should be able to pay the highest rate at the time, ie a 30-year fixed interest rate. Stressing affordability is seen as a positive; however, the stressed interest rate is a market rate and can differ from year-to-year, for instance in 2008 the rate was 5.0% vs 3.5% in 2011.

Variable Rate Mortgage Loans

Variable mortgage rate loans comprise a significant part of the commercial asset pool, but represent only a small part of the residential portfolio. The agency increased the FF on these loans in line with one-year interest reset ARM loans (ie 2.2x), taking into account the similar nature of the products and historical performance data.

Property Type

Based on the historical performance data analysis, Fitch derived the different FF adjustments by property type: 0.9 for flats; 1.00 for houses; and 1.4 for holiday houses.

Borrower Type

The historical performance data provided did not allow the agency to derive the separate default probability adjustments according to borrower type. The agency did not increase the FF to account for the borrower type, as this should already be captured in the base FF, as it was derived from the historical performance data.

Payment Frequency

About 96%-98% of loans in both capital centres pay on a monthly basis and the remainder on a quarterly basis. In line with assumptions in other European countries, the FF was increased by 5% for loans with quarterly payments.

Redemption Type

Danish mortgage loans are amortising mortgage loans, which can benefit from an interest-only period up to 10 years. Similar to other European jurisdictions, the FF was increased by 20% for all interest-only loans.

Loans in Arrears

With regards to loans in arrears, Fitch used the following FFs, as derived for other European jurisdictions.

Figure 17

Foreclosure Frequency for Loans in Arrears

	0-30	30-60	60-90	>90
Rating/arrears (%)	**1**	**2**	**3**	**4**
AAA	40	55	70	100
AA	34	49	64	94
A	28	43	58	88
BBB	22	37	52	82
BB	16	31	46	76
B	10	25	40	70

Source: Fitch

Loss Severities

In determining the loss severities and recovery rates for each loan, Fitch first assesses the value which can be recovered from the sale of a property to repay the debt. The agency estimates the property value on the pool-cut date using indexation and then applies MVD assumptions, comprising a house price decline assumption for each rating scenario and a quick sale adjustment (QSA). It then deducts the foreclosure and carry costs to calculate the recovery value on the property.

Indexed Property Value

To derive the current property value, the agency used the original property value and the house price index published by Danish Statistics. Fitch applies a 50% credit to all upwards house movements and a 100% credit to all house price declines that have occurred since the last valuation.

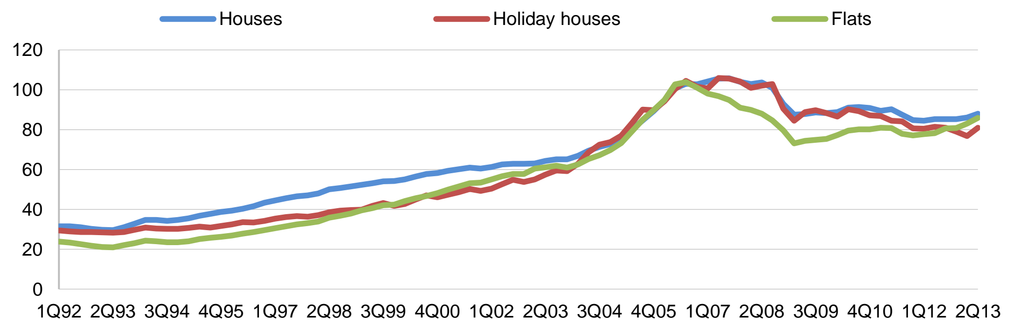
House Price Decline Assumptions

The agency analysed house price behaviour, the macroeconomic environment over the last 20 years and borrower affordability to derive the 'B' house price assumptions that reflect Fitch's near-term expectations.

In recent years, the Danish mortgage market has experienced a housing bubble, especially in the Copenhagen area, supported by a benign economic environment, low mortgage interest rates, and the expansion of new mortgage products (such as ARM and interest-only loans). A house price correction began in 2008; prices declined by around 25% - 30%, depending on property type and location in 2008-2011, but since that time, prices have stabilised and slightly risen.

The agency assumed house price decline expectations in the range 10%-15%, depending on region, in its base case scenario. With regard to 'AAA' assumptions, house price decline expectations were constructed by benchmarking to house price declines observed in the past and against other jurisdictions. The house price decline assumptions were 35% for the Hovedstaden region, which includes Copenhagen, and 30% for all other regions.

Figure 18
Danish House Price Index



Source: Fitch

Quick Sale Adjustment (QSA)

The QSA is an estimated loss which would occur upon the forced sale of the property and is derived as the ratio between the estimated property value and the sales value. Based on provided foreclosure data on about 20,000 properties, repossessed from 1990 to 2010, Fitch assumed a 20% - 25% QSA for properties, depending on the location.

Market Value Decline Assumptions (MVD)

Fitch derived the following MVD assumptions, distinguishing by region and location (rural/urban) at each rating category.

Figure 19
MVD Assumptions for Residential Properties

		(%)					
Region	**Location**	**AAA**	**AA**	**A**	**BBB**	**BB**	**B**
Hovedstaden	Urban	48.0	44.8	41.6	38.4	35.2	32.0
Other regions	Urban	44.0	40.8	37.6	34.4	31.2	28.0
Hovedstaden	Rural	51.3	48.3	45.3	42.3	39.3	36.3
Other regions	Rural	47.5	44.5	41.5	38.5	35.5	32.5

Source: Fitch

Illiquid Property Adjustments

Fitch applies a haircut to very high and very low value properties, as these properties are considered to be less liquid and their values more volatile. A haircut of 20% was applied to all properties (post MVD adjustment) with current (indexed) property values below DKK700,000 and above DKK6,500,000, which represent about 5%-7% of the pool in both capital centres.

Foreclosure Costs

Foreclosure costs comprise fixed and variable costs. Fixed costs include legal fees and revaluations; based on Realkredit data, such costs are around DKK8,000. Variable costs primarily consist of broker fees and are about 5% of the property sales value, based on Realkredit data.

Carry Costs

Carry costs are defined as interest due from the borrower on the delinquent loan for the duration of the foreclosure period. This period runs from the first missed payment through to the property sale date. Realkredit data shows that on average, loans are foreclosed in less than 12 months. The assumed foreclosure time is 18 months in a ‘AAA scenario’.

Appendix 3: Commercial Mortgage Loss Assumptions

In its analysis of commercial mortgage loan portfolios, which include agriculture, business, private rental and multifamily mortgage loans, Fitch relied on its criteria *Rating Criteria for European Granular Corporate Balance Sheet Securitisations (SME CLOs),* dated June 2013. The asset analysis was performed using the Portfolio Credit Model (PCM).

Fitch derived the expected default rate for each asset sub-portfolio separately, 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 2.5%, which is comparable to mortgage portfolios in other European jurisdictions (in the 2.5% - 4.5% range).

Fitch used Realkredit's credit scoring to distribute the assets' one-year PD around the benchmark, applying a 1% 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 performance data.

Figure 21

MVD Assumptions for Commercial Properties

(%)	AAA	AA	A	BBB	BB	B
Agricultural	65	59	53	47	41	35
Business	75	67	60	52	45	37
Multifamily/rental	65	60	55	51	46	41
Subsidised	70	67	63	60	56	53

Source: Fitch

Subsidised Housing

Mortgage loans to subsidised housing represent less than 5% of the multifamily mortgage loan portfolio and about a third of such mortgage loans are covered by guarantees. Subsidised housing is supported via guarantees 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 approximately 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 last three years, Realkredit has only called guarantees three times, with a total value of DKK6m.

Fitch does not rate municipalities in Denmark, but their credit quality has been conservatively placed in the 'A'/'BBB' categories. Fitch did not give full credit to mortgage loans benefiting from 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.

Appendix 4: D-Cap Comparison

Figure 22

Summary of Assessment of Fitch D-Cap Components

	Capital centre S	Capital centre T	Danske D	Danske C	Danske I
Asset segregation	Very Low	Very Low	Low	Low	Low
Liquidity gap and systemic risk	Moderate high	High	Moderate high	Moderate high	Moderate high
Systemic alternative management	Low	Low	Low	Low	Low
Cover pool-specific alternative management	Moderate	Moderate	Moderate high	Moderate high	Moderate high
Privileged derivatives	Very low	Very low	Moderate	Moderate high	Moderate high
Overall D-Cap	Moderate high (3)	High (2)	Moderate high (3)	Moderate high (3)	Moderate high (3)

Source: Fitch

Appendix 5: Danish Covered Bond Types

The current legal framework provides for the following types of Danish covered bonds.

Realkreditobligationer (RO)

This is the oldest type of bond, issued by mortgage banks only. ROs are UCITS, but are not CRD-compliant if issued after 31 December 2007.

Særligt Dækkede Realkreditobligationer (SDRO)

SDROs are issued by mortgage banks only and meet new legal requirements. SDROs are both UCITS- and CRD-compliant. A minimum OC of 8% of risk-weighted assets applies.

Særligt Dækkede Obligationer (SDO)

SDOs were implemented in 2007 following changes in legislation. SDOs can be issued by both commercial banks and mortgage lenders and are UCITS- and CRD-compliant. The minimum OC of 8% of risk-weighted assets applies only to mortgage bank issuers.

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