

Debt Service Coverage Ratio (DSCR) Calculations and Examples

This document provides product-specific information and sample calculations for the debt service coverage ratio that is disclosed for each property underlying Fannie Mae multifamily MBS.

Actual Debt Service Coverage Ratio

Actual DSCR is the ratio of Underwritten Net Operating Income (UW NOI) to the annualized debt service.

UW NOI = Underwritten Effective Gross Income less Underwritten Total Expenses (including Replacement Reserves).

Annualized Debt Service =

- For full and partial interest-only, 30/360, and Actual/360 loans, the Initial Interest Rate multiplied by Actual Unpaid Principal Balance at Acquisition.
- For amortizing 30/360 and Actual/360 loans, the monthly payment (can be found published in the Note) multiplied by 12.

Product Variations

Partial and Full Interest-Only (IO) Loans: The calculation does not include amortization.

ARM Loans: The calculation will be based on the Initial Interest Rate.

Cooperatives: UW NOI = Actual Cooperative NOI Effective Gross Income less Underwritten Total Expenses (including Replacement Reserves).

Supplemental Mortgages & Loans with Subordinate Debt (Combined) or Additional Debt

(Combined): The ratio of UW NOI to the annualized combined monthly payments of all existing loans. Combined monthly payments = the combined current monthly payments for all supplemental, subordinate debt, and first liens (**does not include soft debt, mezzanine debt or preferred equity**). If the additional debt is partial IO and is still in its IO period, then the IO payment is used. If the additional debt is partial IO and is in its amortization period, then the amortizing payment is used.

DSCR at Maximum Payment

DSCR at Maximum Payment is the ratio of UW NOI to the debt service calculated as described below.

Product Variations

Partial Interest-Only Loans: $DSCR = UW\ NOI / \text{annualized partial interest-only amortizing payment}$.

ARM Loans: $DSCR = UW\ NOI / \text{annualized monthly payment calculated using the maximum lifetime interest rate, if applicable, for ARMs with an embedded cap, or the variable underwriting rate for other ARMs (e.g., Structured ARM) with an amortization factor. No amortization factor is used for full interest-only ARM loans.}$

Fixed Rate Full Interest-Only Loans: DSCR at Maximum Payment will be the same as the Actual DSCR.

Fixed Rate Amortizing Loans with no Interest-Only Period: DSCR at Maximum Payment will be the same as the Actual DSCR.

Cooperatives: UW NOI = Rental Equivalent NOI Effective Gross Income less Underwritten Total Expenses (including Replacement Reserves).

Supplemental Mortgages & Loans with Subordinate Debt (Combined) or Additional Debt (Combined): The ratio of UW NOI to the annualized combined monthly payments of all existing loans. Combined monthly payments = the combined current monthly payments for all supplemental, subordinate debt, and first liens (**does not include soft debt, mezzanine debt or preferred equity**). If the additional debt is partial IO and is still in its IO period, then the IO payment is used. If the additional debt is partial IO and is in its amortization period, then the amortizing payment is used.

Sample Calculations

Select Product Type to navigate to the example reflected in the table.

Product Type	Actual DSCR	DSCR at Maximum Payment
Fixed Rate Amortizing Loan	1.55	1.55
Fixed Rate Amortizing Loan (Cooperative)	1.16	1.55
Fixed Rate Full Interest-Only Loan	2.00	2.00
Fixed Rate Partial Interest-Only Loan	2.00	1.55
ARM Loan – Embedded Cap Loan	1.55	1.14
Structured ARM Loan	1.75	1.06
Structured ARM Loan –Partial Interest-Only	2.89	1.06
Structured ARM Loan –Full Interest-Only	2.89	1.39

Fixed Rate Amortizing Loan

Loan Amount: \$10,000,000

Interest Rate: 5.00%

Term: 120

Amortization: 360

UW NOI: \$1,000,000

Debt Service: \$53,682, annualized \$644,184

Actual DSCR: 1.55 = \$1,000,000 / \$644,184

DSCR at Maximum Payment: 1.55

Fixed Rate Amortizing Loan (Cooperative)

Loan Amount: \$10,000,000

Interest Rate: 5.00%

Term: 120

Amortization: 360

Actual Cooperative NOI: \$750,000

Rental Equivalent NOI: \$1,000,000

Debt Service: \$53,682, annualized \$644,184

Actual DSCR: $1.16 = \$750,000 \text{ (Actual Cooperative NOI)} / \$644,184$

DSCR at Maximum Payment: $1.55 = \$1,000,000 \text{ (Rental Equivalent NOI)} / \$644,184$

Fixed Rate Full Interest-Only Loan

Loan: \$10,000,000

Interest Rate: 5.00%

Fixed Rate

Term: 120

Amortization: 0

UW NOI: \$1,000,000

Debt Service: $\$10,000,000 * 5.00\% (.0500) = \$500,000$

Actual DSCR: $2.00 = \$1,000,000 / \$500,000$

DSCR at Maximum Payment: 2.00

Fixed Rate Partial Interest-Only Loan

Loan: \$10,000,000

Interest Rate: 5.00%

Term: 120

Actual 360

Partial Interest-Only: 12 months

Original Amortization: 0

Amortization: 360

UW NOI: \$1,000,000

Debt Service: $\$10,000,000 * 5.00\% (.0500) = \$500,000$

Amortizing Debt Service: \$53,682, annualized \$644,184

Actual DSCR: $2.00 = \$1,000,000 / \$500,000$

DSCR at Maximum Payment: $1.55 = \$1,000,000 / \$644,184$

ARM Loan – Embedded Cap

Loan: \$10,000,000

Initial Interest Rate: 5.00% (e.g, Margin + Libor Rate)

Amortization: 360

Lifetime Max Interest Rate/Ceiling: 8.00%

UW NOI: \$1,000,000

Debt Service using initial interest rate: \$53,682, annualized \$644,184

Debt Service using lifetime max interest rate: \$73,377, annualized \$880,524

Actual DSCR: $1.55 = \$1,000,000 / \$644,184$

DSCR at Maximum Payment: $1.14 = \$1,000,000 / \$880,524$

Structured ARM Loan

Loan: \$12,500,000

Initial Interest Rate: 2.770% (e.g. Margin + Libor Rate)

Variable Underwriting Rate: 5.77% (e.g. Initial Interest Rate + Underwriting spread + Cap Cost)

Applicable Fixed Rate for Same Term Mortgage: 4.95%

Term: 120 months

Amortization: 360 months, using a straight line over the loan term based on the Applicable Fixed Rate

Fixed Principal Payment: \$18,655

Lifetime Max Interest Rate/Ceiling: None

Underwritten NOI: \$1,000,000

Debt Service using initial interest rate: Interest ($\$12,500,000 * 2.770\% (.02770) / 12 = \$28,854$) plus Fixed Principal (\$18,655) equals \$47,509, annualized \$570,108

Debt Service using variable underwriting rate: Interest ($\$12,500,000 * 5.77\% (.0577) / 12 = \$60,104$) plus Fixed Principal (\$18,655) equals \$78,759, annualized \$945,108

Actual DSCR: $1.75 = \$1,000,000 / \$570,108$

DSCR at Maximum Payment: $1.06 = \$1,000,000 / \$945,108$

It is possible for the DSCR at Maximum Payment to be less than 1.0 due to differences in the interest rates used to calculate the principal payment and the interest due.

Structured ARM Loan –Partial Interest-Only

Loan: \$12,500,000

Initial Interest Rate: 2.770% (e.g. Margin + Libor Rate)

Variable Underwriting Rate: 5.77% (e.g. Initial Interest Rate + Underwriting spread + Cap Cost)

Applicable Fixed Rate for same term mortgage: 4.95%

Term: 120 months

Amortization: 360 months

Fixed Principal Payment: \$18,655

Lifetime Max Interest Rate/Ceiling: None

Underwriting NOI: \$1,000,000

Debt Service using initial interest rate: Interest $\$12,500,000 * 2.770\% (.0277) = \$346,250$

Debt Service using variable underwriting rate: Interest $(\$12,500,000 * 5.77\% (.0577) / 12 = \$60,104)$ plus Fixed Principal $(\$18,655)$ equals $\$78,759$, annualized $\$945,108$

Actual DSCR: $2.89 = \$1,000,000 / \$346,250$

DSCR at Maximum Payment: $1.06 = \$1,000,000 / \$945,108$

It is possible for the DSCR at Maximum Payment to be less than 1.0 due to differences in the interest rates used to calculate the principal payment and the interest due.

Structured ARM Loan –Full Interest-Only

Loan: \$12,500,000

Initial Interest Rate: 2.770% (e.g. Margin + Libor Rate)

Variable Underwriting Rate: 5.77% (e.g. Initial Interest Rate + Underwriting Spread + Cap Cost)

Applicable Fixed Rate for same term mortgage: 4.95%

Term: 120 months

Amortization: 360 months

Fixed Principal Payment: None

Lifetime Max Interest Rate/Ceiling: None

Underwriting NOI: \$1,000,000

Debt Service using initial interest rate: Interest $\$12,500,000 * 2.770\% (.0277) = \$346,250$

Debt Service using variable underwriting rate: Interest $\$12,500,000 * 5.77\% (.0577) = \$721,250$

Actual DSCR: $2.89 = \$1,000,000 / \$346,250$

DSCR at Maximum Payment: $1.39 = \$1,000,000 / \$721,250$

It is possible for the DSCR at Maximum Payment to be less than 1.0 due to differences in the interest rates used to calculate the principal payment and the interest due.



Please Note

For more information please refer to Fannie Mae's [Multifamily MBS Prospectus](#). Specific definitions for terms can also be found in the [Multifamily Securities Locator Service Glossary](#).